IECON 2026

Doha, Qatar | 18-21 October

The 52nd Annual Conference of the IEEE Industrial Electronics Society



CONFERENCE PROGRAM

www.iecon2026.org

Doha, Qatar

October 18-21, 2026

IEEE

Advancing Technology for Humanity

IEEE Industrial Electronics Society

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IECON 2026 CONFERENCE PLATFORM

The official platform for accessing IECON 2026 is **Zoho Backstage.**

Platform link:

https://iecon.zohobackstage.com/IECON2026

How to access the platform:

- **Step 1:** Open the ticket email sent to the email address you used during registration.
- **Step 2:** Sign in with your registered email with a one-time code.
- **Step 3:** To join a session, navigate to the Agenda tab, then select the session, and you will see the option to join only 10 minutes before the session scheduled time.

We recommend using the latest version of Google Chrome to access the platform. Please allow access to your microphone and camera when your browser prompts you.

If you have not received your ticket, please check your junk or spam folder. If it is still missing, contact info@iecon2026.org with your full name and registration email address.

Wifi for Onsite Attendees

Network: MarriottBonvoy_Guest

Password: sgd1026

IECON 2026 MOBILE APPLICATIONS

Follow IECON 2026 from your phone. The mobile apps give you the full conference agenda and the papers in every session, and let you attend sessions from 18 to 21 October 2026.

1. Download

Android IECON 2026 app (dedicated)

iOS (iPhone and iPad) Zoho Backstage for Attendee app

- **Android:**

https://play.google.com/store/apps/details?id=com.iecon.attendee

- **iOS:**

https://apps.apple.com/in/app/zoho-backstage-for-attendees/id1324912655

2. Sign In on Android

- Step 1: Download and open the IECON 2026 app.
- Step 2: Sign in with the ticket sent to you by email, or with the email address linked to your IECON 2026 registration.

3. Sign In on iOS

- Step 1: Download and open the Zoho Backstage app.
- Step 2: Search for “IECON”.
- Step 3: Select IECON 2026, starting on 18 October 2026.
- Step 4: Sign in with the ticket assigned to you.

4. What You Can Do in the App

- Agenda: Browse the full program, including session times and rooms.
- Papers: See the papers presented in each session. Tap a paper title to open the paper directly.
- Sessions: Attend sessions from the app.

5. Speakers and Presenters

If you are presenting, join your session through the web-based Zoho Backstage platform on a computer, not through the mobile app. The web platform is required to share your slides and other content during your presentation.

Web platform:

https://iecon.zohobackstage.com/IECON2026

6. Need Help?

If you cannot find your ticket or cannot sign in, contact info@iecon2026.org and include the email address you used to register.

Onsite attendees can also ask at the registration desk in the Dafna Foyer.



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Message from Conference Chairs

Dear Colleagues and Friends,

On behalf of the IEEE Industrial Electronics Society (IES) and the Organizing Committee, we warmly welcome you to IECON 2026, the 52nd Annual Conference of the IEEE Industrial Electronics Society, held in Doha, Qatar, from 18 to 21 October 2026.

With nearly 2,000 paper submissions, this year's conference reflects the strong engagement of our global industrial electronics community. Bringing this program together despite the challenges along the way has been a collective achievement, and we are grateful to everyone who has contributed.

As the flagship annual conference of the IES, IECON brings together researchers, engineers, and industry leaders to share advances and address emerging challenges in industrial electronics. This year's program features keynote lectures, technical and special sessions, tutorials, industry activities, and panel discussions spanning power electronics, robotics and mechatronics, renewable energy, smart grids, cybersecurity, digital twins, and artificial intelligence for industrial applications.

We particularly welcome students and young professionals, whose ideas and participation are essential to the future of our field. We encourage all participants to engage in discussions, explore new perspectives, and build connections that extend beyond the conference.

Our sincere thanks go to the Technical Program Chairs, the entire Organizing Committee, special session organizers, and reviewers for their dedication. We also thank our authors, speakers, sponsors, and partners for their contributions and support.

Beyond the technical program, we hope you will enjoy Doha's cultural heritage and hospitality, and take part in the social activities that bring our community closer together.

We wish you a rewarding conference and a memorable stay in Qatar.

IECON 2026 General Chairs

General Co-Chairs of the 52nd IEEE IECON Conference



Prof. Sertac Bayhan
Hamad Bin Khalifa University, Qatar
Gazi University, Turkiye



Distinguished Prof. Haitham Abu-Rub
Hamad Bin Khalifa University
Qatar



Prof. Mariusz Malinowski,
Warsaw University of Technology
Poland



Prof. Erchin Serpedin
Texas A&M University at Qatar
Qatar

Message from IECON 2026 Technical Program Chairs

Dear Participants,

Welcome to Doha, Qatar, and thank you for being an integral part of the 52nd Annual Conference of the Industrial Electronics Society – IECON 2026. Your participation in this event is key to fostering a dynamic exchange of ideas, strengthening collaborations, and advancing technical knowledge in the fields of power electronics and energy systems.

We are excited to present an outstanding program curated by our dedicated program committee. The conference will feature three distinguished keynote speakers, special and technical sessions, student and young professional tutorials, and industry workshops, bringing together experts from academia and industry to explore the latest developments in power electronics, renewable energy, and smart grids.

IECON 2026 has already demonstrated its significance through impressive statistics: we have received a strong number of paper submissions, with contributions from researchers across various countries, reflecting the global interest in the conference themes. A rigorous peer review process, conducted by our expert track chairs, session organizers, and reviewers worldwide, ensures the highest technical quality of the accepted papers. We extend our deepest appreciation to all those who contributed to shaping the technical program.

As Technical Program Co-chairs, it is our pleasure to welcome you to Doha. We sincerely hope that your participation in IECON 2026 is both rewarding and inspiring, filled with insightful discussions, meaningful collaborations, and memorable experiences.

Looking forward to an engaging and successful conference!

Organizing Committee

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H.E. Eng. Abdulla Bin Ali Al-Theyab
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Lisa Boyd, *IEEE, USA*

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Texas A&M University at Qatar, Qatar
Ahmed Kouzou,
Texas A&M University at Qatar, Qatar
Ahmed Karaki,
Hamad Bin Khalifa University, Qatar

About Doha, Qatar

Doha, the capital of Qatar, is the host city for IECON 2026. The city is served by Hamad International Airport, which is consistently rated among the world's best-connected and highest-scoring airports for passenger experience.

Qatar is ranked among the safest countries in the world and is home to residents of more than 100 nationalities. Citizens of over 100 countries can enter Qatar without a visa, which simplifies travel arrangements for many international delegates.

Doha combines a fast-growing skyline and modern infrastructure with a long-standing cultural heritage. Visitors can explore sites such as the Museum of Islamic Art, the National Museum of Qatar, the historic Souq Waqif market, and the Katara Cultural Village. Qatar's National Vision 2030 sets out a long-term development strategy built around sustainable growth, economic diversification, and cultural preservation. The country hosted the FIFA World Cup in 2022 and continues to develop as a regional hub for business, research, and major international events.

Attractions to Visit

- Museum of Islamic Art (MIA)
- National Museum of Qatar (NMoQ)
- Souq Waqif
- Katara Cultural Village
- Doha Corniche
- The Pearl-Qatar
- Qetaifan Island North and Lusail Marina
- FIFA World Cup stadium tours
- Old Doha Port
- Shopping in Qatar
- Msheireb Downtown Doha
- Desert safari and Inland Sea (Khor Al Adaid)
- Banana Island
- Aspire Park
- Al Bidda Park

The Pearl – Porto Arabia



Porto Arabia is the cosmopolitan heart of The Pearl Island, offering a Mediterranean-inspired waterfront lined with yachts, restaurants, cafés and boutiques. Its open-air boardwalk, elegant marina setting and lively atmosphere make it an excellent choice for a relaxed evening stroll, waterfront meal or scenic break from the conference program.

The Pearl – Qanat Quartier

Known as Qatar's "Little Venice," Qanat Quartier enchants visitors with turquoise canals, candy-coloured buildings, arched bridges and pedestrian-friendly squares. Its waterfront cafés, boutique shops and beachfront promenade create one of Doha's most picturesque settings for walking, dining and photography.



The Pearl – Gewan Island

Situated beside The Pearl, Gewan Island is an emerging waterfront destination featuring a seaside promenade, green spaces, dining and retail venues, and the climate-controlled Crystal Walkway. Its modern setting and relaxed coastal character offer visitors a fresh perspective on Doha's expanding island lifestyle.



The Pearl – Medina Centrale

A vibrant town centre of The Pearl Island, combining Mediterranean-style plazas, landscaped spaces, shopping, dining and family entertainment. Visitors can explore its welcoming streets, enjoy a meal or spend time at attractions such as Megapolis Entertainment Center and the cinema complex.



Lusail Marina

Lusail Marina is the lively waterfront hub of Lusail, where contemporary towers, hospitality venues and public spaces meet scenic seaside boardwalks. The area is ideal for an evening walk, a waterfront meal or a closer look at the bold architecture and urban planning of Qatar's future city.



Lusail – Al Maha Island

Connected to the mainland by a causeway, Al Maha Island is a major leisure and entertainment destination overlooking Lusail's waterfront. It brings together high-end restaurants, beach clubs and seasonal attractions such as Lusail Winter Wonderland, making it a lively choice for dining and entertainment after conference sessions.



Conference Venue

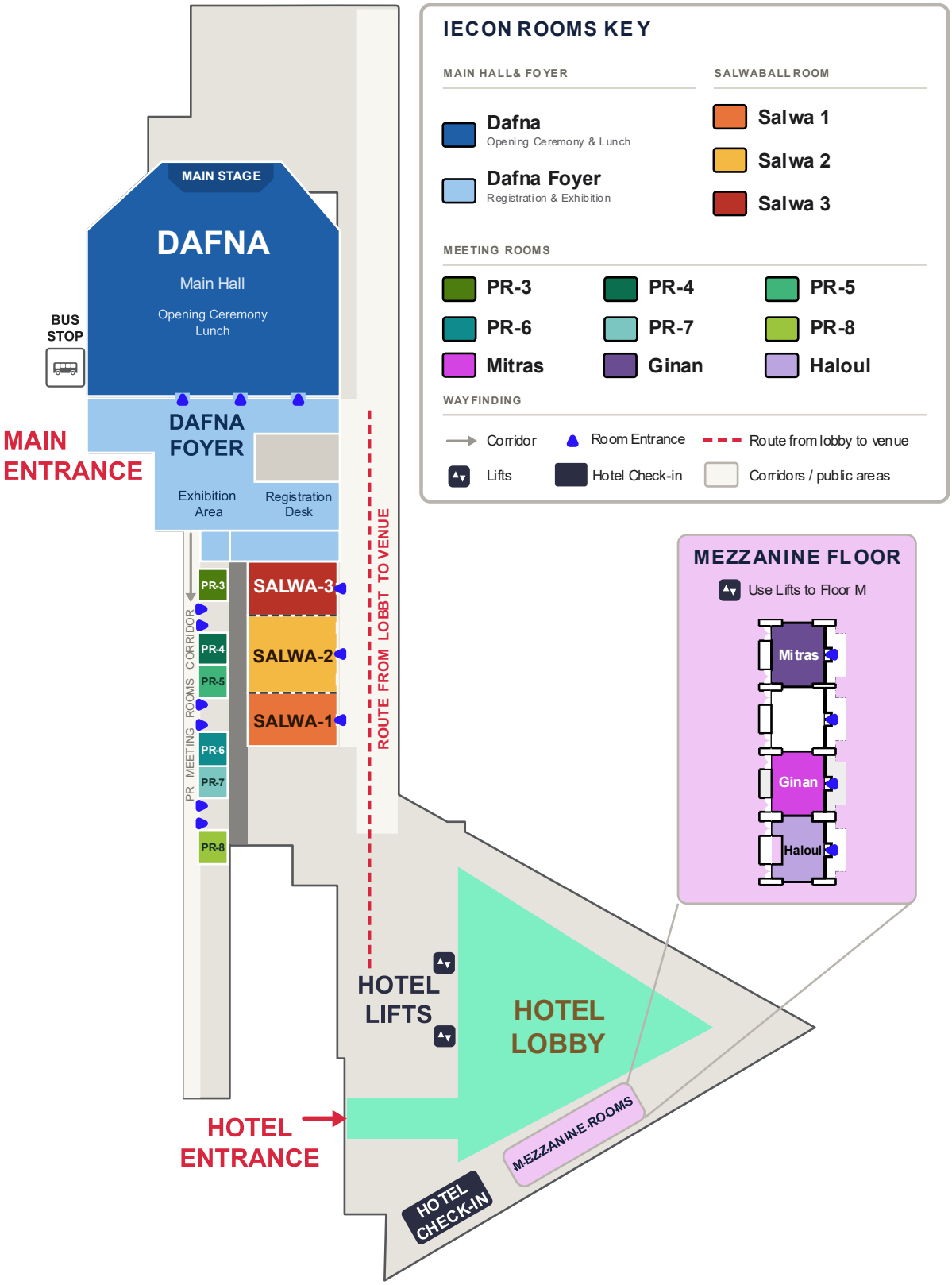
Sheraton Grand Doha Resort and Convention Hotel

IECON 2026 will take place at the Sheraton Grand Doha Resort and Convention Hotel, located in the West Bay district of Doha. The hotel operates seven restaurants and bars offering Middle Eastern, Italian, and Asian cuisine, together with themed buffets, beachfront dining, and a rooftop restaurant serving Arabic cuisine. It is situated approximately 1.9 kilometers from City Center Doha shopping mall and about 20 minutes by road from Hamad International Airport. Nearby cultural sites include the Museum of Islamic Art, the National Museum of Qatar, Souq Waqif, Doha Corniche, and The Pearl-Qatar.



Conference Venue Address:
Sheraton Grand Doha Resort and Convention Hotel
Al Corniche Street, Doha, Qatar
Telephone: +974 4485 4444

Floor Plan


IECON ROOMS KEY
MAIN HALL& FOYER
Dafna
Opening Ceremony & Lunch
Dafna Foyer
Registration & Exhibition
SALWABALLROOM
Salwa 1
Salwa 2
Salwa 3
MEETING ROOMS
PR-3
PR-4
PR-5
PR-6
PR-7
PR-8
Mitras
Ginan
Haloul
WAYFINDING
Corridor
Room Entrance
Route from lobby to venue
Lifts
Hotel Check-in
Corridors / public areas
MAIN STAGE
DAFNA
Main Hall
Opening Ceremony
Lunch
BUS STOP
MAIN ENTRANCE
DAFNA FOYER
Exhibition Area
Registration Desk
PR MEETING ROOMS CORRIDOR
SALWA-3
SALWA-2
SALWA-1
ROUTE FROM LOBBT TO VENUE
MEZZANINE FLOOR
Use Lifts to Floor M
HOTEL LIFTS
HOTEL LOBBY
HOTEL ENTRANCE
MEZZANINE ROOMS
HOTEL CHECK-IN

Conference Program

DAY 1 – Sunday, 18 October 2026				
08:00 – 18:00	Registration and Badge Collection (All day)			
09:30 – 12:30	Parallel Tutorials			
12:30 – 14:00	Lunch Break			
14:00 – 17:00	Parallel Tutorials		Workshop 1	Workshop 2
DAY 2 – Monday, 19 October 2026				
08:00 – 18:00	Registration and Badge Collection (All day)			
08:00 – 09:30	Parallel Technical Sessions			
09:30 – 10:00	Coffee Break			
10:00 – 10:30	Opening Ceremony			
10:30 – 12:30	Keynote: Prof. Xiaohong Guan Keynote: Prof. Maryam Saeedifard			
12:30 – 14:00	Lunch Break			Women in IES Luncheon
14:00 – 15:30	Parallel Technical Sessions	IES Journals Information		
15:30 – 16:00	Coffee Break			
16:00 – 17:30	Parallel Technical Sessions			IECON Newbies
17:30 – 19:00	Technical Committee Meeting			
19:00 – 21:30	Welcome Reception			
DAY 3 – Tuesday, 20 October 2026				
08:00 – 09:30	Parallel Technical Sessions			
09:30 – 10:30	Parallel Industrial Panel Sessions	Chapters Meeting		SYPA
10:30 – 11:00	Coffee Break			
11:00 – 12:30	Keynote: Prof. Huijun Gao Keynote: Prof. Biplab Sikdar	Chapters Meeting		SYPA
12:30 – 14:00	Lunch Break			
14:00 – 15:30	Keynote: Prof. Francisco Longatt Keynote: Prof. Samir Kouro	Chapters Meeting	IEEE IES PDC	SYPA
15:30 – 16:00	Coffee Break			
16:00 – 17:30	Parallel Technical Sessions	Chapters Meeting		SYPA
18:30 – 21:30	Gala Dinner			
DAY 4 – Wednesday, 21 October 2026				
08:00 – 09:30	Parallel Technical Sessions			
09:30 – 10:30	Parallel Industrial Panel Sessions			IES Publications Committee meeting
10:30 – 11:00	Coffee Break			
11:00 – 12:00	Keynote: Prof. Sudip Mazumder			
12:30 – 14:00	Lunch Break			
14:00 – 15:30	Parallel Technical Sessions			Workshop 3
15:30 – 16:00	Coffee Break			
16:00 – 17:30	Parallel Technical Sessions	Workshop 4	Workshop 5	Workshop 6

Day 1 - Sunday October 18

Time	Event	Location
Throughout the day	Registration	Dafna - Foyer
09:30–10:30	Tutorial Sessions	Tutorials
10:00–17:00	Exhibition for Sponsors	Dafna - Foyer
10:30–11:00	Coffee Break	Dafna - Foyer
11:00–12:30	Tutorial Sessions	Tutorials
12:30–14:00	Lunch Break	Dafna - Foyer
14:00–17:00	Workshop - 1 (PSCAD)	Salwa 1
14:00–17:00	Workshop - 2 (Power Electronics & Data Centers)	Salwa 2
14:00–15:00	Tutorial Sessions	Tutorials
15:00–15:30	Coffee Break	Dafna - Foyer
15:30–17:00	Tutorial Sessions	Tutorials

Day 2 - Monday October 19

Time	Event	Location
08:00–09:30	Parallel Sessions	Technical Sessions
09:30–10:00	Coffee Break	Dafna - Foyer
10:00–10:30	Opening Ceremony	Dafna
10:00–17:00	Exhibition for Sponsors	Dafna - Foyer
10:30–12:30	Keynote Prof. Xiaohong Guan — Cyber-Physical Systems in the Age of Intelligence and Networking Prof. Maryam Saeedifard — Next-Generation Grid Architectures in the Era of Power Electronics & AI	Dafna
12:30–15:30	Women in IES Luncheon	Salwa 2
12:30–14:00	Lunch Break	Dafna - Foyer
14:00–15:30	Informative session for IES Journals authors and reviewers	Salwa 3
14:00–15:30	Parallel Sessions	Technical Sessions
15:30–16:00	Coffee Break	Dafna - Foyer
16:00–20:00	Newbies Collaboration	Salwa 2
16:00–17:45	Parallel Sessions	Technical Sessions
17:30–19:00	TC Smart Grid Meeting and Workshop	Salwa 1
18:30–21:30	Welcome Reception	Dafna

Day 3 - Tuesday October 20

Time	Event	Location
08:00–09:30	**Parallel Sessions**	Technical Sessions
09:15–10:40	**Opening Remarks & SYP Joint Keynote**	Salwa 2
09:30–10:30	**Panel 2**	Salwa 1
09:30–10:30	**Chapters Meeting**	Salwa 3
09:45–10:45	**Panel 1**	Dafna
10:00–17:00	**Exhibition for Sponsors**	Dafna - Foyer
10:30–11:00	**Coffee Break**	Dafna - Foyer
11:00–12:30	**Keynote** Prof. Huijun Gao — Intelligent Robotic System for Organoid Regeneration Prof. Biplab Sikdar — AI-Driven Cyber Defense for Next-Generation Power Grids	Dafna
11:00–12:00	**SYP Forum Panel**	Salwa 2
11:00–12:30	**Chapters Meeting**	Salwa 3
12:30–14:00	**Lunch Break**	Dafna - Foyer
13:30–15:00	**SYPA Video Session**	Salwa 2
14:00–15:30	**Keynote** Prof. Francisco Gonzalez-Longatt — Protection in the Era of Power Converter-Dominated Systems Prof. Samir Kouro — Partial Power Conversion: Enabling More Efficient Energy Transition Technologies	Dafna
14:00–15:30	**Chapters Meeting**	Salwa 3
14:00–16:00	**IEEE IES PDC Meeting**	Salwa 1
15:30–16:00	**Coffee Break**	Dafna - Foyer
15:30–17:00	**IES SYP Opportunities & Honorary Keynote Speakers**	Salwa 2
16:00–17:30	**Chapters Meeting**	Salwa 3
16:00–18:00	**Parallel Sessions**	Technical Sessions
18:30–21:30	**Gala Dinner**	Dafna

Day 4 - Wednesday October 21

Time	Event	Location
08:00–09:30	**Parallel Sessions**	Technical Sessions
09:30–10:30	**Panel 3**	Salwa 3
09:30–10:30	**Panel 4**	Salwa 1
10:00–11:00	**IES Publications Committee and Journals Associate Editors**	Salwa 2
10:30–11:00	**Coffee Break**	Dafna - Foyer
11:00–12:00	**Keynote** Prof. Sudip K. Mazumder — Actuation by Light: A New Era in Power Electronics	Salwa 3
12:30–14:00	**Lunch Break**	Dafna - Foyer
14:00–15:30	**Workshop -3 (Siemens)**	Salwa 3
14:00–15:30	**Parallel Sessions**	Technical Sessions
15:30–16:00	**Coffee Break**	Dafna - Foyer
16:00–17:30	**Workshop - 4 (Typhoon)**	Salwa 3
16:00–17:30	**Parallel Meetings**	TC Meetings
16:00–17:30	**Workshop - 5 (Digital Twin Applications in Power Systems)**	Room - PR3

Day 3 - Tuesday October 20

Time	Event	Location
16:00–17:30	Workshop - 6 (Edge Intelligence for Energy Management)	Room - PR4
16:00–17:45	Parallel Sessions	Technical Sessions

Day 1 - Sunday October 18

IECON 2026

09:30 — 7 parallel sessions

09:30–10:30 Mitras	**Tutorial - 01** Instructors: Prof. Mohamed Benbouzid · Prof. Demba Diallo *Condition Monitoring and Prognosis in Power and Energy Systems: From Advanced Signal Processing and Hybrid AI to Digital Twins and LLM-Enabled Decision Support*
09:30–10:30 Haloul	**Tutorial - 02** Instructors: Tobias Geyer *How model predictive control is revolutionizing the high-power drives industry*
09:30–10:30 Room - PR4	**Tutorial - 03** Instructors: Prof. Marco Rivera, Prof. Jose Rodriguez, Prof. Margarita Norambuena, Prof. Fernanda de Morais Carnielutti, Prof. Zhenbin Zhang, Prof. Mokhtar Aly, Prof. Freddy Arturo Flores Bahamonde *Recent Advances, Challenges and Future Trends of Model Predictive Control Applied to Power Electronics*
09:30–10:30 Room - PR5	**Tutorial - 04** Instructors: Prof. Francisco Gonzalez-Longatt *Industrial Intelligence for the Smart Grid: IEC 61850 Process Bus and Digital Substations in the Era of ICT and Artificial Intelligence*
09:30–10:30 Room - PR6	**Tutorial - 05** Instructors: Dr. Ahmed M. Massoud, Dr. Haitham Abu-Rub, Dr. S. M. Muyeen, Dr. Sertac Bayhan, Dr. Abdulrahman Alassi *Sub-Synchronous Oscillations in Modern Power Systems: Mechanisms, Detection, and Mitigation for Large-Scale Renewable Energy Integration*
09:30–10:30 Room - PR8	**Tutorial - 06** Instructors: Prof. Xibo Yuan, Dr. Mohamed Diab, Dr. Wenzhi Zhou *Insulation and Bearing Reliability in Wide-Bandgap Motor Drives: Challenges, Mechanisms, and Mitigation*
09:30–10:30 Room - PR3	**Tutorial - 07** Instructors: Prof. Hui Zhang, Prof. Dan Zhang, Prof. Jicheng Chen, Prof. Dariusz Zielinski, Prof. Amjad Anvari-Moghaddam, Prof. Marek Jasinski *Multi-Scale Resilience Enhancement and Coordinated Orchestration of Next-Generation Networks for Energy and Coupled Traffic V2G Systems*

10:00

10:00–17:00 Dafna - Foyer	**Exhibition for Sponsors**

10:30

10:30–11:00 Dafna - Foyer	**Coffee Break**

11:00 — 7 parallel sessions

11:00–12:30 Mitras	**Tutorial - 01** Instructors: Prof. Mohamed Benbouzid · Prof. Demba Diallo *Condition Monitoring and Prognosis in Power and Energy Systems: From Advanced Signal Processing and Hybrid AI to Digital Twins and LLM-Enabled Decision Support*

Day 1 - Sunday October 18

11:00–12:30 Haloul	**Tutorial - 02** Instructors: Tobias Geyer *How model predictive control is revolutionizing the high-power drives industry*
11:00–12:30 Room - PR4	**Tutorial - 03** Instructors: Prof. Marco Rivera, Prof. Jose Rodriguez, Prof. Margarita Norambuena, Prof. Fernanda de Morais Carnielutti, Prof. Zhenbin Zhang, Prof. Mokhtar Aly, Prof. Freddy Arturo Flores Bahamonde *Recent Advances, Challenges and Future Trends of Model Predictive Control Applied to Power Electronics*
11:00–12:30 Room - PR5	**Tutorial - 04** Instructors: Prof. Francisco Gonzalez-Longatt *Industrial Intelligence for the Smart Grid: IEC 61850 Process Bus and Digital Substations in the Era of ICT and Artificial Intelligence*
11:00–12:30 Room - PR6	**Tutorial - 05** Instructors: Dr. Ahmed M. Massoud, Dr. Haitham Abu-Rub, Dr. S. M. Muyeen, Dr. Sertac Bayhan, Dr. Abdulrahman Alassi *Sub-Synchronous Oscillations in Modern Power Systems: Mechanisms, Detection, and Mitigation for Large-Scale Renewable Energy Integration*
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11:00–12:30 Room - PR3	**Tutorial - 07** Instructors: Prof. Hui Zhang, Prof. Dan Zhang, Prof. Jicheng Chen, Prof. Dariusz Zielinski, Prof. Amjad Anvari-Moghaddam, Prof. Marek Jasinski *Multi-Scale Resilience Enhancement and Coordinated Orchestration of Next-Generation Networks for Energy and Coupled Traffic V2G Systems*
12:30	
12:30–14:00 Dafna - Foyer	**Lunch Break**
14:00	10 parallel sessions
14:00–17:00 Salwa 1	**Workshop - 1 (PSCAD)** Instructors: PSCAD Industrial Workshop *EMT Fundamental and Large-Scale Grid Modelling This three-hour industrial workshop explores practical applications of electromagnetic transient (EMT) simulation using PSCAD, progressing from simple circuits to large-scale power system models and emerging applications of agentic AI. The first part introduces EMT fundamentals and PSCAD through the development of a simple circuit for a transformer energisation study. Using an example network containing synchronous machines and condensers, demonstrations show how wind farm models can be integrated through the Parallel Network Interface. A further example demonstrates control interactions between two inverter-based resources. The second part gives a presentation on large-scale EMT modelling in practice, drawing on real-world projects with transmission system operators globally. It examines why system operators are adopting wide-area EMT modelling and how these models are developed, validated and applied. Examples include RMS and EMT co-simulation, grid connection studies using Grid Connect X, and dynamic frequency scanning for oscillation assessment. Practical approaches to network reduction, model integration and parallel simulation are also highlighted.*
14:00–17:00 Salwa 2	**Workshop - 2 (Power Electronics & Data Centers)** Instructors: Mohammad B. Shadmand · Marek Jasinski *AI Data Centers and the Modern Power Grid: Power Electronics, Control, and Grid Services*

Day 1 - Sunday October 18

14:00–15:00 Mitras	**Tutorial - 08** Instructors: Prof. Petar J. Grbovic *Partial Power Processing Converters -A Myth or the Reality-*
14:00–15:00 Haloul	**Tutorial - 09** Instructors: Tobias Geyer *Industrial medium-voltage converters and drives: from components to systems and applications*
14:00–15:00 Room - PR4	**Tutorial - 10** Instructors: Yi Sui, Mingqiao Wang, Shijie Yang *Optimization Design, Analysis and Control of High-Performance Special Permanent-Magnet Machine Systems*
14:00–15:00 Room - PR5	**Tutorial - 11** Instructors: Prof. Khaled Ahmed *Resilient Power Grid of the Future with High Voltage DC Transmission: Developments, Challenges and Opportunities*
14:00–15:00 Room - PR6	**Tutorial - 12** Instructors: Yazan Qiblawey · Agusti Egea-Alvarez *System Identification of Grid-Forming and Grid-Following Converter Control Modes in IBR-Dominated Networks*
14:00–15:00 Room - PR7	**Tutorial - 13** Instructors: Dr. Saeed Arafat *Edge AI and Advanced Sensor Fusion (Radar, Camera, LiDAR, USS) for Next-Generation Autonomous Vehicles*
14:00–15:00 Room - PR8	**Tutorial - 14** Instructors: Kotb B. Tawfiq *Multiphase Electric Drives: Sustainable Rewinding, Inverter Topologies, and Control*
14:00–15:00 Room - PR3	**Tutorial - 15** Instructors: Prof. Sheldon S. Williamson, Harshit Madaan, Dr. V. Subrahmanya Raghavendra Varaprasad Oruganti, Latha Anekal *Next-generation Intelligent and Cybersecure Modular EV Fast Charging Infrastructure with V2G/V2X Capabilities*
15:00	
15:00–15:30 Dafna - Foyer	**Coffee Break**
15:30	8 parallel sessions
15:30–17:00 Mitras	**Tutorial - 08** Instructors: Prof. Petar J. Grbovic *Partial Power Processing Converters -A Myth or the Reality-*
15:30–17:00 Haloul	**Tutorial - 09** Instructors: Tobias Geyer *Industrial medium-voltage converters and drives: from components to systems and applications*

Day 1 - Sunday October 18

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15:30–17:00 Room - PR5	**Tutorial - 11** Instructors: Prof. Khaled Ahmed *Resilient Power Grid of the Future with High Voltage DC Transmission: Developments, Challenges and Opportunities*
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Day 2 - Monday October 19

08:00 — 28 parallel sessions

08:00–09:30
Ginan
ONLINE

ICELIE 2026 (Hybrid)

Chairs: Sandeep Patil · Mohamed Trabelsi

ICELIE26-000002 **Adaptive AI-Based Examination Framework for Trustworthy and Personalized Digital Assessment**
Swapneswar Sundar Ray

ICELIE26-000008 **Design and Implementation of a Mixed Reality Immersive Analytics System for Student Performance Data**
Khaled Al Dasouki, Masa AlGhrawi, Ahmed Mostafa

ICELIE26-000009 **The Development of a Humanoid Arm Manipulator for Education**
Gabriel Tijerina, Mohamed Gharib

ICELIE26-000011 **Teaching Formal Methods with a Verified P-Language Traffic Corridor**
Danilo Santos, Daniel Cavalcanti, Angelo Perkusich

ICELIE26-000017 **The Dexterous Design Challenge: Planning, Implementation, and Outcomes**
Niamh Coles, Zavier Dollaway, Mohamed Gharib, Debra A. Fowler, M. Cynthia Hipwell, J. Edward Colgate

ICELIE26-000023 **Assessing the Impact of ChatGPT-Supported Personalized Instruction on Academic Achievement: A Pilot Experimental Study in Education**
Raqiya Al Hilali, Jamil Al Shaqsi

ICELIE26-000019 **IntroCSHub: An Offline Integrated Learning Environment for Introductory Programming**
Mohamed Massaoudi, Maymouna Ez Eddin, Shady Khalil, Katherine Davis

ICELIE26-000020 **Design and Validation of an Interactive Learning Environment for Introductory C Programming**
Mohamed Massaoudi, Maymouna Ez Eddin, Shady Khalil, Katherine Davis

ICELIE26-000021 **An Adaptive Learning Platform for AI Education with Confidence-Aware Review and ML Coding Quests**
Mohamed Massaoudi, Maymouna Ez Eddin, Shady Khalil, Katherine Davis

ICELIE26-000015 **Friction Compensation in Mechatronics Education a Tensor Product Model Transformation Based Approach**
Robert Mikuska, Andras Kovacs, Mate Balogh, Zsombor Inzsol, Alireza Sharifan, Peter Korondi

08:00–09:30
Online Room-02
ONLINE

Online-SS-01: Advanced Modeling and Control of Grid-Connected Converters for Distributed Generation and Power Quality

Chairs: Hadi Kanaan · Changda Zhang

IECON26-000738 **Adaptive Frequency Support for a PV-BESS-VSG Considering Battery Health and Operating Stress**
Mingjun Li, Kaushik Rajashekara, Shivam Saini

IECON26-000848 **Harmonic Analysis of Neutral Point Clamped Converter with Carrier-Based Modulation Schemes**
Aravinthan K, Naga Brahmendra Yadav Gorla

IECON26-001168 **Augmented Fault Ride-Through Capability of dVOC-Based Grid-Forming Converters**
Sima Azizi Aghdam, Mohammed Agamy

IECON26-001350 **Inrush Current Suppression Control Strategy Based on Positive and Negative Sequence Virtual Oscillator for Unbalanced Grid Voltage Sag**
Min Huang, Maiyu Liu, Yecheng Lin, Lixun Zhu, Zhilei Yao, Weimin Wu

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Day 2 - Monday October 19

08:00–09:30
Online Room-02
ONLINE
cont'd

Online-SS-01: Advanced Modeling and Control of Grid-Connected Converters for Distributed Generation and Power Quality · continued

IECON26-000754 **Bandwidth Extension of Single-Phase PFC Boost Converters for EV Chargers using Load Estimation based Second-Harmonic Ripple Decoupling**
Mohammed Benmiloud, Khaled Ameur, Mohamed Bougrine, Mohamed Trabelsi

IECON26-000037 **Robust Power-Domain Control of Grid-Connected Converters Using Algebraic Modeling and Jacobian-Based Regulation**
Mohamed Amine Fnaiech, Mohamed Trabelsi, Hani Vahedi

08:00–09:30
Online Room-03
ONLINE

Online-SS-02: Intelligent Modelling and Fault Diagnosis Techniques for Safety-critical Industrial Systems

Chairs: Xianqiang Yang · Xinpeng Liu

IECON26-000048 **Graph Matching-Driven Intelligent Modeling and Placement Defect Detection for SMT**
Zichao Geng, Zhibo Shan, Jingfan Hang

IECON26-000049 **Lightweight Industrial Image Super-Resolution via Frequency-Decoupled Global-Local Modeling**
Hong Yang, Tingxin Li, Ruohong Xu, Zhenghan Ding, Zhixiang Jia, Jingfan Hang

IECON26-000053 **Constrained Multi-Objective Path Planning for Autonomous Vehicles in Hybrid Threat Environments**
Congyi Bi, Jingtao Wang, Lei Yang, Yuxuan Fan, Zhengsheng Chen, Yahui Zhang, Haohan Zhao, Tenglong Huang

IECON26-000066 **Temporal Consistency Verification of Smart Contracts Prior to Deployment in Safety-Critical Industrial Grade Intelligent Unmanned Systems**
Chaoze Lu, Jianchao Zhou, Zhipeng Sun

IECON26-000116 **From Anomaly Maps to Inspection Reports: Rule-Augmented Explainable Industrial Visual Inspection**
Safayat Bin Hakim, Kanchon Gharami, Houbing Song

IECON26-000348 **Distributed Safe Target-Formation Control for Multi-Agent Vehicles With CBF-QP Filtering and Rotational Deadlock Mitigation**
Hang Mo, Huiyan Zhang

08:00–09:30
Online Room-04
ONLINE

Online-SS-03: Rare-Earth Magnet Free Machines for a Sustainable Future

Chairs: Prathap Reddy B · Bheemaiah Chikondra

IECON26-000431 **Failure-Mechanism Transferability of Cumulative-Damage Features for Health State Estimation of SiC Power Modules**
Mattia Scarpa, Evgeny Kusmenko, Francesco Toso, Ruggero Carli, Mattia Bruschetta, Simon Achatz

IECON26-000760 **A Symmetrical Six-Phase Inverter Using Fictional Neutral Points for Extending the DC-Bus Utilisation of Three-Phase Induction Motor Drives**
Sabir V E, Vivek R S, Abhiram A, Prajeesh P Prabhakaran, Vinod V, Anurenjan Purushothaman

IECON26-000762 **Linear Modulation Range Extension of a Two-Phase Induction Motor Using Switched Neutral Points and a Symmetrical Four-Phase Inverter**
Sabir V E, Aswin V P, Vivek R S, Lalgy Gopi, Vinod V, Anurenjan Purushothaman

IECON26-000955 **A New Voltage Sharing Strategy for a Twelve Leg Open-End Winding Nine-Phase Induction Motor Drive**
Tukaram Alias Saurabh Dhavjekar, Siva Kumar Keerthipati

IECON26-001094 **Stator Fault Diagnosis in an 8/6 Switched Reluctance Motor: A Classifier Sensing Factorial Study under Realistic Inter-Turn and Inter-Phase Fault Models**
Franklin Sanchez, Maria Isabel Milanes, Enrique Romero-Cadaval

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Day 2 - Monday October 19

08:00–09:30
Online Room-04
ONLINE
cont'd

Online-SS-03: Rare-Earth Magnet Free Machines for a Sustainable Future · continued

IECON26-000703 **Interlinking Hybrid Distribution Transformer: A Unified Resonant State-feedback Control Strategy**
Dave Figueroa, Alvaro Carreno, Mariusz Malinowski

08:00–09:30
Online Room-07
ONLINE

Online-SS-04: Power-Electronic-Enabled Control and Market-Oriented Operation of Smart Microgrids: Optimization, Demand Response, and Peer-to-Peer Energy Trading

Chairs: Hamidreza Arasteh · Anand R.

IECON26-001481 **A Fast EV Charging Station Based on an ISOI DC-DC Converter**
Milad Rasoulikhatir, Javad Hassani, Qiang Wei

IECON26-001540 **Current-Constrained Continuous-Control-Set Model Predictive Control for dVOC-Based Grid-Forming Inverters in Weak Grids**
Safia Bashir, Surour Alaraifi, Mohamed El-Moursi, Bashar Zahawi

IECON26-000170 **Optimized Sizing and Energy Management of PV Wind CHP Resources in an IEEE 14-Bus Multi-Energy Microgrid**
Hadi Mojtaba, Elhoussin Elbouchikhi, Lahoucine Id-Khajine, Ayoub Chrif, Abdelhakim Saim

IECON26-001163 **Parameter Identification of PEM Fuel Cells Utilizing a Hybridized Jellyfish Search and Nelder-Mead Simplex Optimization Algorithm**
El Moundher Aouiche, Sanjeevikumar Padmanaban, Mohammed Echarif Aguida, Chaima Aouiche, Abdelaziz Aouiche, Mouhammed Saigaa

IECON26-001164 **Hyperbolic Tangent-Based Adaptive Torque Control for Torque-Ripple Mitigation in SRMs**
El Moundher Aouiche, Sanjeevikumar Padmanaban, Mohammed Echarif Aguida, Chaima Aouiche, Mohamed Islam Bentaleb, Abdelaziz Aouiche

IECON26-001561 **Cost-Sensitive Maintenance Action Learning from Real-World Vehicle Time-Series Data**
Walmir Acioli e Silva, Jussif Junior Abularach Arnez, Vandermi Joao da Silva, Vicente Lucena

08:00–09:30
Online Room-08
ONLINE

Online-SS-05: Modern Trends in Electric Drive Control, Power Converter Topologies, and Renewable Energy Systems

Chairs: Mahmoud F. Elmorshedy · Kotb M. Kotb

IECON26-000987 **Atmospheric graph for wind power forecasting**
Abdourahman Khaireh-Walieh, Seifeddine Ben Elghali

IECON26-001412 **DAB Converter Assessment under Constant Power Constant Voltage CP-CV and Traditional CC-CV in Electric Bikes Battery Charging**
Ahmed Shawky, Mokhtar Aly, Mahmoud S. R. Saeed, Jose Rodriguez

IECON26-000114 **An Enhanced Quasi-Z-Source Based T-Type Inverter with Increased Voltage Boost**
Vitor Pires, Armando Cordeiro, Daniel Foito, Javier Gutierrez-Escalona, Carlos Roncero-Clemente, Joao Martins

IECON26-000138 **Multi-Parameter Identification of PMSMs with a Physics-Constrained Backpropagation Neural Network**
Zhongyu Shi, Fobao Zhou, Xueyan Wang, Zhenxiao Yin, Hang Zhao

IECON26-000782 **Efficient Learning of Neural Network Assisted Controller for PMSMs using Lyapunov Function**
Zhenxiao Yin, Xu Chen, Fobao Zhou, Yonghang Zang, Yujia Zhang, Yuxuan Liang, Hang Zhao

IECON26-001246 **An Implementation-Oriented Delay Compensation Method for Simplified Voltage-Based FCSMPC of Dual-Input Split-Source Inverters**
Mustafa Abuzaher, Mokhtar Aly, Jose Rodriguez

Day 2 - Monday October 19

08:00–09:30
Online Room-09
ONLINE

Online-SS-06: Artificial Intelligence and Machine Learning Applications in Renewable Energy and Energy Storage Systems

Chairs: Amee Daiya · Siddharth Joshi

IECON26-000162 **Evaluating the Architecture-Dependent Effectiveness of Quasi-Geostrophic Constraints in Deep Learning for Wind Forecasting**
Maryam Saeed, Jiaqiang Yang, Muhammad Farhan Khan, Bingqiang Liu

IECON26-000318 **Electrode State-of-Health Estimation for Lithium-Ion Batteries Using Physics-Informed Deep Operator Networks**
Philipp Brendel, Christopher Straub, Andreas Rosskopf, Vincent Lorentz, Felix Dietrich

IECON26-000372 **Hybrid Spiking Neural Network Bidirectional Long Short-Term Memory Framework for Accurate and Energy Efficient RUL Prediction of Li-Ion Batteries**
Shevil Mehta, Heidi Nygard, Jagath Sri Lal Senanayaka

IECON26-000392 **From Sanitation to Energy: Multimodal Deep Learning for Real-Time Human Waste Anaerobic Digestion Intelligence**
Diwakar Yalpi, Sruta Keerti Kasula, Ravi Mukkamala

IECON26-000580 **Feature Selection for Data-Driven Solar Photovoltaic Maximum Power Point Tracking**
Salvador Yabar, Michael Garcia Huamani, Carlos Alberto Paragua Macuri

IECON26-000866 **Advanced Physics-Informed Soft Sensor for Offshore Wind Power Measurement and Forecasting via Explainable Graph Convolutional Network**
Menglong Wu, Xiaotian Zhang, Jiamu Zhang, Qilong Dai, Sheng Wu, Yanhui Wang, Zhongxing Gao

08:00–09:30
Online Room-10
ONLINE

Online-SS-07: Emerging AI and Quantum Technologies for Secure and Resilient Future Power Systems

Chairs: Muhammad Ismail · Mostafa Shaban

IECON26-000797 **Assessing Large Language Models for Critical Node Identification in Power Grids**
Brett Billingsley, Amr Elshazly, Jesse Roberts, Rachad Atat, Muhammad Ismail

IECON26-001165 **Evaluating Quantum and Classical Estimation Techniques for Microgrid Frequency Disturbance Detection in Battery Energy Storage Systems**
Uzair Khan, Md Ebrahim Hossain, Saikat Das, Arif Sarwat

IECON26-001396 **Geometry of Quantum-Encoded Renewable Energy Time-Series Data**
Avinash Jeewani, Anwer Shees, Jawad Mohammed, Arif Sarwat

IECON26-000252 **Federated Multi-Agent Reinforcement Learning-Based Electric Vehicle Scheduling for Transformer Health Management**
Wenjun He, Wangli He

IECON26-000244 **Knowledge-Base-Enhanced Domain-Adaptive Reinforcement Learning for Microgrid Scheduling under Extreme Weather**
Na Wang, Jingang Lai

IECON26-000540 **An Integrated Splitting-Pruning-Quantization Method for Edge-Collaborative Forecasting Model Deployment in Microgrid Clusters**
Leijiao Ge, Yue Zhuo, Jierui Yang, Zhouyue Meng, Yuyang Wu, Rubo Lu

08:00–09:30
Online Room-11
ONLINE

Online-SS-08: Next-Gen Electric Vehicles: Hybrid Energy Storage, Power Electronics and Grid-Interactive Charging

Chairs: Abdelbasset Krama · Mostafa Farrag

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Day 2 - Monday October 19

08:00–09:30
Online Room-11
ONLINE
cont'd

Online-SS-08: Next-Gen Electric Vehicles: Hybrid Energy Storage, Power Electronics and Grid-Interactive Charging · continued

IECON26-000122 **EV Off-Board Charger: A Flexible and Dynamic Operation to Control Power Quality in Smart Grids**
Vitor Monteiro, Frede Blaabjerg, Joao Afonso

IECON26-000125 **Real-Time Multi-Objective Energy Management Optimization for Plug-in Fuel Cell Electric Vehicles via Genetic Algorithm and Quadratic Programming**
Ahmad Eid El Iali, Moustapha Doumiati, Dany Abou Jaoude, Mohamed Machmoum

IECON26-000272 **Reconstruction and Prediction of Electric Vehicle Charging Characteristics Using Real-World Office Parking Data**
Dhaouadi Fedi, Youssef Kraiem, Moustapha Doumiati, Saber Krim, Mohamed Faouzi Mimouni, Mohamed Machmoum

IECON26-000732 **A Novel Soft-Switching Resonant ZVS DC-DC Step-Up Converter for Ultra-Low-Power Applications**
Najmehossadat Nourieh, Syed Mudassir Hussain, Oluyomi Simpson, Yichuang Sun

IECON26-000977 **Enhanced Battery Management with Vehicle-Pile Data Fusion: A Perspective**
Chao Sun, Xin Sui, Hui Xing, Shuang Zhao, Shan He

IECON26-001250 **Remaining Driving Range Extension in Electric Vehicles: A Core-Temperature-Guided Battery Thermal Management Method**
Cong-Sheng Huang, Hao-Han Lee

08:00–09:30
Online Room-12
ONLINE

Online-SS-09: AI-2.0-Driven Strategies for Condition Monitoring and Prognosis in Power and Energy Systems: From Digital Twins and Cybersecure Predictive Maintenance to Emerging Foundation and LLM-based Models

Chairs: Mohamed Benbouzid · Demba Diallo

IECON26-000098 **A Linear Dynamic Operating Envelope Allocation for Network-Aware Electric Vehicle Charging Station Operation in Distribution Systems**
Adel Heidari Akhijahani, Irfan Khan

IECON26-000891 **A Digital Twin Framework for Historical Assessment of Solar-Rainwater-Driven Green Hydrogen Production in India**
Mrinmoy Das, Ramesh Kumar, Gianluca Gatto, Suman Jana, Amit Kumar

IECON26-000069 **Interpretable State of Health Prognosis for Lithium-Ion Batteries via a Kolmogorov-Arnold Physics-Informed Neural Network**
Senfeng Cen, Chenglin Fan, Taihoon Kim, Haoxiang Zhang, Qiubo Zhong

IECON26-000320 **Physics-Informed Machine Learning for Motor Bearing Health Prognosis**
Yuichi Kajiura, Tomoyuki Iwawaki, Kai Yamagata, Yebin Wang, Dehong Liu

IECON26-000378 **Electrical Quantity Awareness for Data-Efficient Photovoltaic Fault Diagnosis Under Data Scarcity**
Weiqing Lu, Claude Delpha, Demba Diallo, Anne Migan-Dubois, Yujie Xu, Iman Makrouf, Tianzhen Wang

IECON26-000426 **Diffusion-VAE: A SCADA-Conditioned Latent Diffusion Framework for Unsupervised Wind Turbine Anomaly Detection**
Senfeng Cen, Chenglin Fan, Taihoon Kim

08:00–09:30
Online Room-13
ONLINE

Online-SS-10: AI-Driven Analysis, Modelling, and Control of Unmanned Engineering Systems

Chairs: Min Ma · Tong Wang

IECON26-000928 **GKAG-Former: A Gated Keypoint-Aware Axial Geometry Transformer for 3D Shape Retrieval**
Zhiming Zheng, Qiansong Cheng, Nannan Liu, Pinhe Wang, Xinkai Chen

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Day 2 - Monday October 19

08:00–09:30
Online Room-13
ONLINE
cont'd

Online-SS-10: AI-Driven Analysis, Modelling, and Control of Unmanned Engineering Systems · continued

IECON26-000108 **Pixel-Level Confidence Estimation for Single-Capture Joint Depth and Hyperspectral Reconstruction**
Xinbo Meng, Yuqi Li, Zhengkai Li, Junxi Lai

IECON26-000946 **Effect of Multi-Parameters of Surface Mount Assembly on Defects of Solder Joints**
Wan Tai, Taohan Wang, Hanwen Feng, Yuqing Ran, Jiayun Feng

IECON26-001093 **A Physics-Informed Neural Network Method for Online Pick-Up Error Compensation of the Surface Mounting Process**
Xinbo Meng, Zhengkai Li, Hao Sun, Xinghu Yu, Zhihong Zhao

IECON26-000285 **Reactive Power Compensation Optimization of New Energy Systems Based on Improved Grey Wolf Optimizer**
Yongwei Zhou, Dan Zhang, Yilian Zhang

IECON26-000403 **Precise attitude-tracking controller for rigid-body spacecraft with predefined time convergence**
Umair Javaid, Michael Basin, Salman Ijaz

08:00–09:30
Online Room-14
ONLINE

Online-SS-11: ADVANCED CONTROL AND SIGNAL PROCESSING IN MECHATRONICS

Chairs: Michael Basin · Paolo Mercorelli

IECON26-000868 **Machine-Learning-Assisted Microfluidic Contact Lenses with Capillary Burst Valves for Sequential Tear-State Analysis**
Yuhan Zheng, Chen Liu, Weiwei Qian, Muzi Lin, Nai Yeen Gavin Lai, Xu Sun, Sheng Zhang

IECON26-000901 **Design and Control of a Polar-Coordinate Ceramic 3D Printing Control System for Digital Preservation of Yueyao Celadon Craftsmanship**
Mingming Xu, Jingyu Ding, Zing Siang Lee

IECON26-001227 **Adaptive and Fixed-Gain Sliding Mode Control for Robust Stabilization of a Two-Wheel Inverted Pendulum Part I: Controller Design and Stability Analysis**
Egisona Qosja, Paolo Mercorelli

IECON26-001228 **Adaptive and Fixed-Gain Sliding Mode Control for Robust Stabilization of a Two-Wheel Inverted Pendulum Part II: Simulation-Based Validation and Performance Evaluation**
Egisona Qosja, Paolo Mercorelli

IECON26-001754 **Physics-Informed Neural Network for Stator Magnetic Field Modeling in Halbach-PMSMs**
Abdelrahman Abdelmagid, Sajjad Mohammadi

IECON26-000520 **Optimal Consensus Control of Discrete-Time Multiagent Systems With Input Saturation**
Jinchao Gu, Changda Zhang

08:00–09:30
Online Room-01
ONLINE

Online-TT-012: Power Systems and Smart Grid

Chairs: Abdulrahman Takiddin · Jianqiang Hu

IECON26-000655 **Evolution of Teleprotection Communications: From Power Line Carrier to Hybrid Packet-Based Architectures**
Vaibhav Bhatnagar, Pierre Guillet, Alexandre Fraignac

IECON26-000667 **Conservative Upper Bound on Shunt Resistance for Stabilizing 2t Oscillations in Bilinear-Discretized V-ITM Power-Hardware-in-the-Loop**
Arun Sharma, Sarasij Das

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Day 2 - Monday October 19

08:00–09:30
Online Room-01
ONLINE
cont'd

Online-TT-012: Power Systems and Smart Grid · continued

IECON26-000718 **Dynamic Multi-Objective Metaheuristic Optimization of Energy Communities**
Pablo Horrillo-Quintero, Pablo Garcia-Trivino, Joao Catalao, Luis M. Fernandez-Ramirez

IECON26-000860 **UIPDO-Based Resilient Secondary Frequency Control for Islanded Microgrids**
Xicheng Li, Jianqiang Hu

IECON26-000882 **Data-Driven Distributed Privacy-preserving Resilience Control for DC Microgrids**
Hao Yang, Chao Deng

IECON26-000914 **Diagnostic Sensitivity of EMT Test Cases for TSO-Oriented Validation of Offshore VSC-HVDC Systems**
Sergei Shcherbakov, Soledad Bernal-Perez

08:00–09:30
Online Room-05
ONLINE

Online-TT-013: Smart Building Technologies

Chairs: Alaa Selim · Zakria Qadir

IECON26-000203 **Constrained PMV-Driven Two-Zone HVAC Control Using Centralized PPO Under a Shared Cooling Budget**
Srinivas Vulli, Ming Liu, Zhenyu Huang

IECON26-000383 **Effect of Buffer Tank Size on Thermal Comfort and Energy Consumption in Residential Heat Pump Systems with and without Occupancy: a Simulation-Based Analysis**
Mir Farooq Ali, Francesco Perticaroli, Lorenzo Marra, Crescenzo Pepe, Silvia Maria Zanoli

IECON26-000545 **Distributed MPC for Energy-Optimal Thermal Control in Buildings with Hybrid Heating**
Vahid Ehteshami Bojnurdi, Mohammadhassan Gholami Derouei, Valeriy Vyatkin, Udayanto Dwi Atmojo

IECON26-000616 **Secure Management and Self-Commissioning of Internet of Things Gateways in Smart Cities**
Beatriz Cristina De Faria, Carlos Alcantara, Luis Lopes, Flavia Pires, Jose Barbosa, Tiago Silva, Tiago Pedrosa, Natassya Silva

IECON26-001011 **IoT-based System for Volume and Activity Monitoring for Second-Hand Collection Containers**
Mohamed Yassine Mansouri, Margarida Maia, Soraia Taipa, Flavia Pires, Jose Barbosa

IECON26-001581 **A Unified Home Energy Management System Integrating Smart Metering, Multimodal User Feedback, and On-Device LLM Reasoning**
Mohammadreza Kadkhodaei, Hossein Mokhtari, Sepehr Hashemian, Sepideh Rahimi, Mahdi Zarei

08:00–09:30
Online Room-06
ONLINE

Online-TT-014: Control Systems and Applications

Chairs: Asif Jamadar · Pavol Bauer

IECON26-000763 **Unknown Target Number Cooperative Search with Multiple Heterogeneous UUVs through Role Specialization and Belief Confirmation Mapping**
Yang Shuxin, Zhou Jiajia, Wu Yang

IECON26-000369 **IIoT-Enabled LARX-MPC Based PVC Prediction for Aerospace Gravity-Fed SPSFT Systems**
Sathish Kumar G, Rajeev Kumar, G.s. Chandrasekhar

IECON26-000833 **Data-Driven Control using CDDS for Galvanometric Laser Scanner in SLS 3D Printing of Motor Cores**
Zaki Aslam, Yasutaka Fujimoto

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Day 2 - Monday October 19

08:00–09:30
Online Room-06
ONLINE
cont'd

Online-TT-014: Control Systems and Applications · continued

IECON26-000889 **Small-Signal Stability Analysis and Design Guidelines for Green Hydrogen DC Energy Hubs**
Shadi Khodakaramzadeh, Qobad Shafiee, Zian Qin, Pavol Bauer

IECON26-000900 **Covariance-Aware Nonlinear Model Predictive Control for AUV Trajectory Tracking Under Sensing Uncertainty**
Chengsong Yu, Junjie Lu, Shengyuan Huang, Peng Huang, Hao Liu, Zixin Huang

IECON26-000385 **Risk-Based Assessment of Recreational Seawater Quality in the Gulf of Vlora Using High-Frequency Autonomous Monitoring**
Medriti Mustafaraj, Houxiang Zhang, Oivind Kare Kjerstad

08:00–09:30
Online Room-15
ONLINE

Online-TT-015: Control Systems and Applications

Chairs: Jingyu Ding · Hyejun Hong

IECON26-001109 **Observer-Based Switching Distributed MPC for Heterogeneous UAVs UGVs Systems Under Packet Loss, Delay, and Jitter**
Yujie Luo, Yong Chen, Zhuohua Duan

IECON26-001804 **Planned-Path Sharing for Cooperative Behavior Selection in Multi-Vehicle Autonomous Parking**
Hyejun Hong, Yeong Gwang Choi, Jae Jeon

IECON26-000097 **Stabilization of Highly Nonlinear Stochastic Time-Delay Systems Affected by Deception Attacks via Protocol-Based Control**
Fengqiu Liu, Mingxin Kang, Hongxu Zhang, Jianmin Wang

IECON26-000938 **Bio-plausible Spiking Observer-based Control with Spike Frequency Adaptation Based on Emulation Theory**
Hongfu Xu, Xiaoyu Guo, Liutao Zhou, Shengbo Wang, Jiankai Yin, Shuo Gao

IECON26-000104 **Model-Based Design for Industrial PLC Development: A Simulink-to-TwinCAT Workflow for Real-Time Systems**
Rohini Doddabandar Ramegowda

IECON26-000145 **Advanced Nonlinear Controllers for Torque Management in Electric Vehicle Powertrains**
Muhammad Zubair, Daniela Iacoviello, Adeel Usmani

08:00–09:30
Online Room-16
ONLINE

Online-TT-016: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Eman Hammad · Fabio Suim Chagas

IECON26-000198 **Privacy-Preserving ToA/AoA Fusion Localization via CRT Compression and Dual-Masking Secure Aggregation**
Yuhan Cai, Shengming Chang, Yangwen Luo

IECON26-000219 **Towards LLM-Assisted IEC 61499 Function Block Engineering**
Jorge Vieira, Rui Pinto, Eliseu Pereira, Gil Goncalves

IECON26-000613 **SENTRIX: A Flow-Based Intrusion Detection Cascade With Operator-Driven False-Positive Reduction**
Sohamm Shheth, Nilakshi Jain, Vineet Kumar

IECON26-000714 **Vulnerability of Multi-Sensor Stochastic Event-Triggered State Estimation under Stealthy Hybrid FDI Attacks**
Puchen Xu, Li Jin

IECON26-000870 **Interface-Level Replay Recovery for Supervisory Robotic Telemetry Under Transient Disconnection**
Fabio Chagas, Vedran Simic

IECON26-000211 **HSEP: Hash-Enhanced Secret Sharing with Lightweight ECC for Full-Path Privacy in Collaborative Indoor Localization**
Shengming Chang, Haojun Lin, Dongdong Lv, Davy Tsz Kit Ng, He Xu

Day 2 - Monday October 19

08:00–09:30
Salwa 1

Onsite-TT-001: Power Systems and Smart Grid

Chairs: Ali Alaboudy · Dhanup Somasekharan Pillai

IECON26-001385 **Global Sensitivity Analysis of Sub-/Super-Synchronous Oscillations in Grid-Following PV Inverters**
Sara Hamed, Muhammad F. Umar, Sertac Bayhan, Haitham Abu-Rub, Hussein Alnuweiri

IECON26-001215 **Large Language Models as Strategic Bidding Agents in P2P Energy Trading Markets**
Ismail Lotfi, Ali Ghrayeb, Haitham Abu-Rub

IECON26-000368 **A Rolling Horizon-Based Optimization Approach for Power Systems Under Forecast Uncertainty**
Hussain Ahmed, Ristomatti Pori, Matias Makkonen

IECON26-000408 **Multi-Objective Operation Planning of an Active Distribution Network for EVCS Stress Mitigation Using Sine Cosine Algorithm**
Mohammad Anas, Imtiaz Ashraf, Fareed Ahmad

IECON26-001204 **Wear-Adaptive Learning-Augmented Active Disturbance Rejection Control for Repetitive Robot Manipulator Tasks**
Abdelhadi Aouaichia, Abderraouf Maoudj, A.Aziz Khater

08:00–09:30
Salwa 2

Onsite-TT-002: Power Electronics Converters

Chairs: Youcef Belkhier · Mohammad AlShaikh Saleh

IECON26-000263 **LLC Transformer Design Based on Unbalanced-flux Magnetics Approach**
Sobhi Barg, Mhd Anas Al Ebrahim, Kent Bertilsson

IECON26-000268 **Design and Validation of a Full-GaN Inverter for 800V Automotive Applications**
Saeid Aghaei Hashjin, Alexandre Battiston, Najla Haje Obeid

IECON26-000395 **Constant Switching Frequency of Zero-Voltage Switching Paralleled Inverters for AC Motor Drive**
Xiaoming Fu, Zewei Shen, Dehong Zhou, Xin Liu, Jianxiao Zou, Shicai Fan

IECON26-001782 **GSETS: Gaussian Smoothed Efficient Transition Sampling for Data-Driven Digital Twin Models**
Ahmad Al-Khateeb, Naheel Kamal, Eman Hammad, Sertac Bayhan, Haitham Abu-Rub

IECON26-001135 **Single Phase Dual Source Common Ground Grid-Connected Inverter With Model Predictive Controller**
Anup Marahatta, Sandipan Patra, Shafi Khadem

08:00–09:30
Salwa 3

Onsite-TT-003: Electric Machines and Industrial Drives

Chairs: Morcos Metry · Muhammad Ahmad

IECON26-001867 **Data-Driven Vehicle-to-Grid Smart Charging for Low-Voltage Networks**
Abdullah A Jabbar, Usman Zafar, Muneera Al-Qahtani, Anas Karaki

IECON26-000106 **Harmonic Suppression for PMSM Based on an Improved Model-Free Predictive Current Control Method**
Guanjie Li, Guangsen Wang, Zhentian Liu, Fengrui Cui, Zhaoran Lei

IECON26-000188 **Deviation-Based Health Index for Bearing Condition Monitoring under Blind Operating Conditions**
Muhammad Ahmad, Hasnain Ahmad, Md Shafiullah, Muhammad Majid Gulzar

IECON26-000323 **Different Approaches to Optimal Flux Selection for Wide-Speed-Range SynRM Drives**
Shahal Ibn Islam Joy, Lelisa Wogi, Marcin Morawiec, Deepak Vyas, Jan Barta, Tausifur Rahman

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Day 2 - Monday October 19

08:00–09:30
Salwa 3
cont'd

Onsite-TT-003: Electric Machines and Industrial Drives · continued

IECON26-000341 **Dynamic MTPA-Based Energy-Optimal Trajectory Planning for IPMSM Servo Systems**
Kuan Wang, Yingguang Liu, Le Sun, Longmiao Chen

IECON26-000814 **A Hybrid Quantum--Classical Deep-Learning Framework for Critical-Mineral Price Prediction**
Khaled Dhibi, Fadwa El Mellouhi, Osama Hasoneh, Aseel Mohamed

08:00–09:15
Mitras

Onsite-TT-004: Renewable Energy and Energy Storage Systems

Chairs: Khaled Abedrabboh · Sheeraz Iqbal

IECON26-000197 **Resilience-Aware Techno-Economic Sizing of PV-BESS Systems in Renewable Energy Communities: A Swedish Case Study**
Ziad Amer Al-Taie, Annisa Dhini Septi Kinasih, Fredrik Wallin, Amir Vadiee, Alaa Krayem

IECON26-000239 **Cost-Aware Reinforcement Learning with Action Masking and Projection for Battery Energy Storage Dispatch under Suppressed-Spread Market Shifts**
Kuanlin Chen, Chen-Wei Kuo, Cheng-En Ou

IECON26-001790 **Fault Signature Detection for IGBT Degradation Using Operational Data Analysis of Grid-Tie Central Inverters in Large Scale PV Power Plant**
Youssef Badry, Mahmoud Gaafar, Mohamed Orabi

IECON26-000421 **Prismatic Lithium-ion Battery Parameter Identification using Mean Variance Optimization and SoC Estimation via Extended Kalman Filter**
Jaiminkumar Patel, Mahmadasraf A. Mulla, Ashish Panchal

IECON26-000468 **Future GMPP Forecasting for AI-Assisted Predictive MPPT Under Dynamic Partial Shading**
Hassan Ali, Faizan Rashid, Sheikh Mohammed Rayyan Iqbal, Afaq Gul, Saeed Abdullah Dar

08:00–09:30
Haloul

Onsite-TT-005: Transportation Electrification and Automotive Technologies

Chairs: Dipankar Debnath · Islam Safak Bayram

IECON26-000113 **Electric Vehicle Battery Impedance Identification Using Pseudo Random Binary Sequence Signals Applied by Altered Electric Motor Drive Reference**
Farshid Naseri, Marcus Hoegh Bjerre, Kaiyuan Lu, Erik Schaltz

IECON26-000128 **Triple PV Fed Dual High Frequency Transformer based Isolated Solar Charger for VIPV Applications**
Sanam Agnihotri, Dipankar Debnath

IECON26-000312 **Thermomechanical Analysis of Impregnated Motors Slot Under Thermal Cycling testing**
Sara Ismaeel, Mehmet Gulec, Mohamed Ibrahim, Essam Rashad, Peter Sergeant

IECON26-000538 **Attention-Augmented Recurrent Network with Quantile Uncertainty for EV Charging Load Forecasting**
Abdul Hafeez, Nasser Al-Emadi, Atif Iqbal, Yushan Liu

IECON26-000902 **Behavior-Aware EV Charging Station Selection in a Game-Theoretic Market with Heterogeneous Charging Infrastructure**
Kaniz Suburna, Mousa Marzband, Sobhan Dorahaki, Masoumeh Javadi, Atif Iqbal, S.M. Muyeen

08:00–09:30
Room - PR4

Onsite-TT-006: Control Systems and Applications

Chairs: Sevki Demirbas · Ufuk Tasci

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Day 2 - Monday October 19

08:00–09:30
Room - PR4
cont'd

Onsite-TT-006: Control Systems and Applications · continued

IECON26-000234 **Adaptive PID Control for Melt-Pool Area Regulation in Laser Powder Bed Fusion: Stability Analysis and Simulation Study**
Taha Al-Saadi, Muhammad Shafiq

IECON26-001303 **An Expert-Informed Labeling Framework for Supervised Power Quality Anomaly Detection on Real Building Data**
Ameen Zarif, Rabab Benotsmane, Morcos Metry

IECON26-001382 **Thermal-Headroom-Aware Adaptive Fast Charging with Dynamic C-Rate Modulation for EV Li-ion Batteries**
Amitava Dutta, Ritesh Keshri, Chinmayananda A

IECON26-000872 **Eco-driving of autonomous electric vehicles combining dynamic programming and T-S fuzzy approach**
Ahmed Bentaleb, Ahmed El Hajjaji

IECON26-000917 **Data-Driven Bilinear Koopman Model Predictive Control for End-Effector Trajectory Tracking of a 4-DOF Robotic Arm**
Rima Almahyo, Toqa Alremawi, Mohamed W. Mehrez Said, Mohamed Mabrok, Nader Meskin

08:00–09:30
Room - PR5

Onsite-TT-007: Mechatronics and Robotics

Chairs: Gulam Khan · Larisa Dunai

IECON26-000257 **A Digital Twin Framework for Vision-Based Robotic Disassembly of End-of-Life Electric Motors**
Suhad Aleassa, Mien Van, Zhengui Xue, Minh-Nhat Nguyen, Sean Mcloone

IECON26-000818 **Speed-Dependent Motion-Blur Compensation for Road Surface Projection from Moving Platforms**
Tomohiko Hayakawa, Yuka Hiruma, Yushi Moko, Ayako Mino, Masatoshi Ishikawa

IECON26-000989 **Design, Validation, and Flight Testing of a Custom Hexacopter UAV for a Precision Agricultural Application in Pollinating Date Palms**
Alya Al-Adbah, Mohamed Sultan Mohamed Ali, Asan G. A. Muthalif

IECON26-001271 **Design and Analysis of a Compound-Propelled Underwater Robot for Future Desilting Applications**
Weiyan Shang, Wei Zheng, Lei He

IECON26-001596 **A Continuous Robust Observer for Rotor Flux and Speed Reconstruction in Five Phase Induction Motor Drive**
Sesadri Bhusan Sahoo, Ranjan Behera, Balanthi Beig

08:00–09:15
Room - PR6

Onsite-TT-008: AI Applications in Control, Mechatronics, and Robotics

Chairs: Mohammad Shadmand · Nader Meskin

IECON26-000176 **Large Language Models Integration with Multi-Mobile Robot Systems: A Review of Architectures, Applications, and Open Challenges**
Amr Elfeky, Felix Gehlhoff

IECON26-000735 **An Artificial Intelligence-Powered Bionic Hand Using Electromyography Signals**
Ali Alramadhan, Sami Elferik

IECON26-000497 **Terrain-Aware and Weight-Adaptive Path Optimization for Seedball-Dispensing UAVs**
Leya Sharrouf, Rashed Abou Ali, Dany Abou Jaoude

IECON26-001376 **AI-Assisted Future-Horizon Dynamic Response Prediction in Power-Electronic Systems**
Harsha Vardhan Reddy Modugu, Uzair Asif, Amirhosein Gohari Nazari, Mohammad Shadmand, Sudip Mazumder

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Day 2 - Monday October 19

08:00–09:15
Room - PR6
cont'd

Onsite-TT-008: AI Applications in Control, Mechatronics, and Robotics · continued

IECON26-001122 **Risk-Aware Assessment of Battery SOC Depletion in PV-Dominated Islanded Microgrids**
Sadiah Ahmed Moon, Reza Behnam, Harsha Vardhan Reddy Modugu, Mohammad Shadmand

08:00–09:30
Room - PR7

Onsite-TT-009: Instrumentation, Sensors, Actuators, and Micro-Nano Technology

Chairs: John-John Cabibihan · Wael Alsabbagh

IECON26-000005 **A Natural-neighbor-interpolant-based Pattern Decoding Method for Active Stereo Vision**
Zhenzhou Wang

IECON26-000269 **GA-Optimized 2D MIMO Array Synthesis for 4D Imaging Radars**
Jingqi Ma, Wei Wang, Fuwang Dong, Wensheng Guo, Jingchen Chang, Jianlin Wei

IECON26-000534 **Numerical Investigation of an Integrated Microchannel Thermoelectric Cooler with Direct Inter-Leg Liquid Cooling**
Dihan Amaratunga, Dumith Jayathilaka, Ranjith Amarasinghe

IECON26-000560 **Data-Driven Approach to Evaluating Passenger Ride Comfort in the Lusail Light Rail Transit System**
Salem Abu Azab, Khalil Araji, Nader Meskin, John-John Cabibihan

IECON26-001261 **Design, Implementation, and Experimental Validation of a Low-Cost ESP32-Based Power Quality Analyzer**
Zeyad Elsayed, Hossameldin Hafny, Ahmed Awad

08:00–09:30
Room - PR8

Onsite-TT-010: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Nassma Mohandes · Mostafa Mosa

IECON26-001619 **Climate Controller for Greenhouses in Hot-Arid Regions: Hardware-in-the-Loop Validation Against a Dynamic Greenhouse Energy Model**
Abdellah Islam Kafi, Sa'd Shannak, Mohamed Abdallah

IECON26-000274 **A Standards-Aligned Assurance Interface for Safety--Cybersecurity Evidence**
Yasmine Benghename, Ahmed Lounis, Mohamed Sallak

IECON26-000659 **Temporal Property-driven Design Space Exploration with Reinforcement Learning for Cyber-Physical Systems**
Tagir Fabarisov, Maxime Cordy

IECON26-000846 **Active Disturbance Rejection Control (ADRC) Using Integral-Chain Differentiator**
Walid Alqaisi, Claude El-Bayeh, Ahmed Badawi, Muhammad Zubair

IECON26-001186 **From Zero-Shot to Efficient Fine-Tuning: LLM-Based Early Warning of Video Injection in RTP Surveillance Streams**
Mudassir Malik, Abdullatif Albaseer, Mohamed Abdallah

IECON26-001761 **iPAM: Intelligent Post-Attack Impact Mitigation and Recommendation for EV Charging Networks**
Md Rakibul Ahasan, Sofia Tenghoff, Erchin Serpedin, Abdulrahman Takiddin

08:00–09:30
Room - PR3

Onsite-TT-011: Signal & Image Processing Methodologies

Chairs: Shady Khalil · Ahmed Hefaifa

IECON26-000255 **Distillation-Based Real-Time UAV Detection and Tracking Using Lighting-Robust Thermal Imaging for Intrusion Prevention Applications**
Abdullahi Sani Shuaibu, Ingrid Huso, Ali Al-Zawqari, Gabriele Oligeri, Ali Safa

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Day 2 - Monday October 19

08:00–09:30
Room - PR3
cont'd

Onsite-TT-011: Signal & Image Processing Methodologies · continued

IECON26-000287 **Automated All-Sky Camera Image Quality Assessment for Solar Forecasting Preprocessing: A Confidence-Based Transfer Learning Approach**
Aishwaryaa Kannan, Nassma Mohandes, Dunia Bachour, Daniel Perez-Astudillo

IECON26-000347 **An End-to-End Mobile Application-Based Framework for Intelligent E-Waste Management**
Md. Mosarrof Hossen, Tala Jano, Aya Nabil Sayed, Faycal Bensaali, Farid Touati, Ridha Hamila

IECON26-000906 **MirrorDistill: Illumination-Aware Latent Distillation for Efficient Low-Light Restoration**
Farida Mohsen, Tala Zaim, Nurul Izni Rusli, Ali Al-Zawqari, Ali Safa, Samir Belhaouari

IECON26-001160 **Comparative Study of YOLOv10, YOLOv11, YOLOv12, and YOLOv26 for Real-Time Elderly Fall Detection**
Aanchal Verma, R.k. Saket, Ansh Raj

09:30

09:30–10:00
Dafna - Foyer

Coffee Break

10:00 — 2 parallel sessions

10:00–10:30
Dafna

Opening Ceremony

10:00–17:00
Dafna - Foyer

Exhibition for Sponsors

10:30

10:30–12:30
Dafna

Keynote

Prof. Xiaohong Guan
Cyber-Physical Systems in the Age of Intelligence and Networking

Prof. Maryam Saeedifard
Next-Generation Grid Architectures in the Era of Power Electronics & AI

12:30 — 2 parallel sessions

12:30–15:30
Salwa 2

Women in IES Luncheon
Chair: Regina Roos

12:30–14:00
Dafna - Foyer

Lunch Break

14:00 — 27 parallel sessions

14:00–15:30
Salwa 3

Informative session for IES Journals authors and reviewers
Chair: Haitham Abu-Rub

14:00–15:30
Online Room-01
ONLINE

Online-SS-14: Intelligent Modelling and Fault Diagnosis Techniques for Safety-critical Industrial Systems
Chairs: Xianqiang Yang · Minghao Han

IECON26-000418 **A Lightweight C-JiT for Unsupervised Acoustic Fault Detection in Industrial Environments**
Bin Wei, Chenglin Fan, Senfeng Cen, Haoxiang Zhang, Qiubo Zhong

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Day 2 - Monday October 19

14:00–15:30
Online Room-01
ONLINE
cont'd

Online-SS-14: Intelligent Modelling and Fault Diagnosis Techniques for Safety-critical Industrial Systems · continued

IECON26-000526 **Dynamic Weight Neural Network with Probabilistic Prior Fusion for EV Li-Ion Battery RUL Prediction under Complex Operating Conditions**
Zhuo Li, Yunlong Li, Jing Luo, Chaojun Wang, Song Yuchen, Datong Liu

IECON26-001146 **Reliability-Aware Bayesian Updating Based on Posterior Predictive Checking for IGBT Remaining Useful Life Prediction**
Bac Viet Nguyen, Hieu Le Van, Jae Jeon

IECON26-001268 **Bayesian-Optimization-Based Adaptive Illumination and Fault Detection for Fiducial-Mark Recognition on Flexible Printed Circuit Boards**
Xinbo Meng, Zhengkai Li, Hao Sun, Xinghu Yu, Qin Zhao, Tong Wang

IECON26-001487 **VisionRUL: Visual Foundation Model Meets Turbofan Engine Remaining Useful Life Prediction**
Li Shen, Yan-Fu Li, Xuyi Fan

IECON26-001624 **Towards Safe and Reliable Autonomous Driving: A Context-Aware Multimodal Framework for Lane Keeping Assist Anomaly Detection**
Chun Fai Lui, Yan-Fu Li

14:00–15:30
Online Room-02
ONLINE

Online-SS-15: Sliding Mode Control, Model Predictive Control and AI-Assisted Advanced Control of Power Electronics Converter

Chairs: Hasan Komurcugil · Ramon Guzman

IECON26-000719 **Indirect Model Predictive Control for Grid-Tied Three-Level Converters With Neutral Point Potential Balancing and Improved Active Damping**
Matias Correa, Petros Karamanakos

IECON26-000829 **A Unified Multirate Discrete--Time Sliding Mode Control Design for Robust Current-Limited Output-Voltage Tracking in DC-DC Converters**
Senad Huseinbegovic, Lejla Ahmethodzic

IECON26-001169 **Real-Time Voltage Control of the Boost Converter Using Nonlinear Model Predictive Control**
Marco Guerreiro, Erfan Mousavi, Jonas Ulmen, Steven Liu

IECON26-001245 **Data-Driven Health Monitoring and Fault Diagnosis of Output Capacitors in DAB Converters Using an LSTM Neural Network**
Mustafa Abuzaher, Shen Ke, Deiaaldean Khaleel, Dan Zhan, Mokhtar Aly, Elsayed Saad, Jose Rodriguez

IECON26-001332 **Finite-Time Super-Twisting Sliding-Mode Control for LLCL-Filtered Battery Energy Storage Power Conversion Systems Under Distorted Grid Conditions**
Bin Xiao, Bo Pan, Ning Gao, Chao Li, Lixun Zhu, Hao Chen

IECON26-001692 **Improved Model-Free Predictive Control Using STSMO of an Interleaved Floating DC-DC Multilevel Boost Converter**
Yuxia Wang, Bo Liang, Xuan Zhang, Chuyang Qiu, Jiaming Zhou, Yuren Li

14:00–15:30
Online Room-03
ONLINE

Online-SS-16: Modern Trends in Electric Drive Control, Power Converter Topologies, and Renewable Energy Systems

Chairs: Mahmoud F. Elmorshedy · Dhafer Almakhles

IECON26-001311 **A Hybrid ANFIS-Backstepping Framework for Robust Induction Motor Control: From Model-Based to Data-Driven Learning**
Skander Bensalem, Soufien Hajji, Mohamed Trabelsi, Youssef Agrebi Zorgani

IECON26-001174 **Redundant Vector-Based Hybrid Modulation Strategy for Three-Level Four-Leg Inverters Based on Capacitor Voltage Imbalance Degree**
Xinyang Cao, Xiang Han, Xiang Ou, Yan Deng, Abhishek Kumar, Federico Ibanez, Elena Gryazina

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Day 2 - Monday October 19

14:00–15:30
Online Room-03
ONLINE
cont'd

Online-SS-16: Modern Trends in Electric Drive Control, Power Converter Topologies, and Renewable Energy Systems · continued

IECON26-000020 **Online Estimation Method for Threshold Voltage of GaN HEMT Based on Output Charge During Power Module Start-up Process**
Zhongchang Li, Zihao Zhang, Pengfei Wang, Hao Gu, Zhibin Tian, Minfan Fu

IECON26-000177 **SVPWM of a Three-Phase Hybrid ANPC Converter Applied in EV Fast Chargers**
Ana Rita, Muhammad Awais, Saghir Amin, Nuno Costa, Joao Afonso, Vitor Monteiro

IECON26-001147 **A Single-Phase Single-Stage Six-Switch Nonlinear Buck-Boost Inverter for Low-Voltage DC AC Applications: Topology and Modulation Scheme**
Hao Qin, Liou Cai, Celine -, Xiang Han, Yan Deng, Abhishek Kumar, Federico Ibanez, Elena Gryazina

IECON26-000330 **Improved Phase Noise Mitigation in CV-QKD Using LSTM Neural Networks**
Tao Shen, Nannan Gu

14:00–15:30
Online Room-04
ONLINE

Online-SS-17: Cybersecurity Frameworks for Modern Power Systems: Threats, Resilience, and Intelligent Defence

Chairs: Anil Kumar Yadav · Vivek Prakash

IECON26-001551 **Security Analysis of Agentic AI in OT: Threat Model & Adaptations to IEC 62443**
Marwin Madsen, Fabian Pfetzinger, Heiko Adamczyk, Mike Barth

IECON26-000701 **Resource efficiency and carbon mitigation interventions in groundwater-fed agriculture**
Mehrdad Poursadegh, Jan Haase, Kevin James, Reza Barati, Seyed Hamid Mirghasemi, Ahmad Faezi

IECON26-000331 **A Frequency-aware Differential Privacy Protection Method for Photovoltaic Time Series Data**
Lei Cao, Dan Zhang, Yilian Zhang, Libo Xu

IECON26-000675 **ECHO-IDS: Evidence-Calibrated Hallucination and Intrusion Detection for LLM-Assisted CPS Security**
Mohamed Massaoudi, Maymouna Ez Eddin, Khandaker Akramul Haque, Shady Khalil, Katherine Davis, Thejas Sadashiva

IECON26-001666 **Robust Similarity-Graph Ensemble Intrusion Detection for Multiclass Cyber-Physical Grids**
Mohamed Massaoudi, Khandaker Akramul Haque, Maymouna Ez Eddin, Katherine Davis, Hassan Salamy, Mahmoud Kabalan

14:00–15:30
Online Room-05
ONLINE

Online-SS-18: Advanced Signal and Image Processing Technologies for Condition Monitoring of Electric Machines and Drives

Chairs: Athanasios Karlis · Israel Zamudio-Ramirez

IECON26-000136 **Voltage-Only Online Estimation of Equivalent Average Resistance in Three-Level Buck Converter Using an Auxiliary Switching Network**
Xiaoyu Zhou, Zhangyong Chen, Xiaorong Hou, Yong Chen, Pengqi Gao

IECON26-000954 **Reliability of Capacitors for DC Bus Application: Standardization of Lifetime Model Coefficients**
Annoy Kumar Das, Akshay Kumar Rathore

IECON26-000103 **An Advanced Neural Network Algorithm Optimized by Artificial Bee Colony for Classification of Wind Turbine Faults Based on Stator Current Analysis**
Anissia Beainy, Nazih Moubayed

IECON26-001175 **Symbolic Sequence Encoding and Bio Inspired Optimization for Efficient Few Shot Cross Domain Bearing Fault Diagnosis**
Tarang Pande

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Day 2 - Monday October 19

14:00–15:30
Online Room-05
ONLINE
cont'd

Online-SS-18: Advanced Signal and Image Processing Technologies for Condition Monitoring of Electric Machines and Drives · continued

IECON26-001224 **Effect of Pulsewidth Modulation Schemes on Data-Driven Open-Circuit Fault Classification in AC Drives with T-type Inverters**
Yang Zhao, Chee Shen Lim, Huiqing Wen, Chao Long

IECON26-001677 **Context-Assisted Sim-to-Real Deep Learning for Current-Sensor Gain and Offset Estimation in PMSM Drives**
Johannes Sautter, Philipp Wagner, Michael Grill, Andre Casal Kulzer

14:00–15:30
Online Room-06
ONLINE

Online-SS-19: Self-aware and Resilient Operation of Intelligent Microgrids

Chairs: Xiandong Ma · Yan Xu

IECON26-001482 **Physics-Embedded Variational Learning Framework with Gaussian-Process Port-Hamiltonian Damage Dynamics for IGBTs Wire-bond Prognostics**
Atefeh Gavahian, Javad Ebrahimi, Chris K. Mechefske, Alireza Bakhshai

IECON26-001554 **Energy-Efficient Virtual Machine Rebalancing Using Fuzzy Utility-Guided Biogeography-Based Optimization**
Ehsan Akhlaghisabahi, Javad Ebrahimi, Alireza Bakhshai

IECON26-001417 **Photovoltaic Integration into a Multi-Port Smart Transformer Through Embedded Maximum Power Point Tracking**
Marco Urbano Gomez, Ruben Garcia Corrales, Enrique Romero-Cadaval, Maria Isabel Milanes

IECON26-000614 **Benchmarking Synthetic Defect Generation and Detection Models for Decorative Wood-Based Panel Inspection**
Rodrigo Pereira, Eliseu Pereira, Gil Goncalves

IECON26-000783 **Dual-Layer Retrieval-Augmented LLM-Based Fault Diagnosis Method for Traction Drive Systems**
Lingli Tan, Zhiwen Chen, Zixuan Xu, Jiamin Xu

IECON26-001095 **Data-Driven Dynamics Surrogate for an 8/6 Switched Reluctance Motor Trained on Closed-Loop FCS-MPC Trajectories**
Franklin Sanchez, Maria Isabel Milanes, Enrique Romero-Cadaval

14:00–15:30
Online Room-07
ONLINE

Online-SS-20: Advanced data-driven performance assessment and fault-tolerant control for industrial automation systems

Chairs: Cheng Pang · Yuchen Jiang

IECON26-001037 **Occlusion-Robust Multi-Object Decoupling for Physics-Based Robotic Interaction**
Xin Dong, Lihan Zhang, Tianru Dai, Wenfeng Deng, Yansong Tang

IECON26-001229 **CDGNet: Industrial Gas Image Segmentation Based on Cross-Modality Calibration and Fusion Learning**
Nan Zhang, Jiaxin Li, Wenfeng Deng, Xiaojun Liang

IECON26-001602 **Autonomous Motion Planning for 6-DoF Reusable Launch Vehicles With Fuel Optimization**
Yabin Gao, Chen Xin, Xiuming Yao, Guanghui Sun, Ming Liu

IECON26-000107 **Time-Domain Reconstruction-Enhanced Physics-Informed Neural Network for Parameter Identification of Wireless Power Transfer Systems**
Jianlong Yin, Pingan Tan

IECON26-000711 **Machine Learning for Intelligent Wireless Power Transfer in AGV Charging: A Focused Review**
Mahmoud Howaidi, Yousef Mahmoud

IECON26-000933 **Sensorless Voltage Build-Up Control for Aircraft Multi-Stage Starter-Generator System with Controllable Rectification Generation**
Jingjing Cao, Ningfei Jiao, Tao Yang, Huanxu Zhang, Tao Meng, Weiguo Liu

Day 2 - Monday October 19

14:00–15:30
Online Room-08
ONLINE

Online-SS-21: Intelligent Control, Learning, and Robotics for Flexible and Resilient Industrial Automation

Chairs: Jing Zhou · Houxiang Zhang

IECON26-001176 **AI-Enhanced Predictive Maintenance for Industrial Robotics via Multi-Modal Sensor Data Analysis**
Most Arina Afrin, Elham Ahmadi, Mohammed Elmusrati

IECON26-001495 **Terrain Geometry Estimation for Mobile Robots Using Statistical and Physical Evidence-Based Feature Selection with IMU Data**
Ryunosuke Maruta, Mihoko Niitsuma

IECON26-001518 **RCS-Aided Monte Carlo Localization for 4D Radar in Repetitive Orchard Rows**
Lee Sanghyeon, Kanghyun Jo

IECON26-001543 **A Hybrid Teaching System for Collaborative Welding Robots Integrating Marker-Based Teaching and LLM-Based Verbal-Interactive Teaching**
Kousuke Shimizu, Mihoko Niitsuma

IECON26-001553 **Caregiver Task Assistance through Visual Auditory Information Presentation Based on 3D Human Posture - Based Task Recognition**
Shota Nakajima, Mihoko Niitsuma

IECON26-000887 **Multi-Aerial System Cooperative Path Planing in a Cluttered Flying Zone**
Umair Javaid, Hassal Ul Huzaibi, Michael Basin

14:00–15:30
Online Room-09
ONLINE

Online-SS-22: AI-Driven Analysis, Modelling, and Control of Unmanned Engineering Systems

Chairs: Min Ma · Tong Wang

IECON26-000956 **Boosting Small Object Recognition in UAV Imagery: A Plug-and-Play Module Based on Training-Free Mask Prediction and High-Resolution Feature Classification**
Rui Yang, Michael Basin, Hongzheng Zeng

IECON26-000612 **Experimental Assessment of Modulation Schemes and Reactive Power Support Capability of Grid-connected HERIC Inverter**
Anju James, Naga Brahmendra Yadav Gorla

IECON26-000493 **Adaptive Quantized Control for Coupled 6DOF Spacecraft with Unknown Inertia Properties and Input Saturation**
Qin Zhao, Zhengkai Li, Jingyu Ding, Michael Basin, Mariusz Malinowski

IECON26-000749 **HFA-SR: Hierarchical Fourier Attention for Single Image Super-Resolution**
Xuena Qiu, Wenli Huang, Zhuoyuan Wang, Yizhe Huang, Ping Yu, Ye Deng

IECON26-000810 **A Constrained Reinforcement Learning Approach for Bipedal Locomotion in Low-Clearance Environments via Teacher-Student Distillation**
Chaojie Lin, Zhuolin Tan, Binbin Wang, Xiaochen Xie

IECON26-000062 **Carrier Phase-Shift Modulation Based Zero-Voltage Switching for Parallel Interleaved Differential Boost Inverters**
Yushan Liu, Longtao Zhou, Xiao Li, Marco Rivera, Patrick Wheeler

14:00–15:30
Online Room-11
ONLINE

Online-SS-23: ADVANCED CONTROL AND SIGNAL PROCESSING IN MECHATRONICS

Chairs: Paolo Mercorelli · Oleg Sergiyenko

IECON26-000149 **Nonlinear Velocity Regulation of Laser-Scanning Systems with Friction Compensation**
Jose A. Nunez-Lopez, Javier Cruz-Leyva, Dennis Molina-Quiroz, Vera Tyrsa, Fernando Lopez-Medina, Ruben Alaniz-Plata, Oleg Sergiyenko, Paolo Mercorelli

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Day 2 - Monday October 19

14:00–15:30
Online Room-11
ONLINE
cont'd

Online-SS-23: ADVANCED CONTROL AND SIGNAL PROCESSING IN MECHATRONICS · continued

IECON26-000178 **Robust Anti-Sway Control for 3D Overhead Cranes Guaranteeing Asymmetric Constraints**
Shengzeng Zhang, Xinggao Liu, Michael Basin, Haoxiang Zhang, Junhao Zhang, Xiongxiong He

IECON26-000491 **Fully actuated system approach based 6DOF spacecraft tracking control with input quantization**
Qin Zhao, Zhengkai Li, Zhihong Zhao, Jingyu Ding, Mariusz Malinowski

IECON26-000601 **A Climbing and Jumping Integrated Robot inspired by Centipedes**
Pan Zhou, Haili Li, Michael Basin, Zhaoyi Lin, Lang Zhou

IECON26-000815 **A Damage-Tolerant Braided Array Gripper: Design, Characterization, and Application**
Pan Zhou, Haili Li, Juntao Wang, Wei Zhao, Chongbo Zhou

14:00–15:30
Online Room-12
ONLINE

Online-SS-24: Artificial Intelligence for Design, Modeling, and Optimization of Electric Machines

Chairs: Wenlong Li · Mohammad Sedigh Toulabi

IECON26-000215 **Data-Driven Fault Detection and Performance Monitoring of Induction Motors Under Variable Operating Conditions**
Md Golam Mortuza, Shady Khalil, Mostafa Farrag, Amira Mohammed, Nour Morsi

IECON26-000316 **High-Fidelity Nonlinear Modeling of a PMSM Using a Physics-Informed Recurrent Neural Network**
Qian Deng, Wenlong Li, Tian Liu, Mohammad Sedigh Toulabi

IECON26-000751 **Schema-Guided BERT-LoRA Framework for Continual Surrogate Modeling of Surface Permanent Magnet Motors**
Yuxiao Li, Toshiaki Koike-Akino, Ye Wang, Tatsuya Yamamoto, Yusuke Sakamoto, Bingnan Wang

IECON26-000791 **Genetic Algorithm-Based Topology Optimization of Magnetic Circuits for Hall Effect Thruster**
Ye Mou, Wei Hu, Peihong Cheng

IECON26-001144 **Active-Learning Neural Network Surrogates for Multi-Physics Co-Optimization of High-Speed Iron Nitride Assisted Synchronous Reluctance Motor**
Robin Wilson, Praveen Kumar, Ayman El-Refaie

IECON26-001426 **Self-Calibrating Retrofit PMSM Drive: Restoring Model Predictive Control MTPA and Flux-Weakening References from Onboard Signals**
Khaoula Soula, Seifeddine Ben Elghali

14:00–15:30
Online Room-13
ONLINE

Online-SS-25: Networked Intelligent Measurement and Control for Cyber-Physical Systems

Chairs: Dajun Du · Changda Zhang

IECON26-000521 **Distributed State-Space Nash Equilibrium Seeking for Discrete-Time Multiagent Systems**
Kexuan Han, Changda Zhang

IECON26-000522 **Distributed Nash Equilibrium Seeking for Discrete Multiagent Systems with Dual-Integral Dynamics**
Ruhang Wei, Changda Zhang

IECON26-001528 **A Low-Cost Edge-First Smart Warehouse System Based on Time-Multiplexed Passive UHF RFID**
Cintia Garcia, Paulo Leitao, Luis Piardi

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Day 2 - Monday October 19

14:00–15:30
Online Room-13
ONLINE
cont'd

Online-SS-25: Networked Intelligent Measurement and Control for Cyber-Physical Systems · continued

IECON26-001672 **Link Reliability-Aware Fusion of Multiple Clock Domains for Multi-hop TSN Networks**
Haoze Xue, Jiahao Xu, Qimin Xu, Cailian Chen

IECON26-000888 **NSAIR: Neurosymbolic AI for Adaptive Electric Vehicle Routing in Disrupted Charging Networks**
Md Rakibul Ahasan, Abdulrahman Takiddin

IECON26-001497 **A New Two-Tier Coordinated Dispatch Framework at the Urban Transportation-Energy Nexus: Mobile Charging Vehicle Route-Dependent Active-Power Delivery and Local Reactive-Power Support**
Yucheng Wei, Chuanzhi Fan, Yong Wang, Jing Wang, Huachun Tan, Boyang Hu

14:00–15:15
Online Room-10
ONLINE

Online-TT-023: Signal & Image Processing Methodologies

Chairs: Sanjeevikumar Padmanaban · Gabriella Muscat

IECON26-001012 **Automated Rock Mass Discontinuity Mapping from Borehole Video Using Cylindrical Unwrapping and Depth-Based Stitching**
Gabriella Muscat, Brian Azzopardi, Evan Dimech, Christian Schembri, Adrian Mifsud, Andrew Sammut

IECON26-001092 **A Modified Autogram for Improved Prognostic Health Indicator Extraction in Wind Turbine Gearboxes**
Fawzi Gougam, Mahfoud Bouzouidja, Abdenour Soualhi

IECON26-001141 **RDSE: Real-Time Directional Speech Enhancement Framework for Dual-Mic Commodity Smartphones**
Chinmay Deo, Danish Mahajan, Soudeep Ghoshal, Himanshu Buckchash

IECON26-001298 **YOLO-C2M: An Extremely Lightweight and High-Accuracy Steel Strip Surface Defect Detector**
Ishaan Thairanil, Gargi Srivastava, Nirbhay Kumar Tagore

IECON26-001387 **Faint Serial Number Detection and Recognition on Transparent Lenses via Structured-Background-Assisted Imaging, YOLOv11n-OBB and CRNN**
Xiangkun Zhao, Xuedong Jing

14:00–15:30
Online Room-14
ONLINE

Online-TT-024: Control Systems and Applications

Chairs: Asif Jamadar · Peihua Han

IECON26-000260 **Performance-guaranteed Model Reference Adaptive Control with Input Saturation**
Yuxuan Liang, Zhenxiao Yin, Xiaobing Dai, Caihao Xu, Hang Zhao

IECON26-000307 **Large Language Model-Driven Decision-Making and Risk Assessment for Collision Avoidance in Maritime Navigation**
Peihua Han, Feng Xiao, Beatriz Sanguino, Arnt Hakon Barmen, Guoyuan Li, Houxiang Zhang

IECON26-000322 **Operationally Aware Historical Similarity Search for Blast Furnace Control**
Lucas Amorim, Filipe Mutz, Alberto De Souza, Claudine Badue, Thiago Oliveira-Santos, Thiago Paixao, Vinicius Rampinelli

IECON26-000336 **Multi-FPGA-Based Real-Time Simulation and Model Partitioning for Aircraft Power Systems**
Wang Xiaoqiang, Fei Deng, Zhao Nan, Lei Tao, Li Weilin, Zhang Xiaobin

IECON26-000337 **A Grid-Density-Driven Co-Evolutionary Algorithm for Multi-AUV Cooperative Path Planning under Multi-Objective Constraints**
Ruonan Li, Meng Yang, Wei Zhang, Ruichi Sun, Nan Jing, Lei Du

IECON26-000343 **Asynchronous Game-Theoretic Recovery Allocation for Multi-UUV Systems Under Stale Intention Sharing**
Ruichi Sun, Biyin Zhang, Wei Zhang, Zhe Zhang, Ruonan Li, Nan Jing, Peiyu Han, Zixuan Li

Day 2 - Monday October 19

14:00–15:30
Online Room-15
ONLINE

Online-TT-025: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Salma Aboelmagd · Yuhan Cai

IECON26-001236 **Performance and Energy Trade-offs in Power-Constrained Embedded LLM Inference**
Lucas Silvestre De Jesus, Thales Mikael Cunha Da Silva, Juliana Dos Santos, Marcelo Pias

IECON26-001336 **Multi-Class Event Classification in Grid-Forming Inverter-Based Power Systems Using a Time-Series Foundation Model**
Uzair Asif, Amirhosein Gohari Nazari, Harsha Vardhan Reddy Modugu, Mohammad Shadmand

IECON26-000280 **Verifiable Secure Aggregation for Privacy-Preserving 3D Localization with Linearized 3D AoA/ToA Fusion**
Yuhan Cai, Shengming Chang, Yangwen Luo

IECON26-001455 **MQTT-Based Image Fragmentation and Recovery under Intermittent Connectivity in Cyber-Physical Systems**
Everson Da Silva Flores, Bruna Guterres, Thomaz Pereira Junior, Alberto Cabral, Kaua Barbosa, Marcelo Malheiros, Cristiana Dora, Marcelo Pias

IECON26-000328 **PRISM-Loc: Privacy-Preserving Decentralized 3-D AOA Localization with Secure Aggregation and High Dropout Resilience**
Yichang Mou, Shengming Chang, Dongdong Lv

IECON26-000993 **FIWARE vs. Eclipse Ditto: A Comparative Study of Digital Twin Platforms for Process Industry**
Beatriz Cristina de Faria, Caio Oliveira, Flavia Pires, Gabriel Neves, Jose Barbosa

14:00–15:30
Online Room-16
ONLINE

Online-TT-026: Power Systems and Smart Grid

Chairs: Quanxue Guan · Xinyue Wang

IECON26-001694 **Adversarial Margin Capability of Soft Open Points in Flexible Distribution Networks**
Alaa Selim

IECON26-000199 **Lightweight Multi-Agent RL for Bidirectional V2G Integration in Multi-Microgrid Systems**
Zhang Yule, Shunyuan Xiao, Li Jin

IECON26-001162 **Fast-Tracking Probabilistic Hosting Capacity Assessment in Hybrid AC/DC Grids**
Victor Tibanlombo, Tiago Soares, Ignacio Hernando-Gil

IECON26-000249 **A Privacy-Preserving Load Forecasting Model for Power Grids under Federated Learning Framework**
Xinyue Wang, Xiangyu Kong, Gaohua Liu, Aifei Pei, Mingyang Li

IECON26-000451 **Embedded MPC-based Energy Management for SST-Interfaced Residential Hybrid Nanogrid with Closed-Loop SoC Feedback**
Nasrin Einabadi, Mehrdad Kazerani

IECON26-000463 **Dynamic-Frequency-Deviation-Based Adaptive Damping Control for Islanded Multi-VSG Microgrids**
Mingjun Li, Kaushik Rajashekara

14:00–15:30
Ginan
ONLINE

Online-TT-161: Power Systems and Smart Grid

Chairs: Ahmad Darwish · Yupeng Liu

IECON26-001431 **Demand-Charge-Aware Sinkhorn Distributionally Robust Scheduling for EV Charging Stations**
Renyou Xie, Rui Zhang, Branislav Hredzak

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Day 2 - Monday October 19

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Ginan
ONLINE
cont'd

Online-TT-161: Power Systems and Smart Grid · continued

IECON26-001360 **Separating Correlation Effects from Sampling Structure in Probabilistic Electric Vehicle Hosting Capacity Assessment**
Naveed Ali Brohi, Mehdi Seyedmahmoudian, Kafeel Ahmed, Saad Mekhilef, Alex Stojcevski

IECON26-000473 **Multi-Mode Supervisory Energy Management for Fuel Cell Hybrid Electric Vehicles Under Kuwait Extreme Climate Conditions**
Ghaneemah AlAsfour, Wael Farag, Zakariya Dalala

IECON26-001704 **Evaluating the SPIKE Algorithm on Synthetic Block-Tridiagonal Matrices to Accelerate Radial Network EMT Solvers**
Vibhuti Sahu, Phani Marthi, Suman Debnath

IECON26-001609 **Experimental Validation of a Distributed Nodal-Network Model for Spatial Mapping of Internal Behavior in a PEM Electrolyzer**
Rafika Louli, Djafar Chabane, Ali Mohammadi, Stefan Giurgea, Issam Salhi, Abdesslem Djerdir

IECON26-000345 **A Model Free Predictive Control for Electric Motor Emulators using UltraLocal Model**
Yupeng Liu, Ma Runlin, Dong Xu, Han He, Marco Rivera, Patrick Wheeler

14:00–15:30
PR1 Office
ONLINE

Online-TT-162: Signal & Image Processing Methodologies

Chairs: Mohammad Qasim Mohammad Alathamneh · Acacio Amaral

IECON26-001124 **A Detection Method Based on a Hybrid RPVM-DWT for Implementation Rotor Bars Faults in Induction Motors**
Wissam Dehina, Hubert Razik, Belkheir Abdesselam

IECON26-000863 **SNILM: A Scalable Synthetic Benchmark Dataset for Non-Intrusive Load Monitoring with Demographic Diversity**
Mohammadreza Abbaspour, Omid Mofid, Mahdi Khodayar, Nader Meskin, Saleh Mobayen

IECON26-000621 **Ecological Acoustic and Contact Safe Maneuvering of Autonomous Underwater Vehicles**
Mahdi Jafarpour, Nader Meskin, Saleh Mobayen, Chian Ho

IECON26-001462 **Dual-View RGB-T Semantic Segmentation for Maritime Scene Perception**
Shiyao Wei

IECON26-000755 **Capacitor Health Status Assessment in Boost Converters: A Data-Driven Approach**
Acacio Amaral

IECON26-001681 **Seamless Transition Control of a DFIG-Based Wind Energy Conversion System Between Grid-Connected and Islanded Modes**
Adnan Osmanovic, Adis Panjevic, Tarik Uzunovic, Sabanovic Asif

14:00–15:30
Room - PR4

Onsite-SS-12: AI-driven Optimization Control Approaches in Renewable Energy Systems

Chairs: Yanmin Wang · Xuemei Zheng

IECON26-000055 **Power Distribution Control of Hybrid Energy Storage Systems Based on VMD and Fuzzy Control**
Yanmin Wang, Tianyuan Ma, Jiaming Wang, Junmin Li

IECON26-000196 **Automatic Layout of Photovoltaic Panels Based on BIM Digital Twin**
Peiyuan Chen, Chengze Cai, Jiaying Ye

IECON26-000296 **Harmonic Suppression and Analysis of Stability in Grid-Connected LCL Inverters with VSG Control**
Yanyu Zhao, Xuemei Zheng, Yingming Wang, Paolo Mattavelli

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Day 2 - Monday October 19

14:00–15:30
Room - PR4
cont'd

Onsite-SS-12: AI-driven Optimization Control Approaches in Renewable Energy Systems · continued

IECON26-000308 **Dynamic Wireless Power Transfer System with Slip-Ring Coupler: High Misalignment Tolerance and Constant Voltage Output**
Chao Qi, Hongyu Lu, Qisheng Qiu, Shaoning Qi, Jinhai Jiang, Fengling Han

IECON26-000309 **Toward High-Efficiency Decarbonization: Integrated Optimization of Low-Carbon Technologies for NZEBs**
Li Kanglin, Tang Xiaoliang, Jin Bihui, Yi Jifeng, Li Wei, Li Xiang

IECON26-000310 **Research on PEDF System Design Technology for Large-Scale Public Buildings**
Li Wei, Zou Zhihui, Hu Jun, Li Kanglin, Zhang Jianan

14:00–15:30
Room - PR7

Onsite-SS-13: Artificial Intelligence and Machine Learning Applications in Renewable Energy and Energy Storage Systems

Chairs: Amjad Hussain · Amee Daiya

IECON26-000854 **Long-Term Energy Management for Residential V2G/V2H Under Warranty-Based Battery Degradation Constraints**
Francesco Popolizio, Albert Skegro, Torsten Wik, Chih Feng Lee, Changfu Zou

IECON26-000144 **A Generative AI-Assisted Digital Twin Framework for Battery State-of-Health Prediction**
Mohammad Amir, Zifei Xu, Musa Bashir

IECON26-001441 **AI-Enhanced Multi-Timescale Modeling and State Estimation of Hybrid Energy Storage System**
Jasvindar Singh, Arvind ., Ravi Saini, Vikas Kumar

IECON26-001337 **Single-Shot Performance Analysis of Large Language Models for EV Routing and Charging**
Usman Zafar, Abdullah A Jabbar, Naheel Kamal

IECON26-000816 **Physics-Consistent Stage-Aware Calibration of BiLSTM Models for Helicopter Gearbox Remaining Useful Life Prediction**
Khaled Dhibi, Fadwa El Mellouhi, Amjad El-Mellouhi

14:00–15:30
Mitras

Onsite-TT-017: Power Systems and Smart Grid

Chairs: Mohammad Shadmand · Ali Alaboudy

IECON26-000611 **Iterative Preventive Security-Constrained Optimal Power Flow with AC Feasibility Enforcement and Generator Reactive Saturation**
Yousef Abdelaziz, Shehab Ahmed

IECON26-000771 **Probability EV Demand Profiles for Assessing the Impact of Electric Vehicle Home Charging on Distribution Networks in Qatar**
Selma Khalid Elhaj Awadallah, Ameena Fathima, Mohd Zamri Che Wanik

IECON26-000781 **Efficient Neural Architecture Search for Smart Grid Anomaly Detection Using Real-Time Simulation**
Md Rakibul Ahasan, Md Mainul Islam, Rachad Atat, Shady Khalil, Muhammad Ismail, Erchin Serpedin, Abdulrahman Takiddin

IECON26-000843 **Mitigative Redispatch via Sparsity-Promoting AC Optimal Power Flow**
James Ciyu Qin, Blazhe Gjorgiev, Giovanni Sansavini

IECON26-001428 **Prioritizing Capital Replacement Across Mixed Power System Assets: Multi-Criteria Decision-Making Tools**
Hesham Badahdah

Day 2 - Monday October 19

14:00–15:30
Haloul

Onsite-TT-018: Power Electronics Converters

Chairs: Yasen Harrye · Youcef Belkhier

IECON26-000413 **Deadbeat Control of Grid-Connected Multiport Converters with Ripple Power Decoupling Under Unbalanced Grid Conditions**
Li Ding, Dehong Zhou, Kai Liao, Jianxiao Zou

IECON26-000422 **Comparative Study of Fuzzy Logic-Based Direct Power Control and Simplified Direct Power Control for Grid-Connected Converters**
Azeddine Mehaouchi, Mansour Bouzidi, Boualaga Rabhi, Said Barkat

IECON26-000453 **Sigma-Delta-based measurement model with improved accuracy**
Mikolaj Kadzielawski, Tomasz Swiechowicz, Mariusz Malinowski

IECON26-000478 **Adaptive Dwell Time Control for Quasi Flying Capacitor Inverter**
Mouadh Ezzine, Soroush Faramehr, Annegret Worndle, Babis Vogiatzakis, Petar Igic

IECON26-000505 **A Dual-Vector Modulation Strategy with Low Voltage Stress for Three-Phase Two-Stage Buck-Type AC-AC Converters**
Bingkun Li, Jiaxing Lei, Shuang Feng, Hanbin Lai, Zirui Qin

IECON26-000678 **Torque Estimation for Railway Traction Drives using Converter Input Power and Losses Characterization**
Lander Lejarza, Iraitz Carretero Caballo

14:00–15:30
Room - PR5

Onsite-TT-019: Renewable Energy and Energy Storage Systems

Chairs: Sheeraz Iqbal · Khaled Abedrabboh

IECON26-000566 **Optimization Of Hybrid Renewable Energy Systems With Electric Vehicle Charging Stations**
Muhammad Bilal Ali, Muhammad Luqman, Sheeraz Iqbal, Md Shafiullah

IECON26-000581 **Dual Extended Kalman Filter-Based Thermal State and Parameter Estimation for Lithium-Ion Batteries**
Deepshikha A, Keyur Patel, Mahmadasraf Mulla

IECON26-000641 **Impact of Charging Profiles on Performance and degradation of Sulfide-Based Solid-State Batteries under Constant Temperature**
Aishwaryaa Kannan, Tanisha Gnanasekaran, Tim Tizon, Shady Khalil, Haitham Abu-Rub, Mohammad Alshaikh Saleh

IECON26-000899 **A Methodological Approach for Enhancing Industrial Plants Voltage Stability Using Battery Energy Storage Systems**
Pavel Semenov, Denis Tsarev, Erik Mulkamanov, Vladimir Rebrov, Dmitry Muravyev

IECON26-001006 **Partial Power Processing based Segmented DMPPT Scheme with Battery Storage Capable to Connect with Fixed DC-Bus for EV Charging Application**
Sanam Agnihotri, Badavathu Joshna, V Gouri Prasant, Dipankar Debnath

IECON26-001046 **Sub-Synchronous Oscillations Mitigation in a VSC-HVDC Integrated Offshore Type 4 Wind Farms**
Muhammad F. Umar, Hussein Alnuweiri, Haitham Abu-Rub, Yazan Qiblawey, Abdulrahman Alassi

14:00–15:30
Room - PR6

Onsite-TT-020: Transportation Electrification and Automotive Technologies

Chairs: Farshid Naseri · Islam Safak Bayram

IECON26-000953 **GHOST-CDD: Corroboration-Diversity Detection of False-Consensus Attacks in Collective Perception**
Nima Abdi, Abdullatif Albaseer, Mohammed Al-Mehdhar, Mohamed Abdallah, Ala Al-Fuqaha, Othmane Bouhali

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Day 2 - Monday October 19

14:00–15:30
Room - PR6
cont'd

Onsite-TT-020: Transportation Electrification and Automotive Technologies · continued

IECON26-001042 **Post-Fault Control of PMSM-Driven Propeller System under Single-Phase Loss Conditions**
Dmitriy Savkin, Evgeniy Stolyarov, Aleksei Aksenov, Ksenia Fedorova, Artemiy Zolotov, Galina Demidova, Alecksey Anuchin

IECON26-001586 **Bridging the Gap: A Hybrid LLM-Assisted Framework for Battery Pack Configuration**
Francesco Tosoni, Zhou Xuxin, Li Yuqi, Yukai Chen, Massimo Poncino, Franco Fummi, Sara Vinco

IECON26-001355 **Modelling and stability of an electrodynamic null flux lateral guidance system for maglev vehicles**
Marius Pakstys, Renato Galluzzi, Andrea Tonoli, Nicola Amati

IECON26-001470 **Physics-initialised graph neural network for spatiotemporal thermal monitoring of partial-immersion lithium-ion battery packs**
Saulius Pakstys, Marco Maritano, Fabio Boscarino, Angelo Bonfitto

IECON26-001559 **A Maximum Coverage Location Model to Optimize Hydrogen Refueling Infrastructure in Qatar**
Carlos Mendez, Roberto Baldacci, Marcello Contestabile, Yusuf Bicer, Nurettin Sezer

14:00–15:30
Room - PR8

Onsite-TT-021: AI Applications in Control, Mechatronics, and Robotics

Chairs: Abdelhak Oulmane · Abdullah Kouzou

IECON26-000911 **Stability-Oriented Deep Reinforcement Learning Controller with Enhanced Observation Space for 9-Level Split Capacitor ANPC Inverters**
Abdulrahman Serhan, Alamera Nouran Alquennah, Hamza Makhamreh, Mohamed Trabelsi, Mohamed Zribi

IECON26-001099 **A Lightweight Machine Learning Framework for Leakage Detection and Severity Assessment in Gas-Liquid Two-Phase Flow Pipelines**
Alamera Nouran Alquennah, Hicham Ferroudji, Mohammad Azizur Rahman, Ali Ghrayeb, Abinash Barooah

IECON26-000461 **A Perception-Grounded QUB-PHEO Benchmark for Subtask Detection and Intention Prediction**
Laith Al Shehab, Samuel Adebayo, Mien Van, Sean Mcloone

IECON26-001460 **Generative AI in Operational Technology: A Review of Applications, Challenges, and Research Gaps**
Marko Slunjski, Martina Kutija, Damir Sumina, Igor Erceg

IECON26-000076 **Hybrid State Estimation and Deep Reinforcement Learning for Stabilization and Drift Reduction of a Quadcopter UAV**
Collins Masimba, Kuanysh Yessenzhanov, Ilyas Muhammad, Gulam Khan

IECON26-000786 **A Novel Triple-Inductor Cascaded Hybrid Switch Capacitor Flexible High Step-Up DC-DC Converter for Sustainable Energy Integration**
Joni Sk, Sharmili Das, Piyush Patel, Avik Bhattacharya, Mohd Rihan

14:00–15:30
Room - PR3

Onsite-TT-022: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Jens Krah · Ahmed Elotri

IECON26-000204 **Design, Parametric Optimization, and Comprehensive Comparative Performance Analysis of a Rotor Embedded Permanent Magnet-Assisted Switched Reluctance Motor**
Saifullah Payami, Ekanta Saha

IECON26-001222 **Edge-IoT Smart Parking Access Control Using Occupancy Sensing, License Plate Recognition, and MQTT-Based Dashboard Monitoring**
Thea Lorraine Daniel, Andrea Canaria, Rabab Benotsmane, Maged Baoumy, Morcos Metry

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Day 2 - Monday October 19

14:00–15:30
Room - PR3
cont'd

Onsite-TT-022: Cyber-Physical Systems and Internet of Things in Industry · continued

IECON26-001371 **Machine Learning-Based Classification of RF Curves for Quality Inspection in UHF RFID Tags**
Daniel Santos, Leandro Ensina, Diego Bertolini

IECON26-001392 **A Resource-Task Network Framework for Modeling and Scheduling Complex Recipes in Modular Plants**
Bowen Chen, Torben Miny, Tobias Kleinert

IECON26-000504 **Intrusion Detection for Operational Technology with Cross-Dataset Validation**
Marlene Paulino, Altair Santin, Eduardo Viegas

15:30

15:30–16:00
Dafna - Foyer

Coffee Break

16:00

27 parallel sessions

16:00–20:00
Salwa 2

Newbies Collaboration
Chair: Regina Roos

16:00–17:45
Online Room-05
ONLINE

Online-SS-27: Cybersecurity Frameworks for Modern Power Systems: Threats, Resilience, and Intelligent Defence
Chairs: Anil Kumar Yadav · Vivek Prakash

IECON26-000073 **An Adaptive Graph Neural Network with Dynamic Edge Learning for Real-Time Cyberattack Detection in IoT Networks**
Richa Sharma, Sunny Sharma, Charanjit Singh, Prabjot Kaur, Gautam Srivastava

IECON26-001580 **Duck-Duck-No-Goose: Slow-Drift Threshold Poisoning of Adaptive Anomaly Detection in Digital Substations**
Eman Hammad, Lewis Heuermann

IECON26-001633 **Integrated Detection and Active Mitigation of Bidirectional FDI Attacks in BESS OT/IT Systems**
Jesse Zarmai, Robert Cox, Ehab Shoubaki

IECON26-000796 **LLM Guided Cyber Physical Attack Path Identification in Smart Grids**
Amr Elshazly, Jesse Roberts, Rachad Atat, Muhammad Ismail

IECON26-000894 **High-Fidelity Honeypots for Rooftop PV Inverters Based on Real-Time Dynamics Simulations**
Akula Sathvick, Pratyush Poudel, Sarasij Das

IECON26-000926 **A Cross-Dataset Approach Leveraging Lightweight Machine Learning Modeling for GOOSE Attack Detection**
Michelle Da Luz Rodrigues, Altair Santin, Luiz Nacamura Jr

IECON26-001312 **Robustness of Distributed Source Imaging in OPM-Based Magnetocardiography Under Sensor Calibration Errors**
Min Zhang, Min Xiang

16:00–17:45
Online Room-01
ONLINE

Online-TT-034: Power Electronics Converters
Chairs: Eman Hammad · Quanxue Guan

IECON26-000040 **Optimal Voltage Balancing for Four-Level NPC Converters based on Direct Duty Ratio Calculation under Wide Operating Conditions**
Wei Xu, Jun Wang, Wenzhi Zhou, Xibo Yuan, Yonglei Zhang, Shushu Zhu, Kun Wang, Zhaobo Zhang

continues on next page ▸

Day 2 - Monday October 19

16:00–17:45
Online Room-01
ONLINE
cont'd

Online-TT-034: Power Electronics Converters · continued

IECON26-000845 **Optimal Sizing of Voltage Source Rectifiers for High-Power Hydrogen Electrolysis Plants to Comply with New Demand Grid Codes**
Javier Beaumont, Ernesto Barrios, Alvaro Iribarren, Ianko Valero, Alfredo Ursua, Pablo Sanchis

IECON26-000088 **Input Pulse Optimization for Smooth Load Transitions in SPSM-PFC Circuits via Perturbation-Based Constraint Relaxation**
Chikako Nakayama, Tomoki Emmei, Shinya Toyodome, Kazunori Hatakeyama

IECON26-000089 **An Underwater WPT System With Integrated Magnetics for Multiple Charging Voltages**
Yuhao Liu, Zhilei Yao

IECON26-000247 **Optimization Based Adaptive Control of Grid-Forming Inverters for Oscillation Mitigation in Strong Grids**
Milad Darmiani, Alireza Mehrzad, Chun-Lien Su, Nabil Mohammed

IECON26-000544 **EKF-Based Online Estimation of Equivalent Resonant Inductance and Resonant Frequency for CLLC Resonant Converters**
Hee-Jeong Seon, Hyun-Gyu Koh, Yeong-Jun Choi

IECON26-000433 **GNN-Assisted Power Packet Routing with Multi-Agent Reservation for Energy Internet Networks**
Lynn El Moussaoui, Amani Fawaz, Hadi Kanaan

16:00–17:45
Online Room-02
ONLINE

Online-TT-035: Electric Machines and Industrial Drives

Chairs: Abdulrahman Alharbi · Ahmed Lakhdar Kouzou

IECON26-000032 **Experimental Analysis of Stator Fault Effects in a Reconfigured Triple-Stator Induction Motor Using an Unmodified Rotor**
Abdulrahman Alharbi, Shafiq Odhano, Fajer Alelaj, Barrie Mecrow, Andrew Smith

IECON26-000193 **Ferrite-Assisted Segmented Switched Reluctance Motor for High Torque Density and Low Ripple**
Neethu S, Saptarshi Dey, Anchal Saxena, Baylon Fernandes

IECON26-000264 **Multiphysics Design of Six-Degree-of-Freedom High-Temperature Superconducting Hybrid Maglev Linear Motor**
Koichi Matsuda, Xueying Ma

IECON26-000265 **Control of a Dual-Inverter Five-Phase OEW IPMSM**
Vahe Seferian, Jean Sawma, Flavia Khatounian, Eric Monmasson

IECON26-000276 **Experimental Investigation of Rotor Design Effects on Fault-Tolerant Control of a Triple-Stator Induction Motor**
Abdulrahman Alharbi, Shafiq Odhano, Andrew Smith, Fajer Alelaj, Barrie Mecrow

IECON26-000802 **Modified Model Predictive Control with Integral Compensation for High-Precision Speed Control of BLDC Motors in Industrial Automation**
Vijayakumar Gali, Jagadeesh Kumar Juturi, Hema Janga, Shady Khalil, Nitin Gupta, Kunal Bhatt, Luis Fernando Costa Alberto

IECON26-001476 **Metaheuristic-Based Tuning of Cascaded PI Controllers for BLDC/PMSM Actuator-Level Position Control in Mobile Robot Drives**
Michael Acquah, Guilherme Vieira Hollweg

16:00–17:45
Online Room-03
ONLINE

Online-TT-036: Renewable Energy and Energy Storage Systems

Chairs: Chuanxin Fan · Danniel Stoller

IECON26-000233 **Data-Augmented Hybrid CNN-BiLSTM-RF Model for State of Charge Estimation of Valve-Regulated Lead-Acid Batteries**
Chuanxin Fan, Yanfu Liu, Yuxuan Wen, Yi Wang, Chunfei Gu, Xinxiang Tian

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Day 2 - Monday October 19

16:00–17:45
Online Room-03
ONLINE
cont'd

Online-TT-036: Renewable Energy and Energy Storage Systems · continued

IECON26-000306 **Vibration Energy Harvesting Using Piezoelectric Materials: Experimental Validation and George Washington Bridge Case Study**
Shabtay Bilu, Danniel Stoller, Emanuel Simantobov, Matan Cohen

IECON26-000344 **Physics-Informed Neural Network with Capacity-Balance and Jump-Suppression Constraints for State-of-Charge Estimation**
Kai Jia, Linhui Zhao, Yian Wei

IECON26-000393 **A Hybrid Active-Passive Approach for Broadband Online Electrochemical Impedance Spectroscopy of Li-ion Batteries**
Aryan Chollera, Woongkul Lee, Byunghoo Jung

IECON26-000402 **Local Conformal Calibration for Reliable Short-Term Probabilistic PV Power Forecasting**
Saloni Dhingra, Giambattista Gruosso, Giancarlo Storti Gajani, Luca Daniel

IECON26-000427 **Lithium-Ion Battery Temperature Estimation Method Incorporating Initial Temperature Correction**
Hangkai Zhang, Siyu Cheng, Renchong Yang, Xuliang Zhang, Yuhao Wu, Jinlei Sun

IECON26-001393 **Deep Reinforcement-Learning-Based NTSM Finite-Time Consensus Protocol for a Group of Euler--Lagrange Systems with Uncertainty**
Shafiqul Islam

16:00–17:45
Online Room-04
ONLINE

Online-TT-037: Transportation Electrification and Automotive Technologies

Chairs: Mohammad Qasim Mohammad Alathamneh · Vitor Monteiro

IECON26-000109 **Low-Dropout Regulator Modeling for Bulk Current Injection Simulation**
Christoph Brillinger, Herbert Hackl, Jose Romero Lopera, Richard Gruenwald, Martin Stoiber, Bernhard Auinger

IECON26-000290 **Modular Ultra-Fast EV Charging System: An Interleaved-Based DC-DC Power Stage**
Vitor Monteiro, Riccardo Mandrioli, Mattia Ricco, Joao Martins, Joao Afonso

IECON26-000045 **GQAT-Head: A Head-Level Enhancement for Small and Tiny Object Detection in Low-Altitude UAV Monitoring**
Rui Liu, Jiayan Zhang, Chengzhao Shan, Yongkui Ma

IECON26-000487 **Coordinated Charging and Battery-Swapping Scheduling for Battery-Electric Vessels under Sailing-Time and Energy Uncertainty**
Hanqing Yang, Wenyang Ma, Yue Long, Tieshan Li

IECON26-000943 **Hidden Markov Model-Based GNSS Map Matching**
Subhojit Mandal, Chintha Vishnu Vardhan, S. Vasantha Kumar, Lelitha Devi Vanajakshi

IECON26-000042 **Output Voltage Harmonic Enhancement in a Single-Phase 9-Level Cascaded H-Bridge Multilevel Inverter Suitable for Electric Vehicles**
Subrata Banerjee, Punna Sudha Kiran, Samudra Panda, Kundan Kumar, Aniruddha Bhattacharya

IECON26-001316 **Camera-Based Dental Chair Light Automatic Adjustment System**
Zahraa Almusawi, Aws Alazawi, Mohammed Saeed

16:00–17:45
Online Room-06
ONLINE

Online-TT-038: Mechatronics and Robotics

Chairs: Mahdi Yazdanpour · Paolo Mercorelli

IECON26-000980 **Communication-Aware 3D Frontier Exploration for UAV Swarms in Urban Environments**
Tianji Zheng, Yong Chen

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Day 2 - Monday October 19

16:00–17:45
Online Room-06
ONLINE
cont'd

Online-TT-038: Mechatronics and Robotics · continued

IECON26-000142 **A Zonotopic Observer for Robust State Estimation of Twisted-Coiled Polymer Actuators**
Jannis Dethmann, Paolo Mercorelli

IECON26-000175 **An Adaptive Self-Organizing Map based Near-Optimal Grasping Sequence Plan Algorithm for Apple Harvesting Robot**
Zhihui He, Zhouxing Xie, Zheng Qian, Umair Javaid, Li Zhang

IECON26-001430 **MHE-MPC Framework for Bipedal Robot Stable Locomotion Control**
Heng Yang, Liang Yang, Yong Chen

IECON26-000301 **Design of a Leader Follower Robot Hand with Improved Cross Structure for Bilateral Control**
Marika Matsumura, Naoki Motoi

IECON26-001052 **Design and Data-Driven Control of Hydraulic Tendon-Driven Mechanisms for MRI-Conditional Surgical Robots**
Arshia Akbari, Boshen Qi, Kaixiang Zhang, Zhaojian Li, Erfan Nozari, Jun Sheng

IECON26-001840 **Integral Synergetic Control for Grid-Connected F-Type Inverters**
Badderdine Kanouni, Ahmed Elsanabary, Mokhtar Aly, Abdelbaset Laib, Mohamed Abido, Jose Rodriguez

16:00–17:45
Online Room-07
ONLINE

Online-TT-039: AI Applications in Control, Mechatronics, and Robotics

Chairs: Xiaochen Xie · Yajun Pan

IECON26-000804 **Open4D: Learning to Parse 4D Point Clouds with Open Vocabularies**
Shuyang Yu, Xiaoqing Guan, Shuo Zhao, Yi Wu, You Wang, Guang Li

IECON26-000139 **Safe Reinforcement Learning for Underactuated UUV Navigation via HOCBF-Based Action Shielding**
Xiaochun Xu, Wei Zhang, Zhe Zhang, Wenxue Xu, Ziqi Xia

IECON26-000167 **Automated Resource Discovery and Software Reconfiguration in a Distributed Device Cluster**
Joao Barros, Eliseu Pereira, Gil Goncalves

IECON26-000275 **A Streaming Graph Partitioning Method Using Game Tree Pruning with Deep Reinforcement Network**
Zhipeng Sun, Chaoze Lu, Dongdong Lv, Nan Xiong

IECON26-000554 **Research on 2D and 3D Shape Processing Algorithms Based on Computer Geometry**
Minjun Kwon, Dongho Shin, Jeongwon Kim

IECON26-000482 **Multi-Objective Reward Shaping for Safe and Energy-Aware Robot Navigation**
Steffen Ullmann, Niklas Grau, Ya-Jun Pan, Onur Toker, Abdulaziz Alhamadani

IECON26-001219 **Large Language Models as Autonomous Controllers for Multivariable Industrial Processes**
Vidyashree Rayar, Mahdi Taheri, Christian Herglotz, Philippe Thomas, Sebastian Moeller, Michael Huebner

16:00–17:45
Online Room-08
ONLINE

Online-TT-040: Instrumentation, Sensors, Actuators, and Micro-Nano Technology

Chairs: Ananth Madduluri · Tuozhong Yao

IECON26-000016 **Single-Port VNA Technique for Measuring Mutual Inductance in Coupled Coils**
Ananth Bharadwaj

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Day 2 - Monday October 19

16:00–17:45
Online Room-08
ONLINE
cont'd

Online-TT-040: Instrumentation, Sensors, Actuators, and Micro-Nano Technology · continued

IECON26-000146 **Lightweight and Verifiable Privacy-Preserving Localization Using CRT-Based Compression and Zero-Knowledge Proofs**
Chengzhi Zeng, Dongdong Lv, Shengming Chang

IECON26-000183 **Privacy-Preserving Indoor Localization Using Dual-RIS Phase Randomization with a Single Anchor Node**
Shengming Chang, Xiang Le, Dongdong Lv, Tuozhong Yao

IECON26-001344 **Design of a Photonic Crystal Nanobeam Cavity Sensor for Bacterial Trapping and Sensing**
Le Shen, Guolin Yin, Peihong Cheng, Zhijian Jia, Ping Yu, Shaoping Wang

IECON26-001731 **A Digital-Twin-Enabled Multimodal End-of-Line Inspection System for Automotive Rotors**
Victor Coch, Gabriel Rocha De Souza, Mateus Pinto, Nelson Duarte Filho, Rafaella Quaresma Lourenco, Eder Mateus Goncalves, Marcelo Malheiros, Eduardo Borges, Marcelo Pias, Vinicius Oliveira

IECON26-001507 **Water-Quality-Aware Modeling of Seawater-Fed Anion Exchange Membrane Electrolyzers for Green Hydrogen Production**
Umar Majeed Sada, Fei Gao, Qian Xun, Issam Salhi, Elena Breaz

16:00–17:45
Online Room-09
ONLINE

Online-TT-041: Signal & Image Processing Methodologies

Chairs: Gautam Srivastava · David Orlando Salazar Torres

IECON26-000028 **Time Series Imputation by Deep Interpretable Self-Supervised Autoencoders**
Hendrik Klopries, David Orlando Salazar Torres, Muhammad Ashraf, Andreas Schwung

IECON26-000490 **Orientation-Aware Container Code Recognition in Unconstrained Port Environments**
Luca Barboza Mendonca, Rodrigo De Bem, Eduardo Nunes Borges, Jean Alves, Vagner Santos Da Rosa, Fabiano Sandrini Moraes, Theo Corvello Soares, Maiara Cariolick, Denise Valeria Velarde Mamani

IECON26-000051 **Compact-BoF: A Modular Residual Architecture for Efficient and Interpretable Time Series Analysis on the Edge**
David Orlando Salazar Torres, Diyar Altinses, Andreas Schwung

IECON26-000137 **HGSR: Hierarchical 3D Gaussians for Sparse-View CBCT Reconstruction**
Wenli Huang, Feifei Wei, Liyan Qiu, Zhongyun Bao, Jixin Wang, Ye Deng

IECON26-000181 **LGGS:LiDAR-Guided Gaussian Splatting for Cross-Modal 3D Perception**
Wei Ding, Mien Van, Rajeem Thomas, Yibo Zhou

IECON26-001512 **Design and Performance Evaluation of a Deep-Water ROV for Engineering Operations in Complex Flow Fields**
Weiyan Shang, Zhongda Lv, Fei Wang, Hongfei Cao

IECON26-001304 **CARE-IIoT: A Criticality-Aware Rekeying Scheme for Efficient Key Management in the Industrial Internet of Things**
Mourad Benmalek, Abdessamed Seddiki

16:00–17:45
Online Room-10
ONLINE

Online-TT-042: Industrial Informatics, Cloud Computing, Big Data

Chairs: Murat Akin · Rambabu Budithe

IECON26-000617 **A Cross-Analysis Framework of EGMS InSAR and Mobile LiDAR for Railway Embankment Deformation Monitoring**
Fakhreddine Ababsa

IECON26-000222 **A Hierarchical Anonymization Method for Photovoltaic Sensitive Data Based on Weighted Clustering and Reversible Mapping**
Jilong Zhou, Dan Zhang, Yilian Zhang

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Day 2 - Monday October 19

16:00–17:45
Online Room-10
ONLINE
cont'd

Online-TT-042: Industrial Informatics, Cloud Computing, Big Data · continued

IECON26-000292 **Multistage Co-occurrence Slotting with Alternating Optimization for Category-Constrained Warehouses**
Shuhei Kamiya, Naoki Hattori, Kazuya Okamoto, Norihiko Kato, Takuto Sakuma, Shohei Kato

IECON26-000325 **NEXUS: A Multi-Agent Agentic Workflow for Valid SysML v2 Model Generation from Unstructured Industrial Documentation**
Oscar Berg, Christoph Klaassen

IECON26-000357 **Protocol-Corrected PHM OOD Detection with a GDN-Anchored Auxiliary-View and Spectral Hybrid**
Li-Ming Zhan, Yu Cheng, Dongdong Lv

IECON26-000373 **A Modular Ontology Design for Attribute-Level Traceability Across Engineering Documents in Process Engineering**
Yizhi Wang, Chengkai Shen, Joseph Alterbaum, Bowen Chen, Tobias Kleinert, Birgit Vogel-Heuser

IECON26-001827 **Behavior-Model-Informed Reinforcement Learning for Operator Prompt Timing in Human-Centric Industrial Systems: A Simulation Ablation Study**
Gabriel Viana, Giuliano Caporrino, Bruno Machado Lobato, Vagner Da Rosa, Alessandro Bicho

16:00–17:45
Online Room-11
ONLINE

Online-TT-043: Communications for Industrial and Factory Automation

Chairs: Hamideh Alvand · Simon Neckenig

IECON26-000642 **Evaluating Medical-Image Pre-training for Industrial Defect Detection: A Cross-Domain Transfer Learning Study**
Shabnam Sadeghi Esfahlani, Jason Taylor

IECON26-000758 **CQF Resource-Aware Access Planning for New Terminal Integration in Industrial TSN Networks**
Yang Zhu, Yingxiu Chen, Maoqi Zuo, Yuchao Chen, Yanzhou Zhang, Cailian Chen

IECON26-000788 **Carrier-Based Deterministic Protocol Conversion for Heterogeneous Industrial Networks**
Maoqi Zuo, Yingxiu Chen, Lei Xu, Yang Zhu, Xinping Guan, Cailian Chen

IECON26-000904 **A Systematic Naming Convention for a Unified Namespace in a Real-World Production System**
Simon Neckenig, Wolfgang Kiess, Hendrik Solscheid

IECON26-000984 **Residual Observability and Attack Detectability in Encrypted OPC UA Traffic**
Song Son Ha, Florian Foerster, Henry Beuster, Eduard Zeller, Dominik Merli, Gerd Scholl

IECON26-001132 **Fail-Fast Modbus: Preventing Cryptographic Exhaustion in Real-Time CPS**
Dimitrios Serpanos

IECON26-000853 **Robust Fault Detection and Diagnosis for Grid-Connected PV Microgrids Using T-S Residuals and Rule-Based Isolation Under Measurement Uncertainty**
Hatef Azamizenouzagh, Hamed Badihi

16:00–17:45
Online Room-12
ONLINE

Online-TT-044: Electronic Systems on Chip and Embedded Systems

Chairs: Tarek Ould-Bachir · Oscar Lahuerta

IECON26-001113 **Inter-Step PWM Interpolation for Real-Time FPGA Simulation: A 1 MHz Buck Converter Case Study**
Kevin Garnier, Nader El Zarif, Mostafa Amer, Tarek Ould-Bachir, Yvon Savaria

IECON26-000674 **Practical Hardware Software Realization of KalmanNet for Embedded SOC/SOH Monitoring**
Islam Sayed, Yousef Mahmoud

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Day 2 - Monday October 19

16:00–17:45
Online Room-12
ONLINE
cont'd

Online-TT-044: Electronic Systems on Chip and Embedded Systems · continued

IECON26-000941 **FPGA-based Implementation of INT8 Fast-SCNN and Performance Evaluation of Drivable Region Segmentation**
Min Kwon Choi, Hobin Oh, Hyeonjin Sim, Seung Wook Oh, Seung Woo Park, Jae Jeon

IECON26-001008 **HLS-Based FPGA Implementation of a Kalman-Based Estimator for Real-Time Induction Heating Load Identification**
Oscar Lahuerta, Lydia Virto, Claudio Carretero, Denis Navarro, Jesus Acero

IECON26-000662 **Narrowband FxLMS-Based Tach-Synchronized Feedforward Cancellation for LDO PSRR Enhancement in Rotorcraft HUMS**
Van Huy Phuong, Ngoc Tuyen Dao, Vu Hop Tran, The Anh Nguyen

IECON26-000832 **Zenoh-Pico on an Automotive ZCU-Class Cortex-M7: A Measured Real-Time Deployment Envelope**
Seung Uk Son, Youngsoo Do, Sung Bhin Oh, Jae Jeon

IECON26-001647 **Characterizing Hardware-Aware Neuromorphic Action Selection for a Four-Joint Manipulator on Xylo Audio 3**
Alfredo Barros, Gabriel Iuji Oliveira Taguchi, Aila Karoline Santana Moreira, Chavdar Ivanov, Carlos Alberto Oliveira de Freitas, Vicente Lucena, Vandermi João da Silva

16:00–17:30
Online Room-13
ONLINE

Online-TT-045: Power Electronics Converters

Chairs: Cheeshen Lim · Shafi Khadem

IECON26-000851 **Comparative Evaluation of DC-DC Converter Topologies for Future Medium-Voltage More-Electric Aircraft Propulsion Systems**
Shashank Panikkar, Ishita Biswas, Florian Floh, Manuel Passler, Markus Makoschitz

IECON26-000919 **A Reconstructed SVM Strategy for Four-Mode Dual-Source Inverters with Reduced Switching Losses**
Javad Ebrahimi, Fatemeh Nasr Esfahani, Neeraj Suri, Xiandong Ma, Suzan Eren

IECON26-000839 **Equivalent-Flux Model Predictive Pulse Pattern Control for LC-Filtered Asymmetrical Six-Phase PMSM Drives**
Yang Zhao, Chee Shen Lim, Huiqing Wen, Chao Long

IECON26-001056 **BO-Optimized CNN-LSTM for Switch Fault Diagnosis of Multiphase Drives and Its Physical Interpretation**
Yukun Zheng, Yang Zhao, Chee Shen Lim

IECON26-000985 **Analytical Design Constraints for Two-Stage Three-Terminals Multibeam Klystron Converter**
Vinod Kumar Yadav, Andrii Chub

IECON26-001819 **Lightweight Convolutional Neural Network for Multiclass PCB Surface Defect Classification**
Muhammad Hammad, Nour Morsi, Mostafa Farrag, Shady Khalil, Amira Mohammed, Mohamed Khedr

16:00–17:30
Online Room-14
ONLINE

Online-TT-046: Renewable Energy and Energy Storage Systems

Chairs: Sadiah Moon · Afaq Hussain

IECON26-001445 **Continuous-Control-Set Model Predictive Control With RBF-Based Velocity Prediction for Maximum Power Point Tracking of a Point-Absorber Wave Energy Converter**
Li Wang, Hongyu Zhao, Lixun Zhu, Lichang Yao, Bo Li, Xin Jin

IECON26-001825 **Beyond Leakage-Current Compliance: A Safety Perspective on the Future of Transformerless EV Charging**
Chinmaya Joshi, Gaurang Vakil, Saul Lopez Arevalo

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Day 2 - Monday October 19

16:00–17:30
Online Room-14
ONLINE
cont'd

Online-TT-046: Renewable Energy and Energy Storage Systems · continued

IECON26-000670 **A Fractional Power Controlled PV-Battery Architecture for Stable Grid-Forming Transition**
Afaq Hussain, Jahangir Hossain, Amad Hussain

IECON26-001729 **CommunityGuard-AI: Agentic AI for Cyber-Physical Defense of Energy Communities**
Alaa Selim, Junbo Zhao, Maanat Bhadani

IECON26-001598 **Offline-Optimized and Online-Interpolated B-Spline Trajectories for Variable-Distance Transfer With a Terminal Low-Speed Stage**
Jiahui Wen, Dong Xu, Yupeng Liu, Marco Rivera, Patrick Wheeler

IECON26-000165 **Optimal Sizing and Day-ahead Energy Management of a Renewable Hydrogen-based Microgrid**
Ayoub Chrif, Elhoussin Elbouchikhi, Abdelmajid Abouloifa, Mojtaba Hadi, Mohamed Machmoum, Lahoucine Id-Khajine

16:00–17:45
Online Room-15
ONLINE

Online-TT-047: Control Systems and Applications

Chairs: David Taylor · Osamu Kaneko

IECON26-001521 **SCM-Guided Adaptive SMC with Causal Gain-Adaptive Boundary Layer for PMSM Drives in Industrial Robotic Servo Systems**
Balasriram Kodi, Joyjit Mukherjee, Sandhya Gudipati, Abhishek Sarkar

IECON26-001565 **Prescribed-Time Bipartite Leader Tracking of Multi-Agent Systems via Predictor-Based Dynamic Event-Triggered Control**
Meilin Li, Kai Zhang

IECON26-001591 **Robust Locomotion of Biped Robot with Guaranteed Joint Tracking Boundedness**
Shengzeng Zhang, Xinggao Liu, Michael Basin, Ruojing Liu, Junhao Zhang, Xiongxiong He

IECON26-001640 **FIR Approach to Data-Driven Prediction and Its Application to Data-Driven Control for MIMO Systems**
Yu Oyama, Osamu Kaneko

IECON26-001756 **Automatic Parking with Radar-Based Vacant Spot Detection and Systematic Path Planning**
Darsh Parikh, David Taylor

IECON26-000094 **Adaptive Prescribed-Time Control of Uncertain Robotic Manipulators with Prescribed Performance Constraints via Barrier Lyapunov Functions**
Jianmin Wang, Hongxu Zhang

IECON26-000652 **Constraint-Aware Bayesian Optimization for PID Tuning: Discovering Plant-Specific Control Strategies**
Prince Baah-Mensah, Stephen Armah

16:00–17:45
Online Room-16
ONLINE

Online-TT-048: AI Applications in Control, Mechatronics, and Robotics

Chairs: Naheel Kamal · Sunil Kumar

IECON26-001732 **A Modular Framework for Cooperative AI-based Target Tracking using Autonomous Quadcopters**
Suruz Miah, Isaiah Chism

IECON26-001527 **MA-OBJNAV: A Multi-Agent Semantic Memory Framework for Open-Vocabulary Object Navigation in Industrial Environments**
Jingheng Yan, Jiabao Dong, Lingyuan Yang, Lei Ren

IECON26-001560 **Long-Range Robotic Perception through Fusion of Time-of-Flight Depth and AI-Based Metric Depth**
Aayush Shah, Sunil Kumar, Sagar Dhatrak

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Day 2 - Monday October 19

16:00–17:45
Online Room-16
ONLINE
cont'd

Online-TT-048: AI Applications in Control, Mechatronics, and Robotics · continued

IECON26-001569 **Perception or Policy: Sub-Task Failure Attribution in Sub-Millimeter-Clearance Robotic Assembly**
Yejun Gu, Zhiyuan Yang, Haiyue Zhu, Jingbing Zhang, Jun Liu

IECON26-001670 **An Open-Source Low-Cost Edge-Based IoT Architecture for Distributed Network Telemetry Fleets**
Jose Pablo, Jaime Gomez

IECON26-001679 **A Systematic Review of AI, IoT, and GIS Integration in Field Operations Management Platforms**
Norah Alfaleh, Shaikhah Aldossary, Nora Alsunaid, Omar Alyamani, Turki Andous, Reem Assiri, Joury Sulayhim, Sumyah Aljameel, Eman Alzayer, Tamara Basfar

IECON26-000807 **IMU-Assisted Kalman-Filter-Based disturbance estimation for Bilateral Control Under Low-Resolution Encoder Conditions**
Ryota Ito, Takashi Ohhira, Hideki Hashimoto

16:00–17:45
PR1 Office
ONLINE

Online-TT-049: Power Electronics Converters

Chairs: Yousef Mahmoud · Donald Gilmore

IECON26-000289 **Data-Driven Efficiency Mapping for Rapid LLC Resonant Converter Design**
Luiz Fernando M. Arruda, Skylar Coelho, Mohammad Farsijani, Mohammad Shadmand, Sudip Mazumder

IECON26-000293 **A Novel High-Efficiency 48V to 1V Converter for GPU Applications Using Resonant Topology**
Mohammad Farsijani, Luiz Fernando M. Arruda, Mohammad Shadmand, Sudip Mazumder

IECON26-000710 **Self-Inductance Aware Machine Learning Based Mutual Inductance Estimation for Series-Series Inductive Power Transfer Systems**
Mahmoud Howaidi, Yousef Mahmoud

IECON26-000709 **Self-Inductance-Aware Switched-Capacitor Adaptive Compensation for AGV Wireless Charging Under Air-Gap Variation**
Mahmoud Howaidi, Yousef Mahmoud

IECON26-000712 **Two-Stage Adaptive Compensation and DC-Link Voltage Regulation for SS-Compensated AGV Wireless Charging Under Air-Gap Variation**
Mahmoud Howaidi, Yousef Mahmoud

IECON26-001317 **Online Feedforward Compensation for Precision Motion Control in Wafer Scanners Using LRTCN: Lightweight Residual Temporal Convolutional Neural Network**
Manni Li, Longbin Jiang, Yinyin Lin, Xiaofeng Yang

IECON26-000509 **Equivalent Hydrodynamic Coefficient Representation and Identification of Ship Maneuvering Dynamics under Environmental Disturbances**
Shiyang Li, Guiyong Zhang, Tongtong Wang, Houxiang Zhang, Biye Yang, Jinxin Wu

16:00–17:45
Ginan
ONLINE

Online-TT-050: Control Systems and Applications

Chairs: Reza Behnam · Mehdi Taherzadeh

IECON26-000072 **Hierarchical Parameter Configuration for Coordinated Dual-Axis Servo Operation Under Multiple Performance Constraints**
Meihe Cao, Ziling Nie, Kai Yang, Jun Sun, Yangwei Zhou, Jialin Li

IECON26-000935 **Distributed Proximal Algorithm for Nonsmooth Resource Allocation in Multi-Agent Systems with External Disturbances**
Bo Wen, Ziang Liu

continues on next page ▸

Day 2 - Monday October 19

16:00–17:45
Ginan
ONLINE
cont'd

Online-TT-050: Control Systems and Applications · continued

IECON26-000169 **Dual-Core Defense: A Neuro-Symbolic Generative Framework for Automated Detection of Zero-Day Hardware Vulnerabilities in SoC Designs**
Ahmed Bensalah, Mohammed Yasine Abid

IECON26-000787 **Comparative Study of High-Temperature Wire Insulations under Accelerated Thermal Ageing**
Muhammad Khowja, Gaurang Vakil, Kuldeep Singh, Chris Gerada

IECON26-001447 **Torque Estimation in Induction Machines Using an Augmented State-Space Model**
Ali Zarechavoshi, Mehdi Taherzadeh, Yazidi Amine

IECON26-000406 **A Hierarchical Reinforcement-Learning-Enhanced ECMS for Energy Management of Hybrid-Electric Tiltrotor Aircraft**
Ruixiang Wang, Yong Wang, Ziyang Chai, Xiangyang Wang, Shubo Yang, Wenjie Liu

IECON26-000250 **Multi-Directional Random Conic Pursuit with Integration into Adaptive Dynamic Programming**
Lanqi Ma, Simone Baldi, Di Liu, Chaojie Li, Wenwu Yu, Juan J. Rodriguez-Andina

16:00–17:00
Room - PR3

Onsite-SS-26: Artificial Intelligence and Machine Learning Applications in Renewable Energy and Energy Storage Systems

Chairs: Amjad Hussain · Siddharth Joshi

IECON26-000163 **A Digital Twin-Based Evaluation of Decision-Generation Strategies for Residential Microgrid Energy Management**
Furqan Amjad, Taaha Asrar Ahmed, Tarmo Korotko, Argo Rosin

IECON26-000587 **Particle Swarm Optimized Driven and Domain-Guided Learning Framework with Hybrid Reliable and Uncertainty-Aware RUL Prediction of Lithium-Ion Batteries**
Matee Ur Rasool Meladi, Ghulam Amjad Hussain, Abdul Salam, Muhammad Inam Ul Haq Haq, Zeeshan Ahmad Arfeen, Madia Safdar

IECON26-000725 **Rotational Robustness and Explainable Machine Learning for Hydrogen Storage Prediction in LiNH6 Nanoparticles**
Mustafa Kurban, Erchin Serpedin, Hasan Kurban

IECON26-001661 **Efficient Electrochemical Energy Storage Using a ZnMnO3//rGO Asymmetric Supercapacitor**
Athika Mattath, Muhammed Junais Pulikkathumbayil, Firoz Khan

16:00–17:30
Mitras

Onsite-TT-027: Power Systems and Smart Grid

Chairs: Ali Alaboudy · Yousef Abdelaziz

IECON26-000458 **SIMDA-FL: Sequence Impedance Modal Fault Localization in Distribution Networks**
Hassan Ali, Mutasim Nour

IECON26-000068 **Adaptive Signal Processing Framework for Frequency Estimation of Power System Forced Oscillations**
Aya Haraz, Ahmed Massoud, S.m. Muyeen

IECON26-000880 **Game-Theoretic Adaptive Voltage Threshold Tuning Against HVAC Based Load Demand Variations**
Suman Maiti, Anjana Balabhaskara, Sunandan Adhikary, Soumyajit Dey

IECON26-001115 **Synergetic Secondary Control for FCS-MPC Based Grid Forming Inverters**
Abdelbasset Krama, Sertac Bayhan

IECON26-001142 **A Hardware-in-the-Loop Testbed for Microgrid Cybersecurity: Protocol Analysis, and Evaluation**
Analucia Vera-Marich, Yakubu Tsado, Alexandros Paspatis, Soheil Abafat, Bamidele Adebisi

Day 2 - Monday October 19

16:00–17:30
Haloul

Onsite-TT-028: Power Electronics Converters

Chairs: Yasen Harrye · Krzysztof Gorecki

IECON26-001059 **Experimental and Grid-Connected Validation of a Cascaded High Step-up DC-DC Converter for Photovoltaic Applications**
Md Tahmid Hussain, Rashid Ahmed Khan

IECON26-000965 **Modeling of mutual thermal couplings between planar transformer components**
Krzysztof Gorecki, Pawel Gorecki

IECON26-001027 **Multi-Cell Active Resonant Voltage Balancer with Integrated Hysteresis Window for Supercapacitor Modules**
Sebastian Pjeci, Alireza Ghanbari, Aleksandra Stanojevic, Petar Grbovic

IECON26-001105 **Quasi-Variable-Capacitor-Based Resonance Condition Control for Induction Heating Inverters**
Sachio Kubota, Yoshihiro Shimaoka

IECON26-001100 **A Time-Domain Machine Learning Method for Non-Intrusive Converter Control Identification**
Yazan Qiblawey, Agusti Egea-Alvarez, Khaled H. Ahmed, Abdulrahman Alassi

IECON26-001708 **Thermal Performance Evaluation of Unbalanced-Flux Magnetics**
Rayen Selmi, Sobhi Barg, Manel Jebali-Ben Ghorba, Kent Bertilsson, Wissem Naouar

16:00–17:30
Room - PR4

Onsite-TT-029: Electric Machines and Industrial Drives

Chairs: Ramazan Bayindir · Mustafa Ersan

IECON26-000940 **Vector-Length-Modulated Model Predictive Flux Control for Open-End Winding Induction Motor Drives**
Kaif Ahmed Lodi, Balanthi Beig, Jamal Alsawalhi

IECON26-001843 **Quantitative Dynamic Characterization of a Cross- Feedback-Network PLL Under Speed Transients for Sensorless PMSM Rotor-Angle Estimation**
Taseen Bin Asad, Yaman Zbede, Morcos Metry

IECON26-001320 **Application Limits of Heat-Pipe-Assisted Rotor Cooling in Electrical Machines: A First-Order Thermal Analysis**
Toluwaleke Owoso, Rafal Wrobel, Richard Law, Ryan Mcglen

IECON26-001479 **MTPA-Based Adaptive Command-Filtered Control for High-Efficiency Position Servo of IPMSMs**
Zihang Wan, Le Sun, Longmiao Chen

IECON26-001532 **Model Recovery Anti Windup in the Flux Weakening Region for Synchronous Reluctance Machines**
Rashad Ghassani, Mohamed Mroueh, Al Kassem Jebai

IECON26-000083 **Semi-Supervised Learning for Bearing Fault Diagnosis under Label Scarcity**
Muhammad Ahmad, Mannan Hassan, Md Shafiullah

16:00–17:30
Room - PR5

Onsite-TT-030: Renewable Energy and Energy Storage Systems

Chairs: Khaled Abedrabboh · Mohammad Alshaikh Saleh

IECON26-001178 **A Quantitative Inspection Approach for Mixed Power-Rating Defect in Photovoltaic Module Assembly Using Electroluminescence Imaging Analysis**
Bessan Sherif, Youssef Hassan, Mahmoud Gaafar, Mohamed Orabi

IECON26-001397 **Multi-Criteria Optimal Sizing of Deployable Islanded PV Battery Hydrogen Microgrids**
Venkata Siva Sathya Sairam Jagu, Lies Debruyne, Jorben Mus, Frank Buysschaert, Michael Kleemann

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Day 2 - Monday October 19

16:00–17:30
Room - PR5
cont'd

Onsite-TT-030: Renewable Energy and Energy Storage Systems · continued

IECON26-001424 **Performance Ratio Assessment and Loss Factor Analysis of a Grid-Connected PV System in Egypt Using PVsyst**
Eman Gomaa, Eltaib Ibrahim, Mohamed Orabi

IECON26-001626 **Operational Assessment of Fresnel-Lens CPV-PEM Systems in Arid Regions: Hydrogen Yield, Field Sizing, and Limited Buffering**
Amal El Yaagoubi, Ali Ahaitouf

IECON26-000564 **Physics-Informed Prognostics for Commercial 21700 Cells: A Causal Sequence-to-Sequence Approach**
Rehaan Hussain, Fadwa El Mellouhi, Souhil Sid, Ahyen Mostofa

IECON26-001321 **Neural Operators for Transferable Battery State-of-Health Forecasting**
Mohammad Alshaikh Saleh, Sertac Bayhan, Haitham Abu-Rub, Ali Ghrayeb

16:00–17:30
Room - PR6

Onsite-TT-031: Transportation Electrification and Automotive Technologies

Chairs: Abdullah Kouzou · Ahmed Hefaifa

IECON26-001117 **Dual Active Bridge Converters for Electric Vehicle Chargers: A Survey of Converter Variants, Modulation Strategies, and Hardware Trends**
Futoun Alajmi, Aseel Aslah, Abdulrahman Serhan, Mohamed Trabelsi

IECON26-001746 **Closed-Loop Edge Evaluation of Compressed Deep Reinforcement Learning for Autonomous Driving**
Sumansmita Rout, Ayantika Chatterjee

IECON26-001794 **LCL-based Dual-Transmitter Compensation Architecture for Dynamic WPT Systems with Comparative Analysis of Prominent Compensation Networks**
Kanij Ahmad, Hassan Khalid, Saad Mekhilef, Hussain Bassi

IECON26-001235 **Control of an Integrated Three-Level NPC Rectifier-Based On-Board Battery Charger for EVs**
Oumaima Joraiche, Abdelmajid Abouloifa, Ibtissam Lachkar, Juan Wang, Abdelali El Aroudi

16:00–17:30
Room - PR7

Onsite-TT-032: Control Systems and Applications

Chairs: Morcos Metry · Yushan Liu

IECON26-001769 **Modelling, Controller Design and Performance Analysis for UAV Trajectory Tracking in Last-Mile Delivery**
Abdul Hannan Ameer, Salmiah Ahmad, Rabab Benotsmane, Waleed Mahimi

IECON26-000875 **FPGA-Accelerated Model Predictive Control of Gas Turbine Aero-Engines**
Issam Chekakta, Hadriano M Escamilla, Andrew F Hills, Andrew R Mills, Steven Culwick

IECON26-000262 **Obstacle-Aware Reinforcement Learning Based Control of a Custom 5-DOF Robot Arm for Automated Energy Infrastructure Management**
Tala Zaim, Mohammad Reza Chalak Qazani, Hong Fu, Nader Meskin, Ali Safa

IECON26-001258 **A Low-Cost and Low-Complexity Functional Safety Embedded Controller Reference Board with Flexible 24 V I/Os for Industrial Applications**
Joschka Laufs-Randerath, Christian Muhlfeld, Jens Onno Krah

IECON26-000362 **Interacting Multiple Model Filtering for Robust Underwater Robot Direction-of-Arrival Tracking**
Nader Meskin, Ali Safa

16:00–17:30
Room - PR8

Onsite-TT-033: AI Applications in Control, Mechatronics, and Robotics

Chairs: Abdelhak Oulmane · Mostafa Mosa

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Day 2 - Monday October 19

16:00–17:30
Room - PR8
cont'd

Onsite-TT-033: AI Applications in Control, Mechatronics, and Robotics · continued

IECON26-001649 **Design and Experimental Comparison of Motorization Alternatives for an Assisted Walker**
Isabel Segui Verdu, Dunai Larisa, Luis Taroncher Pellicer

IECON26-001579 **H-PAC Hand: Control-Oriented Modeling and Tendon-Elasticity Compensation for an Underactuated Robotic Hand**
Teng Yan, Jiongxu Chen, Teng Wang, Yue Yu, Zhengyang Pei, Qixiang Hua, Zihang Wang, Yongru Chen, Bingzhuo Zhong

IECON26-000979 **A High-Step-up Hybrid Cascaded SEPIC DC-DC Converter with a Switched-Inductor-Capacitor Cell for Renewable Energy Applications**
Hamed Abdi, Ebrahim Babaei

IECON26-000602 **Robust Power Flow Control of Quad-Active Bridge Converters Using Deep Reinforcement Learning**
Alamera Nouran Alquennah, Abdullah Berkay Bayindir, Sertac Bayhan, Ali Ghrayeb

IECON26-001587 **Public-only EV Charging Sufficiency for Monthly Driving Routines in Qatar**
Irfan Alp Gurkaynak, I Safak Bayram, Usman Zafar, Sertac Bayhan

17:30

17:30–19:00
Salwa 1

TC Smart Grid Meeting and Workshop
Chairs: Mohammad B. Shadmand · Naki Guler

18:30

18:30–21:30
Dafna

Welcome Reception

Day 3 - Tuesday October 20

08:00 — 28 parallel sessions

08:00–09:30
Online Room-01
ONLINE

Online-TT-061: Power Systems and Smart Grid

Chairs: Alaa Selim · Pratyush Chakraborty

IECON26-001777 **An Efficient Partial Power Converter for Battery Integration in Multilevel Modular Converter with Grid Frequency Ripple Rejection**
Neelesh Yadav, Niwton Gabriel Feliciani dos Santos, Andrii Chub

IECON26-000248 **A Multi-Expert System for Short-Term USEP Forecasting in a Non-Stationary Electricity Market**
Ye Mou, Kang Lai, Mingyu Zhang, Wei Hu

IECON26-001420 **Joint CLR ESR Dispatch of a Co-Located Data Center and Battery Storage System in Electric Reliability Council of Texas**
Viswamithra B, Pratyush Chakraborty

IECON26-000627 **Impact of PV Panel Blocking Diodes on DC-side Temporary Over-Voltages of Central Grid Following Inverters During Fault Recovery**
H R Sai Kiran Pandit, Sarasij Das

IECON26-000643 **Control of a Hybrid Distribution Transformer with a BESS for Circulating Active Power Flow Support**
Alvaro Carreno, Luis Ignacio Martinez Caballero, Jan Danisiewicz, Mariusz Malinowski, Marcelo Perez, Zhihong Zhao

IECON26-000091 **A Conditional Transformer-Based Model for Switching Transient Prediction of GaN HEMTs from Static Operating Conditions**
Qiang Zhou, Yuxuan Yang, Xiao Li, Marco Rivera, Patrick Wheeler

08:00–09:15
Online Room-02
ONLINE

Online-TT-062: Power Electronics Converters

Chairs: Zhilei Yao · Riccardo Ruffo

IECON26-000305 **A Comprehensive Experimental Loss Investigation of a HERIC DC/AC Converter based on GaN FETs**
Vedatroyee Ghosh, Riccardo Ruffo

IECON26-000321 **A Dual-Input Single-Output Enhanced DC-DC Converter with High Voltage Gain for Renewable Energy Systems**
Mohammadparham Sobhrast, Ebrahim Babaei, Mehran Sabahi

IECON26-000329 **Research on Individual-Phase Virtual Synchronous Generator Control Strategy for Cascaded H-Bridge Energy Storage Systems Under Unbalanced Grid**
Xiaoyun Zhang, Zhao Liu, Wei Lin

IECON26-000495 **A Novel Single-Stage Multiport Bidirectional AC-DC Converter with Shared Inverter Legs for Wind Turbine and Battery Energy Storage Integration**
Sayed Erfan Shahsavargar

IECON26-000513 **AC-DC Talkative Power Conversion in Fly-Gen Airborne Wind Energy Systems**
Yang Leng, Rongwu Zhu, Yanqi Hou, Weihao Hu, Peter Hoeher, Marco Liserre, Xiqiang Chang, Tianrui Dun, Degeng Zhou

08:00–09:30
Online Room-03
ONLINE

Online-TT-063: Electric Machines and Industrial Drives

Chairs: Mohammad Qasim Mohammad Alathamneh · Qingsong Wang

IECON26-000300 **Design and Control of a Novel 6-DoF Coreless Bearingless Motor**
Koichi Matsuda, Xueni Peng

IECON26-000302 **Experimental Validation and 6-DoF Motion Control of a Compact Maglev Linear Motor System**
Koichi Matsuda, Jie Luo, Dizhou Nie

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Day 3 - Tuesday October 20

08:00–09:30
Online Room-03
ONLINE
cont'd

Online-TT-063: Electric Machines and Industrial Drives · continued

IECON26-000407 **Simplified Dual-Vector Model Predictive Voltage Control for PMSM Drives with Unified Vector Selection and Analytical Duty Ratio Solution**
Shulin Wang, Shuo Zhang, Xueping Li, Ying Zhou, Yue Zhao, Chengning Zhang

IECON26-000423 **Model-Independent Position-Sensorless Vector Control of Parallel VSI Fed High-Power Induction Motor Drives Operated at Low Switching Frequency**
Ashish Kumar Panda, Sourav Ghimirey, Avanish Tripathi

IECON26-000376 **Effect of Terminal Voltage Variation on the Iron Losses of a High Speed Solid Rotor Induction Machine**
Shoaib Ahmed, Lassi Aarniovuori, Janne Nerg, Jouni Ikaheimo, Ondrej Vitek, Jan Barta

IECON26-000405 **A Practical Design Methodology for Cascaded PI Control of Electric Drives Under Saturation Constraints**
Harikrishnan S, Arun Rahul S

08:00–09:30
Online Room-04
ONLINE

Online-TT-064: Renewable Energy and Energy Storage Systems

Chairs: Chuanxin Fan · Elisa Irujo Izcue

IECON26-000457 **Analysis and Experimental Validation of Sodium-Ion Battery Nonlinear Effects on EKF-Based SOC Estimation**
Elisa Irujo, Alberto Berrueta, Pablo Sanchis, Alfredo Ursua

IECON26-000503 **Online State of Charge Estimation for Lithium Ion Batteries Using Extended Kalman Filter With MH within Gibbs**
Nannan Gu, Jianyu Bao, Chenhu Wu, Yubo Liang

IECON26-000508 **Complementarity-Weighted Multi-Objective Dispatching Optimization for Small Hydropower Groups with Wind and Solar Integration**
Xiong Lishan, Long Shuying, Zhao Jiayang, Li Yijun, Xia Yonghong

IECON26-000512 **Voltage-Strain Fusion for Lithium-ion cells State-of-Charge Estimation: Optimality, Fragility, and Mismatch Detection**
Jiayi Su, Luodan Liu, Zhimin Wei, Chunping Luo

IECON26-000569 **Multi-Timescale Degradation-Aware Hierarchical MARL for Hybrid Energy Storage Management in DC Microgrids**
Li Jin, Wei Jiang

IECON26-000590 **EnhancedMamba: Structured State Space Modeling for Battery SOH Estimation**
Kepei Miao, Rafita Haque, Minghui Cheng, Nezih Pala, Chunlei Wang

08:00–09:30
Online Room-05
ONLINE

Online-TT-065: Transportation Electrification and Automotive Technologies

Chairs: Pratyush Chakraborty · Nurettin Sezer

IECON26-001739 **Tri-Stream Physics-Informed Learning for Multi-Level Reliability Assessment of DC Fast-Charging Hardware for Electric Vehicle**
Saikat Das, Md Ebrahim Hossain, Arif Sarwat

IECON26-001632 **A Symmetric-Optimum Tuned Linear Extended State Observer for Active Disturbance Rejection Control of Dual-Active-Bridge Converters**
Uddhav Surve, Austin Allan, Srirama Srinivas

IECON26-000653 **Comparative Evaluation of Hybrid Storage Management Strategies in Electric Vehicles**
Islam Sayed, Yousef Mahmoud

IECON26-000780 **Rapid and Safe Trajectory Planning over Diverse Scenes through Diffusion Composition**
Wule Mao, Zhouheng Li, Yunhao Luo, Fangguo Zhao, Lei Xie

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Day 3 - Tuesday October 20

08:00–09:30
Online Room-05
ONLINE
cont'd

Online-TT-065: Transportation Electrification and Automotive Technologies · continued

IECON26-000800 **An Induction Generator Based Electric Power System with Low DC Bus Capacitance and Short-Circuit Fault Tolerance for Unmanned Aerial Vehicles**
Krishna Raj Ramachandran Potti, Rohith Pottekkat, Hao Huang, Kaushik Rajashekara

IECON26-001045 **A Cascaded CD-Euler Prediction Strategy for NMPC-Based Autonomous Vehicle Path Tracking**
Tung Mai-Trung, Shin Kawai, Triet Nguyen-Van

08:00–09:30
Online Room-06
ONLINE

Online-TT-066: Control Systems and Applications

Chairs: Shuo Wang · Peihua Han

IECON26-000556 **PSGN-Loc: Privacy-Preserving Localization via Secure Aggregation of Gauss Newton Statistics**
Haojun Lin, Shengming Chang, He Xu

IECON26-000391 **An Adaptive-Integrated LSTM-EKF Method for Online Battery Capacity and RUL Prediction**
Zijin Ling, Runze Mao, Peihua Han, Weiqian Xu, Ning Yuan, Houxiang Zhang

IECON26-000401 **Uncertainty-Aware Significant Wave Height Estimation from Ship Motion Using Gaussian Process Regression**
Jinyan Xu, Xinyu Guo, Runze Mao, Peihua Han, Guoyuan Li, Houxiang Zhang

IECON26-000429 **Quantized Online Learning for Uncertain System Control via Gaussian Processes**
Jie Mei, Xiaobing Dai, Zhijun Li, Nan Xie, Sandra Hirche

IECON26-000432 **Unified Small-Signal Model for Constant-Current LCC-P and LCC-SP Resonant IPT Systems**
Denys Ovsiyenko, Mohamed Saad, Eduard Alarcon

IECON26-001060 **Robust Control Architectures for Trajectory Tracking of Autonomous Skid-Steer UGVs**
Chhavi Singh, Bishakh Bhattacharya

08:00–09:30
Online Room-07
ONLINE

Online-TT-067: Mechatronics and Robotics

Chairs: Florian Kerber · Jingze Zhang

IECON26-000315 **Online Dual-Antenna Lever-Arm Identification for Spherical-Robot Localization under Antenna Mounting Changes**
Fengqi Zhang, Bixuan Zhang, Song Jin, Xiaoqing Guan, You Wang, Guang Li

IECON26-000338 **Task-Consistent vision guided robot control for industrial PCB Manipulation**
Florian Kerber, Vinayaka Bhat

IECON26-000349 **Exploratory Anatomically Informed sEMG Channel Relevance Mapping for Index Finger Flexion**
R.M. Maheshi Ruwanthika, K P D Frank Perera, Seiichiro Katsura

IECON26-000441 **Robust Disturbance-Observer-Based Position Control of Multi-Degree-of-Freedom Manipulator under Low-sampling-rate Conditions**
Eiji Nakayama, Yasutaka Fujimoto

IECON26-000469 **Reverse-Aware Curriculum for Reverse-Enabled Differential-Drive Navigation with Large Goal Sets**
Jingze Zhang, Yijia Zhu

IECON26-000565 **Data-Driven Closed-Loop Response Prediction for Model Predictive Local Planner of Spherical Robots**
Xiaoqing Guan, Tao Hu, Fengqi Zhang, Zhitao Liu, You Wang, Guang Li

Day 3 - Tuesday October 20

08:00–09:30
Online Room-08
ONLINE

Online-TT-068: AI Applications in Control, Mechatronics, and Robotics

Chairs: Mohammad Saleh · Chunya Tong

IECON26-000400 **Precise motion control of industrial manipulator via adaptive interval type2 fuzzy integral sliding mode**
Umair Javaid, Michael Basin, Zhihui He, Yuanjiang Liao

IECON26-000416 **A Collaborative Deep-Detection and Correlation-Filter Tracking System for Embedded Visual Servoing**
Shichang Huang, Di Cui, Chunya Tong, Jianzhi Chu, Guangsong Huang

IECON26-000424 **Active Noise Estimation based Fuzzy Particle Filter for Humanoid Robot Localization**
Zhiwei Zheng, Jiahong Xu, Qiubo Zhong, Bingzheng Tan

IECON26-000444 **Prediction-Aware Deep Reinforcement Learning-Based Navigation for Biped Robots in Dynamic Environments**
Wushan Jia, Yuhao Liu, Jinqian Tan, Yamin Wang, Xiaochen Xie

IECON26-000607 **A Bioinspired Homonomous Metamerism Module for Multi-Mode Soft-Rigid Hybrid Robots**
Pan Zhou, Haili Li, Lang Zhou, Zhaoyi Lin, Michael Basin, Jiantao Yao

IECON26-000241 **A Real-Time RGB Dual-Camera Surveillance System for Long-Range Drone Detection and Bearing Estimation**
Kangnan Wang, Yu Hu, Hao Liu, Sergii Baidachnyi, Yihe Wang, Zheng Liu

08:00–09:30
Online Room-09
ONLINE

Online-TT-069: Instrumentation, Sensors, Actuators, and Micro-Nano Technology

Chairs: Mansour Bouzidi · Ning Yang

IECON26-000303 **A Novel Deep Learning Framework Combining Multiple CNN-LSTM for Human Activity Recognition based on Wearable Sensors**
Ning Yang, Chaoze Lu

IECON26-000352 **UA-PC-GNN: Uncertainty-Aware Physics-Constrained Graph Neural Network for Dynamic Industrial Spectral Calibration**
Heyu Xu, Peihong Cheng, Hongwei Ying

IECON26-001375 **Beyond Cellular Coverage: Satellite IoT for Deploy-and-Forget Water Tank Level and Rainfall Monitoring in Remote Agriculture**
Sami Ullah Saqib

IECON26-000535 **Set-Membership Global Estimation for Complex Sensor Networks: A Point-Set-based Approach**
Chongqing Wang, Yilian Zhang, Xianwen Zhou, Dan Zhang

IECON26-000006 **An Entropy-Based Privacy-Preserving Approach for Distributed Acoustic Sensing via Spectral-Spatial Feature Disentanglement**
Lincan Li, Shengming Chang

IECON26-000389 **Joint Node Privacy Preservation in Range-Based Localization via CRT-Based Aggregation and Paillier Encryption**
Hongyi Zhou, Shengming Chang

08:00–09:30
Online Room-10
ONLINE

Online-TT-070: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Hasan Kurban · Katherine Davis

IECON26-000286 **Topology and Multipath Routing Co-Design for Reliability Enhancement Based on IEEE 802.1CB**
Chenxiang Yuan, Cailian Chen, Yanzhou Zhang, Yuchao Chen, Peizhe Li, Xinping Guan

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Day 3 - Tuesday October 20

08:00–09:30
Online Room-10
ONLINE
cont'd

Online-TT-070: Cyber-Physical Systems and Internet of Things in Industry · continued

IECON26-001084 **SDN-based Communication Reconfiguration for Distributed Control in Multi-Microgrids with Link Establishment Optimization**
Jingyu Hu, Yong Chen

IECON26-000595 **A Novel Temporal GNN-Based Intrusion Detection with Attention-Guided Attack-Path Analysis**
Mohamed Massaoudi, Maymouna Ez Eddin, Shady Khalil, Katherine Davis

IECON26-001177 **Privacy-Preserving Collaborative Localization with Decentralized Dynamic Multi-Client Functional Encryption and a Vector Compression Funnel**
Xizhi Yang, Dongdong Lv, Shengming Chang

IECON26-000173 **LVPP-Loc: Lightweight and Verifiable Privacy-Preserving Localization with Homomorphic Encryption and GDOP-Based Node Selection**
Xiang Le, Junjie Yin, Bing Chu, Ji Li, Zhaohong Fan, Shengming Chang

IECON26-001407 **Impedance Based Precise Characterization of a High-Voltage High-Frequency Transformer**
Muhammad Saqib Ali, Syed Majid Nizami

08:00–09:30
Online Room-11
ONLINE

Online-TT-071: Signal & Image Processing Methodologies

Chairs: Gautam Srivastava · Katsumi Konishi

IECON26-000190 **Bayesian Fusion for Heterogeneous Mixed Dimensional Sensing with Support Governance**
Charbel Karkafi, Rodin Karkafi, Ricardo Karkafi, Fadi Karkafi

IECON26-000202 **A Hybrid ALS-SVT Algorithm with Blockwise Nuclear-Norm Regularization for Low-Rank Matrix Completion**
Katsumi Konishi, Ryohei Sasaki

IECON26-000213 **MLB-YOLO: A Lightweight and Efficient Small Object Detection Algorithm for UAV Imagery**
Chengkun Xiong, Zihao Wang, Zhi Zhang, Xiaobing Shang

IECON26-000278 **CDDPM-MUNet: Class-Conditioned Diffusion Denoising for Medical Image Enhancement**
Barisha Chowdhury, Madan Mohan Saha Momit

IECON26-000340 **Parallel Tendency Network for Capturing Action Tempo**
Zijun Chen, Lonyan Wang, Jing Yang, Guanao Zhao, Zhixue Yang, Yuehai Chen, Kun Zhang

IECON26-000358 **Normal-Only Structured Scoring for Hard-Category Reliability in Frozen-Backbone Industrial Visual Anomaly Detection**
Li-Ming Zhan, Kaiying Wang

08:00–09:30
Online Room-12
ONLINE

Online-TT-072: Industrial Informatics, Cloud Computing, Big Data

Chairs: Mustafa Kurban · Andreas Muller

IECON26-000382 **Fraud Detection in Blockchain Networks with Data Stream Learning Algorithms**
Camila Marques, Fabricio Enembreck, Edson Scalabrin

IECON26-000425 **SHIELD-RAG: A Three-Layer LLM Firewall for Secure Retrieval-Augmented Generation**
Martin Esugo, Oluwatobi Alao, Haitham Mahmoud

IECON26-000430 **Instrumenting Complex AI Systems in Requirements Engineering for User-specific Explanations**
Andreas Muller, Jonas Recker, Alexander Keuper, Gunther Schuh, Christoph Legat

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Day 3 - Tuesday October 20

08:00–09:30
Online Room-12
ONLINE
cont'd

Online-TT-072: Industrial Informatics, Cloud Computing, Big Data · continued

IECON26-000456 **Industrial-Grade Task Offloading for UAV-Assisted Mobile Edge Computing via the Integration of Reinforcement Learning and Game Theory**
Chaoze Lu, Roujing Wu, Yinan Sun

IECON26-000518 **Temporal Memory Cross-Attention Network for Carbon Flux Estimation from Multivariate Sensor Streams**
Gaoshan Bi, Xulong Wang, Zhipeng Yuan, Menghui Zhou, Qing Xue, Po Yang

IECON26-000529 **IncodeSense: AI-Powered Monitoring and Optimisation for Resource-Efficient SME Manufacturing**
Md Mahmudul Hasan, Mohsin Ali, Ammar Al-Bazi, Mumtahina Ahmed, Nazia Hameed

08:00–09:30
Online Room-13
ONLINE

Online-TT-073: Communications for Industrial and Factory Automation

Chairs: Muhammad Farooq Umar · Minsoo Gu

IECON26-001173 **A Lightweight and Privacy-Preserving Multilateration Algorithm for Crowdsourced Localization**
Sunkang Lin, Shengming Chang, Davy Tsz Kit Ng, Tuozhong Yao, Na Yang, Artur Madal

IECON26-001346 **Bayesian-Based Multi-Agent Deep Reinforcement Learning Algorithm for Satellite Communication Resource Scheduling**
Wenjing Wu, Peng Song, Junzheng Wang, Dawei Shi

IECON26-001365 **When to Aggregate Cyclic Control Traffic on MCU-Based 10BASE-T1S Networks**
Minsoo Gu, Sung Bhin Oh, Seok Dong Min, Min Young Chung, Youngsoo Do, Jae Jeon

IECON26-001366 **Load-Triggered TAS Window Switching for Automotive Ethernet**
Sang Hun Shin, Youngsoo Do, Sung Bhin Oh, Chan Gyu Park, Jae Hun Kang, Jae Jeon

IECON26-001734 **From Uniform Thresholds to Service-Aware Link Admission in UAV Missions: A Reproducible MATLAB Study**
Ana Teixeira, Alessandra Vaz, Felipe Mamed, Marlon M. Lopez-Flores, Paulo Fernando Ferreira Rosa

IECON26-001800 **Performance Assessment of Multi-Broker Architectures for Prioritized MQTT**
Luca Leonardi, Lucia Lo Bello, Gaetano Patti, Alessio Pirri

08:00–09:30
Online Room-14
ONLINE

Online-TT-074: Electronic Systems on Chip and Embedded Systems

Chairs: Jie Sheng · HyeonJin Sim

IECON26-000214 **Context Save and Restore of Partial Reconfiguration Regions for MultiSLR AMD-Xilinx FPGAs**
Matthias Kalbitz, Marcel Eckert, Bernd Klauer

IECON26-001289 **An Evidence-Based Design-Stage Framework for Electromagnetic Susceptibility Risk Prioritisation in Embedded Electronic Systems**
Geon George Bastian, Mireya Fernandez-Chimeno, Ferran Silva

IECON26-001291 **CogniPristine - A Context-Aware Large Language Model for Static Checks in Automotive Embedded Software**
Neelam Singh, Soumya Asati

IECON26-001352 **Logical Placement for Multi-Stream Acoustic Anomaly Detection under CIM Array Constraints**
Tong Zhang, Weiping Pan, Jingdi Liu, Shuqiong Zhu, Xiaotao Li, Yawen Niu

IECON26-001044 **A Descriptor-Driven FPGA Accelerator for Lightweight Semantic Segmentation with a Lifetime-Aware Memory Overlay**
Seung Wook Oh, Hobin Oh, Min Kwon Choi, Hyeonjin Sim, Seung Woo Park, Jae Jeon

IECON26-000939 **Hardware-Friendly Redesign of TwinLiteNet for On-Device Driving-Scene Segmentation**
Hyeonjin Sim, Min Kwon Choi, Seung Wook Oh, Hobin Oh, Young Hoon Suh, Jae Jeon

Day 3 - Tuesday October 20

08:00–09:30
Online Room-15
ONLINE

Online-TT-075: Power Systems and Smart Grid

Chairs: Abdelbasset Krama · Lasse Peltonen

IECON26-000964 **Data-Driven Voltage Constraints for Aggregator Dispatch Under Partial Visibility: A Quantile Regression Approach**
Yacine Merrad, Seifeddine Ben Elghali, Mokhtaria Mesri

IECON26-000966 **A Digital DC Energy Packet Transmission System**
Jiang Feng, Xibo Yuan, Quanrui Liu, Ruijie Zhu, Yonglei Zhang, Kai Wang

IECON26-000992 **Electrical Distance-Based Node Ranking for Scalable Transmission Stability Studies**
Jordi Edo Puig, Jonathan Aviles Cedeno, Jose Luis Rueda

IECON26-000995 **Time-Dependent WECC Composite Load Model Parameterization: A Dutch Power System Case Study**
Jordi Edo Puig, Jonathan Aviles Cedeno, Jose Luis Rueda, Jorrit Bos

IECON26-001085 **Early Transient Stability Assessment Using Internal Measurements from a Grid-Forming Converter**
Yazan Barbar, Surour Alaraifi, Emadeldeen Eldele

IECON26-000445 **Performance Assessment of Frequency Estimation Algorithms for Fast Frequency Based Ancillary Services**
Lasse Peltonen, Tuomas Rauhala, Pertti Jarventausta, Sami Repo, Pekka Koponen

08:00–09:15
Online Room-16
ONLINE

Online-TT-076: Power Electronics Converters

Chairs: Harish Sudhakaran Nair · Alireza Bakhshai

IECON26-000879 **An Active Federated Learning Method for Cross-Modulation-Resistant Fault Classification**
Binglei Guan, Jiechen Sun, Funa Zhou, Tianzhen Wang

IECON26-000923 **A Generalized Modulation Strategy for Capacitor Voltage Balancing in NPC-Based Dual Active Bridge Converters**
Seyed Hamidreza Mousavi Tabar, Javad Ebrahimi, Alireza Bakhshai

IECON26-000927 **Online Harmonic Control for Half-Wave Symmetric Harmonic Programmed Pulsewidth Modulation**
Inigo Pascual, Javier Samanes, Jesus Lopez, Eugenio Gubia

IECON26-001822 **A Supervisory Zonal Volt/VAR Control for Distribution Networks with Limited Coordination**
Muhammad Usman

IECON26-000962 **Common-Grounded Active Switched-Inductor High Step-up Converter with Equalized Inductor Currents**
Motiur Reza Mohammed, Jamal Al Sawalhi, Balanthi Beig

08:00–09:30
PR1 Office
ONLINE

Online-TT-077: Renewable Energy and Energy Storage Systems

Chairs: Muhammad Usman Sajid · Cedric Wagner

IECON26-001850 **An Enhanced AI-Based Framework for Dynamic Anomaly Detection and Automated Cleaning Control in Real-World PV Systems**
Basma Mohsen, Sherine M. Abd El-Kader, Anar A. Hady, Amr Al-Awamry

IECON26-001166 **Frequency-Deviation Based Adaptive Virtual Impedance for Fault Current Limitation in Grid-Forming Inverters Under Grid Disturbances**
Uchenna Chibuzor Ngwu, Chiagozie Emmanuel Anekwe, Chisom Benedicta Nwabuisi, Hendel Huanca Choque, Jose Luis Azcue

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Day 3 - Tuesday October 20

08:00–09:30
PR1 Office
ONLINE
cont'd

Online-TT-077: Renewable Energy and Energy Storage Systems · continued

IECON26-001335 **Versioning Concept for Wireless Sensor-integrating Gears as Evolving Updateable Embedded Systems**
Cedric Wagner, Lukas Frei, Dominik Hujo, Robert Fromm, Erich Knoll, Michael Otto, Karsten Stahl, Faouzi Derbel, Birgit Vogel-Heuser

IECON26-001192 **Robust Sliding Mode Battery Charging Control of Bidirectional Interleaved DC-DC Converter Based EV Charging Stations**
Ahmed Elsanabary, Mokhtar Aly, Abdul Junejo, Mahmoud Hamouda, Mohamed Abido, Samir Kouro, Jose Rodriguez

IECON26-001474 **Dynamic Aware AI-Assisted Estimation of Effective Inertia and Damping in Modern Power System**
Hamideh Alvand, Alireza Zare, Mohammad Shadmand

IECON26-001601 **Sliding Mode Current Controller for Permanent Magnet Synchronous Motor Emulator**
Dong Xu, Marco Rivera, Patrick Wheeler, Ma Runlin, Yupeng Liu

08:00–09:15
Ginan
ONLINE

Online-TT-078: Power Systems and Smart Grid

Chairs: Ali Sharida · Mohamed Gamal

IECON26-000117 **A Hierarchical NMPC Framework for Unit Commitment and Real-Time Frequency--Voltage Regulation in Islanded Industrial Microgrids**
Nidhal Aouididi, Dai Jing, Pankovits Petronela, Vlad Cristina, Petit Marc

IECON26-001429 **TREDD: Robust Trend-Based Reference Evaluation for Interpretable Degradation Detection**
Elisabeth Vogel, Ronny Porsch, Peter Langendorfer

IECON26-000741 **A Stochastic Mean-CVaR Framework for BESS Multi-Market Bidding Strategies.**
Younes Zahraoui, Jun Cao, Samir Kouro, Pedro Rodriguez Cortes

IECON26-001776 **Scalable Extreme-Weather Power System Scenario Generation based on Large Language Models**
Yifan Zhu, Xiyuan Zhou, Huan Zhao, Yuheng Cheng

IECON26-000959 **A Unified Multimodal Framework Towards Semantic and Spatial Understanding on Packaging Surface Defects**
Bingyang Guo, Abdulhamid Ibrahim, Ruiyun Yu

08:00–09:15
Room - PR3

Onsite-SS-28: Design, Control and Fault Detection of Power Converters for Energy Storage and EV Charging Systems

Chairs: Hadi Kanaan · Adam Adib

IECON26-001590 **An Air-Gapped Neuro-Symbolic Framework for Autonomous Root Cause Analysis in Commercial Chillers**
Tanishq Singh Sisodiya, Sai Prashanth Mallellu, Rajanikanth Aluvalu

IECON26-000131 **SALT-ASC: An Authenticated Stateful Channel for Secure Data Exchange in Industrial Control Systems**
Marko Slunjski

IECON26-000356 **A Novel Control Algorithm For DAB-Based Wireless Power Transfer Systems Under Non-Resonant Operation**
Afaf Dagher, Jean Sawma, Hadi Kanaan

IECON26-000588 **LLM-PPO Framework for Runtime-Adjustable BESS Dispatch in Grid-Connected Microgrids**
Adam Adib, Di Wu, Lyne Woodward, Arezki Merkhouf, Kamal Al-Haddad

IECON26-001465 **Reliability-Oriented Phase-Count Selection and Preliminary Validation of an Interleaved Boost Converter for Harsh-Climate Portable Power Stations**
Mubarak Alboainain, Laial Harfouch, Morcos Metry

Day 3 - Tuesday October 20

08:00–09:30
Mitras

Onsite-TT-051: Power Systems and Smart Grid

Chairs: Abdullah Baraean · Mohamed Orabi

IECON26-001201 **EMBGO-Tuned PID Controllers for Load Frequency Control Under Dynamic Loading and Cyber Attack Induced Packet Loss**
Subhajit Roy, Dulal Chandra Das, Nidul Sinha, Mohammad Tayyab, Syed Amrr, Suhail Hussain

IECON26-001225 **Impact of K-factor-Based Current Injection Control on Critical Clearing Time Under Various Renewable Resource Penetration Levels**
Omid Abdoli, Selma Khalid Elhaj Awadallah

IECON26-001234 **Hierarchical Consensus-Based Algorithm for Large Scale Economic Power Dispatch in Smart Grids**
Mounira Hamdi, Lhassane Idoumghar

IECON26-000067 **DNN-Assisted Adaptive Backstepping Terminal Sliding Mode Control for DC Microgrid Voltage Regulation**
Waleed Hamanah, Abdullah Baraean

IECON26-001136 **A Heterogeneous Wireless Fabric for Resilient, Infrastructure-Independent Communication in Smart Cities**
Abdul Muhaimin Dad Khan, Tariq Khattab, Azzam Abu Rayash

IECON26-001243 **Temporally Validated User-Level Clustering of Public AC Charging Behaviour: Multi-Year Evidence from a UK Network**
I Safak Bayram, Ali Saad, Sertac Bayhan

08:00–09:30
Haloul

Onsite-TT-052: Power Electronics Converters

Chairs: Ahmad Darwish · Salman Ijaz

IECON26-000156 **Deep Reinforcement Learning-Based EMS Using Deep Deterministic Policy Gradient for Offshore Hybrid Marine Docking Platform**
Youcef Belkhier, Hao Chen, Gang Yao, Abdeslam Mamoune, Mohamed Benbouzid

IECON26-001193 **GaN HEMT power module thermal model with thermal couplings taken into account**
Pawel Gorecki

IECON26-001314 **Influence of passive components properties on overcurrents and overvoltages in SEPIC converter**
Krzysztof Gorecki, Kalina Detka

IECON26-000690 **Risk-Aware and Stress-Conditioned Evaluation of Photovoltaic Power Forecasting Models for Grid Deployment**
Prince Aduama, Ruosi Kong, Ameena Al-Sumaiti, Khalifa Al-Hosani

IECON26-001614 **A Single-Source Six-Level Boost Inverter: Topology, and Performance Evaluation**
Md Reyaz Hussan, Md Shafiullah, Marif Daula Siddique, Muhammad Ahmad

IECON26-000961 **Physics-Guided Stable Degradation Representation for Cross-Condition Capacitance and ESR Estimation in MMC Submodules**
Guoqing Zhang, Yang Liu

08:00–09:00
Room - PR4

Onsite-TT-053: Electric Machines and Industrial Drives

Chairs: Ayman Abdel-Khalek · Sevki Demirbas

IECON26-001785 **Comparative Analysis of Stator Flux Ripple in Five Phase Induction Motor Drives Using Conventional Space Vector PWM and Bus Clamping PWM**
Rajeevan P P, Jyothi Krishna K V

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Day 3 - Tuesday October 20

08:00–09:00
Room - PR4
cont'd

Onsite-TT-053: Electric Machines and Industrial Drives · continued

IECON26-001296 **A Compact Hardware-Aware Neural Network for Robust Inverter Fault Diagnosis in PMSM Drives**
Jiaqin Sun, Liangshuo Liu, Jim Greer, Giampaolo Buticchi

IECON26-001079 **Resilience Assessment of Long-term Performance Degradation and Failure Mechanisms of Grid-Connected PV Systems in Desert Climates**
Amir Abdallah, Mohammad Altamimi, Mohamed Elgaili, Mohamed Abdelrahim, Maulid Kivambe

IECON26-001886 **Weibull-Constrained PINN for XLPE Power Cable Aging Prediction**
Alamera Nouran Alquennah, Mohammad AlShaikh Saleh, Shady S. Refaat, Marek Olesz, Ali Ghrayeb, Jarolaw Guzinski

08:00–09:30
Room - PR5

Onsite-TT-054: Renewable Energy and Energy Storage Systems

Chairs: Hassan Ali · Md Shafiullah

IECON26-000410 **Machine-Learning-Assisted Screening of MgAlH3 Perovskite Nanoparticles for Hydrogen Storage in Future Energy Systems**
Mustafa Kurban, Erchin Serpedin, Hasan Kurban

IECON26-001720 **Impact of Residential Photovoltaic Self-Consumption and Energy-Sharing Strategies on Distribution Transformer Aging**
Pedro Pereira, Joao Martins, Margarida Pereira

IECON26-001880 **A Review of Low-Voltage Ride-Through Strategies in Grid-Connected PV Inverters**
Abdelbasset Krama, Abdellatif Hussine

IECON26-001280 **Spectral Observability-Based Optimal PMU Placement for Sub-Synchronous Oscillation Detection in Renewable-Dominated Power Systems**
Abdelaziz Abuelrub, Muhammad F. Umar, Sertac Bayhan, Ali Ghrayeb

IECON26-001891 **Coolant Admissibility and Cell Arrangement for Immersion-Cooled Battery Thermal Management**
Anas Karaki, Abdul Wadood Fathah, Sertac Bayhan

IECON26-001698 **Integrated Electrical and Financial Modelling of Residential Photovoltaic Systems: A Case Study for Qatar**
Fatima Hassan, Khaled Abedrabboh, Luluwah Al-Fagih

08:00–09:30
Room - PR6

Onsite-TT-055: Control Systems and Applications

Chairs: Salmiah Ahmad · Nurettin Sezer

IECON26-000026 **Co-Simulation and Validation Framework for Deep Reinforcement Learning Enabled Grid-Interactive Efficient Buildings**
Aya Amer, Sertac Bayhan, Haitham Abu-Rub, Mehrdad Ehsani

IECON26-000647 **Risk-Informed Autonomous Overtaking in Mixed Traffic: Integrating Graph-Based Risk Assessment into Reinforcement Learning**
Ahmed Riahi, Adam Hamadi, Joachim Grimstad, Andrey Morozov, Nader Meskin

IECON26-000027 **Tracking-Error-Bounded Nonlinear Control for Overhead Cranes Involving Load Lowering**
Shengzeng Zhang, Xinggao Liu, Michael Basin, Zhu Haiyue, Chentao Han, Xiongxiong He

IECON26-000411 **Modeling and Control of VTOL Mode of a Fixed-Wing Hybrid UAV: Offline RL-Based PID**
Mahieddine Ayad, Nadia Ait-Ahmed, Mouhanned Brahim, Mourad Ait-Ahmed, Nicolas Bernard

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Day 3 - Tuesday October 20

08:00–09:30
Room - PR6
cont'd

Onsite-TT-055: Control Systems and Applications · continued

IECON26-001299 **Robust Recurrent Takagi-Sugeno Fuzzy Parallel Distributed Compensation with Lyapunov-Based Adaptive Identification for Electric-Vehicle Speed Control**
A. Aziz Khater, Abdelhadi Aouaichia, Abderraouf Maoudj, Yi Chen

IECON26-001061 **Experimental Evaluation of Stereo Vision Reconstruction Error in Crane Digital Twins**
Juliana Dos Santos, Murilo Bicho, Tony Froes, Gabriel Dorneles, Richard Assis, Pedro Edom, Silvia Botelho, Eder Mateus Goncalves, Marcelo Pias

08:00–09:30
Room - PR7

Onsite-TT-056: Industrial Informatics, Cloud Computing, Big Data

Chairs: Abdullah Kouzou · Ahmed Hefaifa

IECON26-000238 **ARID: A Deployable Edge AI System for Structured Information Extraction from Industrial Maintenance Work Orders**
Kuanlin Chen, Chen-Wei Kuo

IECON26-000242 **Global Ranks Survive, Selected Heads Shift: BOS-Sink Topology under 4-bit Weight-Only Quantization**
Kuanlin Chen, Chen-Wei Kuo, Cheng-En Ou

IECON26-000563 **On the Use of Digital Twin as a Testbed for LLM Agents in Industrial Automation**
Francesco Biondani, Sebastiano Gaiardelli, Luigi Capogrosso, Franco Fummi

IECON26-000744 **RLG-MoR: MicroKG-Guided Recursive Reasoning for Industrial Control Logic Tracing**
Xu Guo, Runjie Shen, Jianfei Zhu, Ke Shi

IECON26-001098 **Physics-Guided Digital Twin for Power-Based Anomaly Detection in Industrial Robots**
Muhammad Uddin, Jorg Walter, Michele Lora, Davide Cannizzaro, Davide Maria Gatta, Franco Fummi

IECON26-001190 **Evidence-Aware Engineering Document Extraction for AAS-Ready Process Automation Data**
Bowen Chen, Benedikt Schmetz, Torben Miny, Tobias Kleinert, Birgit Vogel-Heuser

08:00–09:30
Room - PR8

Onsite-TT-057: Electronic Systems on Chip and Embedded Systems

Chairs: Alin Tisan · Mohammed Shafi

IECON26-000075 **A Modular Smart E-Waste Kiosk for Automated Collection and Sorting**
Aya Nabil Sayed, Tala Jano, Md Mosarrof Hossen, Ridha Hamila, Faycal Bensaali, Farid Touati, Iraklis Varlamis

IECON26-000379 **Quantized TinyYOLOv3 Deployment on Low- Resource FPGA Platforms Using FINN**
Antonio Ventoso Dean, Alexis Menendez Vazquez, Carlos Castellano Jacob, Andrea Quintans Fernandez, Roberto Fernandez-Molanes, Carlos Gonzalez Val, Juan J. Rodriguez-Andina, Jose Farina Rodriguez, Mhd Rashed Al Koutayni

IECON26-000705 **Fully Automated Hardware-in-the-Loop Validation of a Buck Converter Controller**
Nader El Zarif, Mostafa Amer, Yvon Savaria, Ahmad Hassan

IECON26-000847 **Online Time-Step Adaptation for FPGA-Based HIL Simulation of Power Converters with Variable Switching Frequency**
Iraitz Carretero Caballo, Lander Lejarza

IECON26-001133 **Hardware-Resident IEC-104 Intrusion Detection: FPGA Feasibility Under Realistic Prevalence and Domain Shift**
Heinrihs Skrodelis, Andrejs Romanovs

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Day 3 - Tuesday October 20

08:00–09:30
Room - PR8
cont'd

Onsite-TT-057: Electronic Systems on Chip and Embedded Systems · continued

IECON26-001416 **Bearing Fault Diagnosis Using Mel-Spectrograms and Transfer Learning with Vision Backbones**
Claudia Asare, Kwabena Kwarteng

08:00–09:30
Salwa 2

Onsite-TT-058: Post Journal Session

Chairs: Irfan Khan · Hatem Zein El Din

IECON26-PJ031 **Ethernet POWERLINK for Reconfigurable Robotics: Teaching an Old Fieldbus New Tricks**
Alexey M. Romanov

IECON26-PJ046 **Integration of Grid-Forming and Grid-Following Characteristics for Grid-Connected Inverters**
Yihao Zhu, Hongda Cai, Yanghong Xia, Wei Wei, Yongzhi Zhou

IECON26-PJ020 **A New Five-Phase Inverter Topology With Reduced Common-Mode Voltage**
Kotb B. Tawfiq, Hatem Zeineldin, Ahmed Al-Durra, And Ehab F. El-Saadany

IECON26-PJ043 **Finite-Time Prescribed Performance Fault-Tolerant Attitude Control for Rocket Substage Recovery by Parafoil**
Xiaojun Xing, Wenxin Yang, Linfeng Qin, Bing Xiao, Feisheng Yang

IECON26-PJ047 **High-throughput uniform scanning of stick-slip actuators with optimal smooth trajectory**
Xiangyuan Wang, Lingwen Tan, Qi Yu, Hao Wu, Yixuan Meng, Linlin Li, Hu Huang, Limin Zhu

IECON26-PJ023 **A New SVPWM for a Hybrid-Level Three- Phase Inverter for Common Mode Voltage Mitigation**
Kotb B. Tawfiq, Hatem Zeineldin, Ahmed Al-Durra, And Ehab F. El-Saadany

08:00–09:30
Salwa 1

Onsite-TT-060: Power Electronics Converters

Chairs: Yushan Liu · Shafi Khadem

IECON26-000381 **A Comprehensive Review of Inverter and Rectifier Topologies for Inductive Wireless Power Transfer Systems**
Md Ashraf Ali Khan, Bhaskar Kafle, Sheldon Williamson

IECON26-000896 **Comparative Investigation of Coil Structures and Compensation Topologies for Efficient and Misalignment-Tolerant Wireless EV Charging**
Md Ashraf Ali Khan, Sanjida Moury, Sheldon Williamson

IECON26-000205 **State of Charge and State of Energy Estimation in Renewable Microgrids using Graphical Neural Network Approach**
Kundan Kumar, Vikram Kumar Saxena, Benjamin A Shimray, Vivek Bhatt, Sanjeet Kumar Dwivedi

IECON26-000990 **A New High Step-Up DC-DC Converter Based on Voltage-Boost Cells and a Z-Network Cell**
Vida Ranjbarizad, Shahriar Haji, Ebrahim Babaei, Deniz Zargariafshar

IECON26-001134 **Synthetic Inertia and Fast Frequency Support from Variable-Speed Wind Turbines: A Review of Control Methods, the Energy-Recovery Trade-off, and Open Challenges**
Mohamad Hamoud, Lazhar Ben-Brahim, S M Muyeen

IECON26-001611 **Refining the Boost Converter Topology While Preserving Key Performance Characteristics**
Reza Sharifi Shahrivar, Hossein Gholizadeh, Lazhar Ben-Brahim

Day 3 - Tuesday October 20

09:15

09:15–10:40 | Salwa 2

Opening Remarks & SYP Joint Keynote

Chairs: Dr. Chathurika Brahmana · Prof. Antonio Luque

Welcome speech - Dr. Chathurika Brahmana and Prof. Antonio Luque

Part 1: "Engineering Resilient Smart Grids and Smart Careers: AI, Cybersecurity, and the IES Journey"
Prof. Mohammad B. Shadmand

Part 2: "On the Transition from Conventional Power Systems to Intelligent Power Systems: Stability Challenges, Innovation Prospects, and Career Opportunities"
Dr. Muhammad Farooq Umar

09:30 — 2 parallel sessions

09:30–10:30 | Salwa 1

Panel 2

09:30–10:30 | Salwa 3

Chapters Meeting

Chair: Hani Vahedi

09:45

09:45–10:45 | Dafna

Panel 1

10:00

10:00–17:00 | Dafna - Foyer

Exhibition for Sponsors

10:30

10:30–11:00 | Dafna - Foyer

Coffee Break

11:00 — 3 parallel sessions

11:00–12:30 | Dafna

Keynote

Prof. Huijun Gao
Intelligent Robotic System for Organoid Regeneration

Prof. Biplab Sikdar
AI-Driven Cyber Defense for Next-Generation Power Grids

11:00–12:00 | Salwa 2

SYP Forum Panel

Chairs: Dr. Chathurika Brahmana · Prof. Antonio Luque

"Beyond Graduation: Navigating Careers in Academia and Industry"

- *Prof. Antonio Luque, Associate Professor, University of Seville, Spain*
- *Dr. Saeed Arafat, Technical Team Lead - Parking Sensors, Robert Bosch GmbH, Germany*
- *Ms. Regina Roos, Typhoon HIL GmbH, Switzerland*
- *Mr. Aziz Ben Kbaier, TrendLabs, Tunisia*

Photos and Networking with the Panel
Group photo and networking

11:00–12:30 | Salwa 3

Chapters Meeting

Chair: Hani Vahedi

Day 3 - Tuesday October 20

12:30

12:30–14:00 | Dafna - Foyer

Lunch Break

13:30

13:30–15:00 | Salwa 2

SYPA Video Session

IES YP SYPA Committee: Mr. Uzair Asif, Dr. Chathurika Brahmana, Dr. Joao Carvalho Neto, and Dr. Edivan Carvalho

Screening of the top winners' videos

14:00 — 3 parallel sessions

14:00–15:30 | Dafna

Keynote

Prof. Francisco Gonzalez-Longatt
Protection in the Era of Power Converter-Dominated Systems

Prof. Samir Kouro
Partial Power Conversion: Enabling More Efficient Energy Transition Technologies

14:00–15:30 | Salwa 3

Chapters Meeting

Chair: Hani Vahedi

14:00–16:00 | Salwa 1

IEEE IES PDC Meeting

PDC Meeting

15:30 — 2 parallel sessions

15:30–16:00 | Dafna - Foyer

Coffee Break

15:30–17:00 | Salwa 2

IES SYP Opportunities & Honorary Keynote Speakers

Chairs: Dr. Chathurika Brahmana · Prof. Antonio Luque

IES SYP Opportunities

- *IES YPC Activities - Dr. Chathurika Brahmana, IES YP Chair*
- *IES SAC Activities - Mr. Aziz Ben Kbaier, IES SAC Co-Chair*
- *IES Hubs and Nodes - Prof. Milos Manic, IES Past President*
- *IES GenAI Hackathon - Prof. Daswin De Silva, TC Chair - Responsible AI*
- *IES SYP Congress - Prof. Leandro Becker and Mr. Aziz Ben Kbaier*

Honorary Keynote Speakers

"Peer-Review Process for IEEE IES Transactions Journals"
Prof. Juan Rodriguez-Andina, IES President

"IES Overview, MAs, and Opportunities for the IES Community"
Prof. Ya-Jun Pan, IES VP-MA

Certificate Ceremony, Networking, and Closing Activities

- *Group photos*
- *Certificate ceremony*
- *Mandatory survey*
- *Networking: meet IES leaders and committee members*

16:00 — 27 parallel sessions

16:00–17:30 | Salwa 3

Chapters Meeting

Chair: Hani Vahedi

Day 3 - Tuesday October 20

16:00–17:30
Online Room-01
ONLINE

Online-SS-34: AI-driven Optimization Control Approaches in Renewable Energy Systems

Chairs: Yanmin Wang · Chao Qi

IECON26-001702 **Data-driven State-of-Charge-Conditioned Residual Tightening for Voltage-Constrained Battery Current Scheduling**
Hasin Abrar Biswas, A.s.m. Bakibillah

IECON26-000160 **A Generative AI-Augmented Physics-Informed Framework for Intelligent Microgrid Energy Management**
Elluru Ritesh Goud, Devanathan Balakrishnan, Selvaraj Palanisamy

IECON26-001029 **Online Learning-Based Adaptive Hybrid Benders Decomposition for Risk-Averse Optimal Sizing**
Saif Ahmad, Seifeddine Ben Elghali, Hafiz Ahmed

IECON26-001404 **Safety-Aware Reinforcement Learning for Network-Constrained Energy Storage Dispatch**
Chengfang Hu, Yunqi Wang, Xinghuo Yu, Lasantha Meegahapola

IECON26-000267 **Experimental evaluation of Grid-connected B4 Photovoltaic Inverters through Frequency Response Measurements**
Enric Toran, Marian Liberos, Ivan Patrao, Raul Gonzalez-Medina, Gabriel Garcera, Emilio Figueres

IECON26-001530 **Mind Before Motion: Bounded Verification and Counterexample-Guided Repair for Constrained Industrial Robotic Manipulation**
Teng Yan, Yu Yue, Teng Wang, Yihan Liu, Shuai Liu, Bingzhuo Zhong

16:00–17:45
Online Room-02
ONLINE

Online-TT-082: Power Electronics Converters

Chairs: Zhilei Yao · Shafi Khadem

IECON26-000515 **PSK-PWM Carrier-Based AC-DC Talkative Power Conversion for Airborne Wind Energy System**
Yanqi Hou, Yang Leng, Rongwu Zhu, Weihao Hu, Yuan Feng, Xiqiang Chang, Tianrui Dun, Degeng Zhou

IECON26-000561 **A Novel Integrated Phase Shift Modulation for CLLC Resonant Converter for Onboard Chargers**
Tae-Seok Kang, Yoo-Seop Kim, Hyunjin Jin, Yeong-Jun Choi

IECON26-000600 **Modeling and Power-Based Voltage Control of a Stacked Interleaved DC-DC Boost Converter**
Sodessa Soma Shonkora, Alessandro Serpi

IECON26-000604 **A Current Balancing Control Method With Fewer Sensors Under Parameter Mismatch for Three-Phase LLC Resonant Converter**
Hyunjin Jin, Tae-Seok Kang, Yeong-Jun Choi

IECON26-000726 **Solid-State Transformers for Data Center and Electrolyzer Applications: A Comparative Review**
Tayebeh Faghihisenejani, Hani Vahedi, Pavol Bauer, Zian Qin

IECON26-000039 **Optimal Voltage Balancing Control of Five-Level Neutral-point Clamped Converters with One-phase Redundant Level Modulation**
Wei Xu, Jun Wang, Wenzhi Zhou, Xibo Yuan, Yonglei Zhang, Shushu Zhu, Kun Wang, Zhaobo Zhang

IECON26-000415 **Ocean Wave Field Reconstruction from Sparse Stereo via Spectral-Prior Ensemble Kalman Filtering**
Feng Wang, Chengtao Cai, Qidan Zhu

Day 3 - Tuesday October 20

16:00–17:45
Online Room-03
ONLINE

Online-TT-083: Electric Machines and Industrial Drives

Chairs: Qingsong Wang · Guan-Ren Chen

IECON26-000353 **Electromagnetic Tradeoff Analysis of Stator-Slotted Flux Switching Wound Field Machines**
Chiweta Abunike, Qingsong Wang, Lyne Woodward, Kamal Al-Haddad

IECON26-000354 **Multi-Objective Harmonic Analysis of Trapezoidal-Slotted Flux Switching Wound Field Machines**
Chiweta Abunike, Qingsong Wang, Lyne Woodward, Kamal Al-Haddad

IECON26-000593 **Globally Stable Hall Position Fault Tolerant Topology using MLE-Based Detection and Orthogonalization Compensation for PMSM**
Guan-Ren Chen, Jyun-You Chen

IECON26-000654 **Fault-Tolerance Analysis and Enhancement of a Single-Sided Axial Flux Permanent Magnet Motor Using a Proposed Y Split-Phase Winding Topology**
Sunny Nazir, Ahmad Almomani, Yazan Al-Jizawi, Faisal Khan, Mohammad Sedigh Toulabi

IECON26-000668 **Energy Current Quality Trade-Offs Between CCS-MPC and FCS-MPC in Retrofit BEV PMSM Drives**
Khaoula Soula, Seifeddine Benelghali

IECON26-000324 **Privacy-Preserving Consensus-Based ADMM for Multi-Period Market Clearing in Network-Constrained Microgrids with Battery Storage**
Emmanuel Emeruom, Abdullah Umar, Vijayakumar Gali, Prashant K Jamwal, Shady Khalil, Mostafa Farrag

IECON26-000742 **Optimizing Multi-Class EV Charger Placement with Greedy Heuristics**
Masa Lazic, Ines Pavlovic, Tatjana Davidovic, Dragan Urosevic, Nurettin Sezer, Raka Jovanovic

16:00–17:45
Online Room-04
ONLINE

Online-TT-084: Renewable Energy and Energy Storage Systems

Chairs: Chuanxin Fan · Hafiz Ahmed

IECON26-000691 **PET-3C: A Transferable Physics-Informed ECM-Residual Framework for Lithium-Ion Battery Voltage Prediction**
Min Xie, Chajin Chen, Jufei Wang, Dong Zhang, Hanpeng Liao

IECON26-000739 **State-of-Charge Estimation and Capacity Fade-Based State-of-Health Assessment of Lithium-Ion Batteries Using Kalman Filters**
Himalay Baidya, Mohammad Taufiqul Arif, Ashika Savinda Mendis, Ameen Gargoom, Md. Enamul Haque

IECON26-000766 **Policy-Driven Optimal Sizing of Grid-Connected PV/Wind Systems in GCC Buildings Using Metaheuristic Algorithms: Doha and Yanbu Case Studies**
Abdulrahman S. Sait

IECON26-000874 **A Random Forest-Based Method for Multi-Fault Diagnosis of Batteries**
Zhang Hengrui, Zhu Lingyun, Guo Changhui, Zheng Hairui, Zhan Licheng, Zhang Xuliang

IECON26-000799 **Robust Multi-Criteria Framework for Resilient and Sustainable Supplier Selection**
Rabab Alasbool, Mohammed Qadar, Fatema Al Balooshi

IECON26-001493 **Spatiotemporally Decoupled Perception via Prior-Map-Guided Inverse Projection for Real-Time Landmark Anchoring**
Ruoyu Liu, Zhaohong Wang, Hong Lei

IECON26-001232 **Multi-AUV Cooperative Localization Network with Enhanced Fault Tolerance and Dynamic Adaptability**
Xiaoyu Wang, Chengtao Cai

Day 3 - Tuesday October 20

16:00–17:45
Online Room-05
ONLINE

Online-TT-085: Transportation Electrification and Automotive Technologies

Chairs: Alireza Zare · Joao Pedro Trovao

IECON26-000883 **Sensor-Burst Congestion Mitigation in TSN-Based Zonal Software-Defined Vehicle Architecture**
Sung Bhin Oh, Beom Gi Suh, Youngsoo Do, Young Min Kim, Jae Jeon

IECON26-001318 **A Systematic Design Methodology for Tuning ANFIS Parameters in Dual-Motor EV Energy Management**
Chi Nguyen, Bao-Huy Nguyen, Joao Trovao, Minh C. Ta, Loic Boulon

IECON26-001231 **Credibility-Supervised Nash Arbitration for Redundant MPC-Based Fault-Tolerant Vehicle Trajectory Tracking**
Yuhao Bao, Henglai Wei, Jicheng Chen, Kai Jiang

IECON26-001427 **Symmetry-Hard-Constrained Physics-Informed Neural Network for Efficient Electromagnetic Modeling of Superconducting Electrodynamic Suspension Trains**
Linfeng Liu, Yijie Zhao, Wei Dong, Hao Ye

IECON26-000618 **Rust-Based RTIC and FreeRTOS for In-Vehicle CAN Response Determinism**
Seok Dong Min, Youngsoo Do, Sung Bhin Oh, Jae Jeon

IECON26-001409 **A Deep Concurrent Learning-Based Control Strategy of Hybrid Electric Vehicles for Fuel Economy Improvement**
Nilanjan Mukherjee, Subhajyoti Barman

IECON26-001483 **Frequency-Independent Passive RIS Optimization for Wideband Sub-THz Industrial Communications**
Faran Awais Butt, Ali Arshad Nasir, Saleh Ahmed Alawsh, Ali Hussein Muqaibel

16:00–17:45
Online Room-06
ONLINE

Online-TT-086: Control Systems and Applications

Chairs: Rajeev Kumar · Raissa Raimundo da Silva

IECON26-000442 **Integrated Fault Estimation and Fault-tolerant Tracking Control for Polynomial Fuzzy Systems**
Jingyu Ding, Jinyong Yu, Qin Zhao, Michael Basin

IECON26-000449 **Nonlinear Anti-Sway Control for Double-Pendulum Overhead Crane with Composite-Output Constraint**
Shengzeng Zhang, Xinggao Liu, Michael Basin, Haoxiang Zhang, Chentao Han, Xiongxiong He

IECON26-000452 **Data-Driven Smart Control of Chiller Systems: An Integrated Modeling and Optimization Approach**
Gina Yang, Ching-Yi Hsueh, Jen-Chung Liao

IECON26-000474 **Sensorless EKF Control of PMSMs Under Thermal Variations: A Comparative Study of LUT and ANN Compensation**
Raissa Raimundo da Silva, Lucas Rossato Rocha, Mozer Schunck Lorenzo, Eduarda Fumaco Freitas, Gabriel Capitao Freo, Luis Felipe Pessoa Teixeira, Marco Rivera, Rodrigo Padilha Vieira

IECON26-000475 **Robust Distributed Control for Flexible DC Microgrids Under Dynamic Operating Conditions**
Lejla Ahmethodzic, Senad Huseinbegovic

IECON26-000485 **Finite-Time Mean-Square Boundedness and H-Infinity Property of a Fading Memory Reduced Order Extended Kalman Filter**
Andrew Strandt, Alia Strandt, Edwin Yaz

IECON26-001159 **Reference-Frame-Independent Quantum Key Distribution in Pauli Noise**
Junaid Ur Rehman, Shehbaz Tariq, Symeon Chatzinotas

Day 3 - Tuesday October 20

16:00–18:00
Online Room-07
ONLINE

Online-TT-087: Mechatronics and Robotics

Chairs: Zhenlei Chen · Sota Shimizu

IECON26-000573 **Open Omnibot: A Low-Cost ESP32 Mecanum Platform with Per-Wheel Self-Calibration for Reproducible Indoor Experiments**
Samiul Hoque, Manash Kumar Mandal, Md. Ataur Rahman, Md. Shirazim Munir, Md. Tarek Habib

IECON26-000591 **An AO-Synchronized CPG-Guided Variable-Admittance Framework for Smooth Multi-Mode Switching in Lower-Limb Exoskeletons**
Zhenlei Chen, Tianyi Sun, Yao Yan, Tieshan Li

IECON26-000631 **Passive Acoustic Detection and Localization of Drones for Airspace Security**
Abdelrazzak Merheb, Elie Zaarour, Steven Bassil, Charbel Raffoul

IECON26-000636 **Design and Implementation of a 5-DOF Vision-Guided Robotic Arm for Sorting and Classification of Mixed Objects**
Osama Nagee, Momen Abayazid, Mohammed Almismari

IECON26-000648 **SLAM-Guided Nonlinear Model Predictive Control for Autonomous Flight of a Custom Drone**
Minh-Nhat Nguyen, Yuzhu Sun, Mien Van

IECON26-000716 **Development of 2-DOF Electromagnetic Soft Actuator**
Sota Shimizu, Hokuto Kurihara

IECON26-001520 **Predictive Safety Monitoring for Camera-Guided Micro Aerial Vehicle Obstacle Avoidance**
Hani Beirami, Marco Roveri

IECON26-001524 **A Runtime Safety Layer for Real-Time UAV Control Using Predictive Monitoring**
Hani Beirami, Marco Roveri

16:00–17:45
Online Room-08
ONLINE

Online-TT-088: AI Applications in Control, Mechatronics, and Robotics

Chairs: Rambabu Budithe · Hassan Z. Al Garni

IECON26-001194 **Onboard Image Compression with Hardware-Accelerated Autoencoders for Mobile Machines**
Marius Kruger, Birgit Vogel-Heuser, Alexander Vieres, Jonas Woll, Markus Echtler, Max-David Falkner, Claus Lechner, Hans Regler

IECON26-001349 **Evaluating Large Language Models for Field-Level Data Preprocessing in Industrial Automation: A Feasibility Study**
Marius Kruger, Birgit Vogel-Heuser, Stefanie Muller

IECON26-000121 **Hybrid Data-Driven and Physics-Based Pre-Flight Battery SOC Prediction for Drone Logistics**
Sofiene Lassoued, Roman Juhls, Stefan Lier, Dorothea Schwung, Andreas Schwung

IECON26-000555 **Adaptive Confidence-Based Self-Correction for Few-Shot Learning with Meta-Learning**
Kyuseung Kim, Dongho Shin, Jeongwon Kim

IECON26-000557 **Hierarchical Semantic Dynamic Attention Modulation for Vision Transformers**
Seonyul Shin, Dongho Shin, Jeongwon Kim

IECON26-000054 **AI-Powered Predictive Maintenance System for an Induction Motor Using Edge Machine Learning**
Mousa Alhashem, Ali AlGhazwy, Hassan Z. Al Garni, Abdullahi Abubakar Mas'ud

IECON26-001097 **Quantum Random Access Codes for Quantum Machine Learning**
Junaid Ur Rehman

Day 3 - Tuesday October 20

16:00–17:45
Online Room-09
ONLINE

Online-TT-089: Instrumentation, Sensors, Actuators, and Micro-Nano Technology

Chairs: Hamideh Alvand · Qinglei Hu

IECON26-000567 **Broadband MoS2/Ga2O3 Heterojunction Photodetector for Enhanced UV to NIR Detection**
Maha Alaqeel, Areej Aljarb, Arwa Kutbee

IECON26-000715 **Design and Optimization of an RF Power Amplifier for Mid-Power Microwave Wireless Power Transfer**
Elham Norouzzadeh, Javad Ebrahimi, Alireza Bakhshai

IECON26-000761 **A Precision Capacitive Displacement Sensing Scheme Based on Transimpedance Amplifier and Lyapunov Estimator**
Lixin Zhang, Jianying Zheng, Xinyu Wang, Lihang Xu, Liang Xu, Qinglei Hu

IECON26-000767 **A Robust Nonreciprocal Large-Mode-Area Microwave Waveguide Enabled by Asymmetric Metamaterial Claddings**
Zhuoyuan Wang, Qian Shen, Yuhong Zhou, Ping Yu

IECON26-000789 **Enhanced Performance of MnO2 Memristors Using an Oxygen-Rich/Oxygen-Deficient Homojunction Architecture**
Raihan Amin Rana, Manoj Kumar Rajbhar, Dayanand Kumar, Nazek El-Atab

IECON26-001018 **Cost-Effective 3D Borehole Reconstruction Using an Infrared Time-of-Flight Downhole Probe for Rock Mass Discontinuity Characterization**
Brian Azzopardi, Gabriella Muscat, Evan Dimech, Christian Schembri, Adrian Mifsud, Andrew Sammut

IECON26-001798 **A Digital Twin Framework for Automated Ship Microgrid Modeling with Advanced Multi-Node Voltage Stabilization**
Mehdi Asadizadehshiraz, Rafal Jastrzebski, Emre Can Kaya, Touko Herranen, Sami Tohmola, Jari Boling

16:00–17:45
Online Room-10
ONLINE

Online-TT-090: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Sadiah Moon · Amir A. Abdallah

IECON26-000727 **A Digitization Approach for Offshore Floating Platforms Based on RAMI4.0 and ISO 23247**
Romina Giugge, Lucas Sakurada, Joao Paulo Coelho, Paulo Leitao

IECON26-000798 **An FPGA-Based Real-Time Replay Attack Detection Architecture for IEC 61850 GOOSE Communications**
Saeed Keshavarzi, Navid Eghtedarpour

IECON26-000828 **Differential Privacy Defence Against Label Inference Attacks in Federated Split Learning for Industrial Object Detection**
Reem Elagamy, Raj Mani Shukla, Suman Bhunia

IECON26-000857 **Evaluation Metrics for Communication Protocols in Industrial Software Systems**
Volodymyr Trykoz, Nicholas Sjoqvist Obucina, Bjorn Leander, Saad Mubeen, Mohammad Ashjaei

IECON26-000150 **A Privacy-Preserving Localization Protocol Using VCF and PH-NTRU Lattice Cryptography**
Hanzhe Zhang, Shengming Chang, Linhua Zhou

IECON26-000154 **A Lightweight Privacy-Preserving Localization Scheme for Crowdsourced Hybrid TDOA-AOA Networks Using CRT and Zero-Sum Noise**
Chenxiao Lin, Shengming Chang, Dongdong Lv

IECON26-000571 **A Temporal Neural Network-Driven Method for Predicting the Optimal Time of Software Online Update and Evolution in Industrial Intelligent Unmanned Systems**
Chaoze Lu, Cheng Peng, Xiaocheng Chen

Day 3 - Tuesday October 20

16:00–17:45
Online Room-11
ONLINE

Online-TT-091: Signal & Image Processing Methodologies

Chairs: Abdelbasset Krama · Fadi Karkafi

IECON26-000371 **A Dual-Frequency Domain Fusion Blind Watermarking Algorithm Based on Deep Learning**
Cheng Guo, Jun Li, Shi Jingjing

IECON26-000462 **Physics-Guided Multi-Scale Network for Underwater Electromagnetic Parameter Inversion**
Nan Jing, Sheng Zhong, Biyin Zhang, Ruichi Sun, Ruonan Li, Tianxu Zhang

IECON26-000466 **Linear Spectral Combination: A Dictionary Based Framework for Interpretable Spectral Identification**
Fadi Karkafi, Maxime Leiber, Jean-Frederic Diebold, Mohammed El Badaoui

IECON26-000528 **Closed-Form User-Centric Privacy-Preserving Localization for Three-Party MPC**
Haojun Lin, Shengming Chang, Tuozhong Yao

IECON26-000660 **Drone-Based Lane Violation Detection System for Autonomous Vehicle Competitions**
Seung Yun Noh, Young Hoon Suh, Hyo Jin Park, Hye Jun Hong, Sun Hong Jung, Jae Wook Jeon

IECON26-000677 **Robust Homography Estimation for Visible-Infrared Image Registration in Wildfire UAV Applications**
Linhan Qiao, Xiaobo Wu, Yufei Fu, Youmin Zhang, Yaohong Qu

IECON26-001888 **Investigation of Combined ADRC and MPC for Robust Speed Control of PM-Assisted SynRM**
Mahmoud Elmorshedy, Sagar Bhaskar Mahajan, Seshagiri Vemparala, Dhafer Almakhles

16:00–17:45
Online Room-12
ONLINE

Online-TT-092: Industrial Informatics, Cloud Computing, Big Data

Chairs: Reza Behnam · Sara Marhaba

IECON26-000110 **Smart Inspection Systems: A Comprehensive Review of Inspections Technologies, and Future Directions**
Rula Alghamdi, Shaden Alajji, Maryam Alghamdi, Dana Asiri, Omar Alharbi, Sumyah Aljameel, Mariya Almarhoon

IECON26-000672 **AI-Enabled Predictive Maintenance Framework for Legacy Industrial Control Systems Using Machine Learning and Real-Time PLC Integration**
Mazher Khleel, Ray E Sheriff, Hadi Kazwini

IECON26-000819 **Leveraging Retrieval-Augmented Generation (RAG) Question-Answering for Ontology Generation**
Sara Marhaba, Arwa Allinjawi

IECON26-000830 **Trustworthy Evaluation under Data Scarcity: Tabular Foundation Models for Industrial Support of Hydrogen Production via Dry Reforming**
Renan Akira Nascimento Garcia Escribano, Marcos Antonio Schreiner, Luiz Eduardo Soares De Oliveira

IECON26-000893 **When Retrieval Is Not Enough: Agentic Search for Incomplete RAG Corpora**
Rhuan Garcia de Assis Teixeira, Thiago Oliveira-Santos, Alexandre Loureiros Rodrigues, Gabriel Shen Baldon, Flavio Miguel Varejao

IECON26-000913 **Generative AI-Driven Analysis within the AAS-based Data Ecosystem**
Hesam Rezaee Ahvanouee, Mohammad Hossein Rimaz, Sina Namaki Araghi, Alexander Fay

IECON26-001411 **A Hybrid Approach for the Accurate Parameterization of Commercial Photovoltaic Modules**
Muhammad Saqib Ali

Day 3 - Tuesday October 20

16:00–17:45
Online Room-13
ONLINE

Online-TT-093: Power Systems and Smart Grid

Chairs: Alaa Selim · Yong Chen

IECON26-001110 **Predefined-Time Distributed Fractional-Order Sliding Mode Control for Frequency Regulation and Economic Dispatch in Islanded AC Microgrids**
Ahmed Lotfy, Zhangyong Chen, Yong Chen, Esam H. Abdelhameed

IECON26-001161 **A Robust and Fast Distributed Peer-to-peer Trading Framework for Electric Vehicle Charging Stations under Price Uncertainty**
Guopeng Li, Lijian Zhuang, Yuqian Fan, Lihui Zheng, Xiaojun Tan, Quanxue Guan

IECON26-001339 **Ramp Rate Independence and Grid-Facing Disturbance Characteristics of Co-Located AI Data Center Workloads**
Arun Karthik Sundararajan, Yogesh Rethinapandian, Smrithi Prakash, Kaushik Kumar

IECON26-001210 **Voltage Safety Boundary Assessment for DC Microgrids with Pulsed Power Loads**
Weiyi Zhang, Rui Huang, Mengbiao Zhou

IECON26-001213 **Variance-Weighted Adaptive Power Capping for Grid-Stable AI Data Centers**
Yogesh Rethinapandian, Arun Karthik Sundararajan, Kaushik Kumar, Smrithi Prakash

IECON26-001281 **Communication Performance Evaluation of a LoRa Peer-to-Peer-Based Transformer Temperature Monitoring System in an Indoor Transformer Room**
Rafly Rizqi Darmawansyah, Sudarmono Sasmono, Bagus Aditya

IECON26-001719 **Comparative Speed Regulation of PMSM-Driven Pumping Systems Using Intelligent Controllers Integrated with Predictive Current Control**
Mohamed Assaad Hamida, Ragab El-Sehiemy, Mohamed Abdelwanis, Ahmed Mashaly, Mohamed Elgohary

16:00–17:45
Online Room-14
ONLINE

Online-TT-094: Power Electronics Converters

Chairs: Alessandro Serpi · Uzair Shakir

IECON26-000970 **A 1-MHz 12-V-to-1-V Series-Capacitor Buck Converter With Lossless Module-Level Current Sharing for Data-Center Applications**
Zhongbo Hou, Ke Jin, Weiyang Zhou

IECON26-001004 **Three-Port Symmetrical Switch Doubly-Grounded PV-Battery Inverter with Predictive Controller**
Eltaib Ibrahim, Mokhtar Aly, Jose Rodriguez, Mohamed Orabi

IECON26-001007 **Straightforward PI tuning method to avoid high-frequency transformer saturation in DAB converters**
Inaki Orradre, David Elizondo-Martinez, Pablo Sanchis, Ernesto L. Barrios

IECON26-001009 **Three Phase AC-DC Bidirectional Battery Charger Based on The Versatile Buck-Boost Converter**
Uzair Shakir, Roberto Giral, Javier Calvente

IECON26-001010 **Efficient Half-Step Delay Compensation for Deadbeat Predictive Current Control of 2-Level Inverters Using Low-Cost ARM Cortex-M Microcontrollers**
Sarina Zirak Sima, Mostefa Kermadi

IECON26-001050 **Extending Light-Load ZVS Performance in a Cosine-Resonant Modular Multilevel DC-DC Converter Using Duty and Frequency Scheduling**
Aritra Basu, Dongsheng Yang, Songda Wang, Yin Sun

IECON26-001793 **A Dual-Channel WPT System for Multi-Load Charging Based on PT Symmetric Concept**
Xukun Hou, Liang Huang, Giampaolo Buticchi, Salman Ijaz

Day 3 - Tuesday October 20

16:00–17:45
Online Room-15
ONLINE

Online-TT-095: Control Systems and Applications

Chairs: Osamu Kaneko · Yilian Zhang

IECON26-000496 **Construction and Optimization Method of Feedforward Controller for Precision Motion Stages Based on Modal-Space Model**
Xuewei Fu, Zhenyu Chen, Xiaofeng Yang, Yang Liu, Jiubin Tan

IECON26-000502 **Data-Driven Safe Control of Unknown Control-Affine Systems via Reservoir Computing**
Yupeng Zhu, Zetao Huang, Zhuoyu Li, Chengwei Wu

IECON26-000542 **Distributed Set-Membership Estimation for Automated Guided Vehicles based on a Novel Topology Adaptation Strategy**
Jiale Gao, Yilian Zhang, Xianwen Zhou, Dan Zhang

IECON26-000546 **Prescribed Performance Trajectory Tracking Control for Robot Manipulator via Physics-Informed Hamiltonian Adaptive Dynamic Programming**
Xiaohe Liu, Pengda Liu, Jun Gou, Li Chen

IECON26-000794 **Risk-Aware Path Planning and Safety Control for Autonomous Vehicles in Factory Mixed Traffic**
Yuhan Zheng, Weiwei Qian, Yan Wang

IECON26-000628 **The Disturbance Observer as a Double Agent: Spectral Detection of Stealthy Injection Attacks in ADRC and DOBC Motor Drives**
Jeremy Scerri, Kevin Theuma

IECON26-001443 **A Joint-Constrained Numerical Inverse Kinematics Method for 7-DOF Redundant Manipulators**
Wenqi Zhao, Dong Xu, Yupeng Liu, Marco Rivera, Patrick Wheeler

16:00–17:45
Online Room-16
ONLINE

Online-TT-096: AI Applications in Control, Mechatronics, and Robotics

Chairs: Siva Prakash · Zixuan Wang

IECON26-000578 **A Hierarchical SAC-NMPC Architecture for Robust Trajectory Tracking of Underactuated AUVs**
Zixuan Wang, Zimo Zhang, Jiongming Wang, Xingjian Cao, Yefan Shi, Wei Zhang

IECON26-000579 **Lightweight Image Data Hiding and Steganography Framework for Networked Visual Control Systems**
Runsa Ma, Junyang Xu, Cheng Hu, Dajun Du, Aleksandar Rakic

IECON26-000450 **Online Local Rolling Path Planning Method for Industrial UAVs in Dynamic Low-Altitude Environments**
Chaoze Lu, Ruyue Shen, Jing Wang

IECON26-000608 **Obstacle Masking: Learning Zero-Collision Policies in Decentralised Reinforcement Learning for Multi-AGV Scenarios**
Yutong Du, Polina Ovsiannikova, Antti Oulasvirta, Valeriy Vyatkin

IECON26-000610 **An Optimal Task Planning Integrated with Allocation Algorithm for Smart Factories**
Qiguang Chen, Ya-Jun Pan

IECON26-000649 **Controlled Evaluation of YOLO-Based Monocular Bounding-Box Distance Estimation for Autonomous Obstacle Avoidance**
Minsoo Kim, Min Young Chung, Jae Jeon

IECON26-001593 **AI-Reinforcement-Learning Powered Nonsingular Terminal Sliding Mode-Based Consensus Control for Leader--Follower Quadrotor UAV Networks**
Shafiqul Islam

Day 3 - Tuesday October 20

16:00–17:45
PR1 Office
ONLINE

Online-TT-097: Power Systems and Smart Grid

Chairs: Shady Khalil · Osman Saleem

IECON26-001071 **Integrated Post-Disaster Restoration With Coordinated Crew and Game-Theoretic V2G Dispatch for Resilient Networked Microgrids**
Osman Saleem, Keith Corzine, Leila Parsa, Ricardo De Castro

IECON26-001126 **Leveraging Vehicle-to-Grid (V2G) Technologies for Post-Disaster Power System Restoration and Resilience: A Comprehensive Multi-Modal Analysis and Policy Review**
Osman Saleem, Keith Corzine, Leila Parsa, Ricardo De Castro

IECON26-001897 **Comparative Probabilistic Assessment of Power Loss and Voltage Quality Under Load and Wind Uncertainty**
Mohammed Alzubaidi

IECON26-001284 **RE-INTEGRATE EMT Simulation Platform: A Multiphase Use Case**
Phuong (Peter) H. Hoang, Shamim Hasan, Qianxue Xia, Suman Debnath

IECON26-000541 **CC-CV Charging of EV Batteries by Means of a Soft-Switched Interleaved Buck Converter**
Ahmed Alfouly, Hugo Valderrama-Blavi, Oswaldo Lopez-Santos, Abdelali El Aroudi

IECON26-000598 **Identification and Analysis of Frequency-Inertia and Amplitude-Elasticity of Current-Controlled Grid-Connected Converters**
Zhenjiang Xu, Han Peng, Yue Cui, Sicheng Wang, Xiaoming Yuan, Xin He

IECON26-000867 **Cost-Compliance Regimes for Voltage-and-Harmonic Power Quality Constraints in Unbalanced Multi-Microgrid EMS**
Jonathan Ntiaka Muzakwene, Bouzid Allal El Moubarek, Estibals Bruno, Tsafack Pierre, Alonso Corinne

16:00–17:45
Ginan
ONLINE

Online-TT-098: AI Applications in Control, Mechatronics, and Robotics

Chairs: Sudheer Obbu · Sotirios Athanasoulias

IECON26-001546 **A Decoupled Machine Learning Framework for Simultaneous Fault Detection and Signal Restoration in Industrial Systems**
Diyar Altinses, Ulrich Nickel, Maximilian Schmidt

IECON26-000772 **ENERGIZE: A Hardware-Aware Compression and Deployment Framework for Privacy-Preserving Edge NILM**
Sotirios Athanasoulias, Christos Kozanitis

IECON26-001078 **3D Heterogeneous Integration of Optical GaAs HEMTs and HV Ga2O3 MOSFET**
Sourojit Mazumder, Vikash Jangir, Sudip Mazumder, Mohammad Farsijani

IECON26-001285 **Generative AI for Early Failure Prediction via Synthetic Degradation Trajectory Modeling**
Aya Elmogy, Heba Ragab, Qusai Mashriqi

IECON26-000439 **The State-Language-Action Cyber-Physical Threat Framework for the Humanoid-Integrated Smart Factory**
Donghyun Yoon, Jiwon Park, Yoonjin Yoon

IECON26-000148 **A Reproducible Benchmarking Framework for LLM-Based Industrial Fault Diagnosis**
Irini Provatidis, Kristian Sandstrom, Moris Behnam, Elmeri Syrjane

IECON26-000191 **Supervising Reinforcement Learning with Large Language Models: A Hierarchical LLM-RL Approach for V2G Microgrid Control**
Adam (Hossein) Adib Behrooz, Di Wu, Lyne Woodward, Arezki Merkhouf, Kamal Al-Haddad

Day 3 - Tuesday October 20

16:00–17:30
Room - PR5

Onsite-SS-29: Advanced Modeling and Control of Grid-Connected Converters for Distributed Generation and Power Quality

Chairs: Hadi Kanaan · Ahmed Lakhdar Kouzou

IECON26-000615 **A Novel Dual-Inverter Open-End Winding Induction Motor Drive with Integrated Energy Management Strategy**
Khaled Safsouf, Jean Sawma, Hadi Kanaan

IECON26-001485 **Optimizing EV Charging Infrastructure Utilization via Dynamic Rerouting and Predictive Load**
Shahriar Rahman Fahim, Rachad Atat, Abdulrahman Takiddin, Muhammad Ismail, Hasan Kurban, Erchin Serpedin

IECON26-000572 **ChainVPP-Sense: A Federated Blockchain-Orchestrated IoT Sensor Framework for Tamper-Proof Flexibility Aggregation in Heterogeneous Virtual Power Plants**
Sheeraz Iqbal, Md Shafiullah, Muhammad Bilal Ali, Muhammad Luqman, Muhammad Aurangzeb

IECON26-000665 **Hybrid Flatness API Control for Improved Grid Current Quality in a Multiport Energy Router**
Mohammadreza Azizi, Oleksandr Husev, Carlos Roncero-Clemente, Oleksandr Velihorskyi, Enrique Romero-Cadaval

IECON26-000801 **Rule-Based Energy Management of a Wind-Battery Hybrid AC/DC Microgrid for Grid-Connected Applications**
Vijayakumar Gali, Hema Janga, Jagadeesh Kumar Juturi, Shady Khalil, Amira Mohammed, B Chitti Babu, Somporn Sirisumrannukul

IECON26-000282 **Three-Phase Differential-Mode Inverter Operating using a New Continuous Modulation Approach**
Debotrinya Sur, Sudip Mazumder, Shantanu Gupta

16:00–17:30
Room - PR6

Onsite-SS-30: Intelligent Modelling and Fault Diagnosis Techniques for Safety-critical Industrial Systems

Chairs: Hatef Azamizenouzagh · Abdullah Berkay Bayindir

IECON26-001542 **Data-Rate Sensitivity Analysis for Model-Based Fault Detection in Lithium-Ion Battery Packs**
Nima Abadi, Moqbel Hamood, Ozan Ozay, Metin Gokasan, Seta Bogosyan Estrada, Mohamed Abdallah

IECON26-001111 **Inverse Model Predictive Control with Single Loop Architecture for Fast Electric Vehicle Chargers**
Abdullah Berkay Bayindir, Younes Mohammed Tsabet, Ali Sharida, Sertac Bayhan

IECON26-000817 **Physics-Informed Anomaly Detection for Helicopter Gearbox\\ Health Monitoring Using Griffith-SIW CUSUM**
Khaled Dhibi, Fadwa El Mellouhi, Amjad El-Mellouhi

16:00–17:30
Room - PR7

Onsite-SS-31: Sliding Mode Control, Model Predictive Control and AI-Assisted Advanced Control of Power Electronics Converter

Chairs: Hasan Komurcugil · Naki Guler

IECON26-001705 **Differentiable Predictive Control of Voltage Source Converters: A Comparative Study with Model Predictive Control and Supervised Learning**
Galina Demidova, Alecksey Anuchin, Daniil Shvetsov, Nikolai Poliakov

IECON26-000029 **A New Five-Level Single-Stage Boost Inverter: Performance Validation via Model Predictive Control**
Hasan Komurcugil, Naki Guler, Farzaneh Bagheri

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Day 3 - Tuesday October 20

16:00–17:30
Room - PR7
cont'd

Onsite-SS-31: Sliding Mode Control, Model Predictive Control and AI-Assisted Advanced Control of Power Electronics Converter · continued

IECON26-000058 **Experimental Real-Time ANFIS-Based MPPT Current Reference Generation for PV Systems with Fast Terminal Super-Twisting Sliding-Mode Control**
Habiba Rizki, Ahmed El Hajjaji, El-Mahjoub Boufounas, Lahcen Bejjit

IECON26-000858 **Smooth Battery Power Regulation in Hybrid Electric Vehicles Using PID-Like Continuous SMC**
Abdullah Abushokor, Mohammad Samiullah, Syed Amrr, Ali T. Al-Awami

IECON26-000386 **A Degradation-Aware MILP Framework for Joint Swap Service and Ancillary Market Optimization of Battery Swapping Stations**
Muhammad Ashar Ayaz, Irfan Khan

IECON26-000876 **Mitigating Cyber-Physical Attacks in Smart Grids: A Learner Verifier Architecture**
Suman Maiti, Sunandan Adhikary, Somnath Hazra, Soumyajit Dey

16:00–17:30
Room - PR8

Onsite-SS-32: Cybersecurity Frameworks for Modern Power Systems: Threats, Resilience, and Intelligent Defence

Chairs: Hsen Abidi · Hadhlul Aladhyani

IECON26-001180 **Impact of EV Charging on Anomaly-Based Cyberattack Detection in Distribution Grids: A Transfer Analysis**
Mohammed Gad, Mohammad Alshaikh Saleh, Ali Sharida, Sertac Bayhan, Haitham Abu-Rub

IECON26-001644 **A Cyber-Physical Risk Assessment Framework for IEC 61850 Substations**
Smitha Rani Bs, Preetam Mukherjee, Mathias Ekstedt

IECON26-001028 **A Real-Time Embedded Software Sensor/Controller Architecture for PV Systems**
Hsen Abidi, Lilia Sidhom, Math Bollen, Ines Chihi

IECON26-001041 **Interconnection of Grid-Forming Microgrids Using a Back-to-Back Converter in Low-Inertia Systems**
Mohammed Alsubaie, Hadhlul Aladhyani, Vasishta Burugula, Hamdan Alosaimi, Mohammed Alrajhi, Subhashish Bhattacharya

IECON26-001662 **Energy Management Strategy for Comparative Battery Capacity Assessment of a Grid Connected PV Battery Hydrogen System**
Faizan Khan, Md Abdul Aziz, Saad Mekhilef

16:00–17:30
Room - PR3

Onsite-SS-33: Stability Control, Analysis and Implementation of Grid-following/Grid-forming Renewable Energy Systems

Chairs: Wei Li · Yanmin Wang

IECON26-000304 **Multi-Energy Complementarity in Smart Microgrids for Advanced Building Systems**
Li Wei, Chen Che, Guangxi Li, Li Kanglin, Wei Li

IECON26-000516 **Deep learning-based joint identification of coil parameters and misalignment in wireless power transfer**
Chao Qi, Ren Yijia, Yang Wang, Xiyu Mo, Qisheng Qiu, Fengling Han

IECON26-000548 **Super-Twisting Sliding Mode Current Control for Grid-Forming Cascaded H-Bridge Converters**
Yingming Wang, Xuemei Zheng, Paolo Mattavelli, Yanyu Zhao

IECON26-000877 **Multi-Constraint Region Assessment of Grid-Forming SVG Support for PLL-Synchronized Wind Turbines in Weak Grids**
Jingqian Peng, Zongxiang Lu, Ying Qiao, Shuangxi Zhou, Shiyu Zhang, Youzhuo Huang, Hui Liu

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Day 3 - Tuesday October 20

16:00–17:30
Room - PR3
cont'd

Onsite-SS-33: Stability Control, Analysis and Implementation of Grid-following/Grid-forming Renewable Energy Systems · continued

IECON26-001001 **Modular Model Reference Adaptive Control for Grid-Forming Converters**
Alaa Altawallbeh, Abdulrahman Alassi, Nader Meskin, Mohammed Al-Hitmi, Ahmed Massoud

IECON26-001712 **Autocontrast-Assisted Lightweight Ensemble Learning for Photovoltaic Cell Defect Detection in Electroluminescence Images**
Ridvan Canbaz, Ayberk Calpbinici, Bayram Akdemir

16:00–17:30
Mitras

Onsite-TT-079: Power Electronics Converters

Chairs: Ahmad Darwish · Muhammad Ahmad

IECON26-000743 **AI-Assisted Magnetic Design of a Six-Port High-Frequency Transformer for Solid-State Transformer-Based EV Charging Applications**
Mahnoor Abbasi, Raihana Sattari, Alamera Nouran Alquennah, Sertac Bayhan, Ali Ghrayeb

IECON26-000730 **SiC-Based Multi-Phase Traction Inverter for Transportation Applications**
Manoj Yadav, Mulakapati Krishna, Bheemaiah Chikondra

IECON26-000793 **Computational Fluid Dynamics Analysis of Data Center Ceiling Return Plenum Depth Under Different IT Loads**
Sayed Mohammad Kameli, Abdlmonem Beitelmal, Anas Karaki, Nurettin Sezer, Sertac Bayhan

IECON26-001423 **Lagged Causal-Pruned Graph Temporal Network for Industrial Rotary Kiln Temperature Prediction**
Xiaoning Zhang, Weichao Luo, Yu Lu, Nan Zhou, Wenfeng Deng, Xiaojun Liang

IECON26-001536 **Design and Analysis of a 20 kV Self-Triggering Boost Marx Pulse Power Generator for Water Treatment Application**
Musaab Salih, Jamal Y. Alsawalhi, Balanthi Beig, Noureddine Harid

IECON26-001743 **Designing Batteries for the AI Era: A Specific-Resistance Design Framework for AI Datacenter DC-Bus Surge-Buffer**
Hamza Al-Hallaj, Stoyan Stoyanov, Dj Gilmore, Mohammad Shadmand, Said Al-Hallaj

16:00–17:30
Haloul

Onsite-TT-080: Control Systems and Applications

Chairs: Salman Ijaz · Salmiah Ahmad

IECON26-000499 **Anchoring Control-Oriented Modeling in Standardized Engineering Information Models**
Joshua Galys, Lukas Peter Wagner, Felix Gehlhoff

IECON26-000510 **Trade-off-Triggered Dual Iterative Learning Control for Multi-UAV Systems With Unknown Noise Statistics**
Huanan Wang, Yu Zhong, Xue Luo, Chengdai Huang

IECON26-000537 **Weighted Least-Squares INDI-SMC for VLEO Moving Mass DiskSats**
Jiahui Sun, Ruichen Xi, Chao Wei, Tong Wu, Fan Wu

IECON26-000606 **Hybrid Control Allocation Merging Benefits from Model Inversion and Online Optimization Methods for Multi-source DC Systems**
Yoann Tastavy, Gregoire Le Goff, Antoine Picot

IECON26-001400 **Prescribed-Time Normalization of Variable-Exponent Fixed-Time Control for Tethered Payload Retrieval**
Muhammad Shafiq, Taha Al-Saadi

Day 3 - Tuesday October 20

16:00–17:30
Room - PR4

Onsite-TT-081: Electric Machines and Industrial Drives

Chairs: Md Shafiullah · Shady Khalil

IECON26-000398 **Stiffness Enhancement-Based Suppression of Backlash-Induced Limit Cycle Oscillations in Two-Mass Systems**
Xuewei Bi, Le Sun, Zihang Wan, Ziheng Kuang

IECON26-000494 **A Multi-Fidelity Residual-Transfer LPTN for Fast Transient Thermal Prediction of PMLSMs**
Yaoqi Shen, Yezhen Peng, Fengwen Yu, Nanjie Han, Weimin Kang, Congcong Luan, Xinhua Yao, Jianzhong Fu

IECON26-000622 **LLM Driven Simulation, and Electromagnetic Analysis of a Low-Speed High-Torque BLDC Motor for LH Aircraft Actuation**
Khalifa Aliyu Ibrahim, Qing Qin, Patrick Luk, Efstathios Siampis

IECON26-000623 **Scalarized Multi-objective Optimization for a cryogenic actuator at 20 K for hydrogen aircraft with the Fuzzy Analytic Hierarchy Process**
Qing Qin, Patrick Luk, Efstathios Siampis

IECON26-001892 **Does Soiling Heat or Cool Photovoltaic Modules Evidence from Five Years of Paired Rear-Side Module Measurements in a Desert Climate**
Oktoviano Gandhi, Dhanup S. Pillai, Carlos D. Rodriguez-Gallegos, Brahim Aissa, Sertac Bayhan

IECON26-001108 **Fault Signatures and Dynamic Partial Shading Effects in Vehicle-Integrated Photovoltaic Systems**
Mohammad Qais, I Safak Bayram, Rafael Pena-Alzola, Stuart Galloway

18:30

18:30–21:30
Dafna

Gala Dinner

Day 4 - Wednesday October 21

08:00 — 28 parallel sessions

08:00–09:30
Online Room-01
ONLINE

Online-TT-104: Power Systems and Smart Grid

Chairs: Carlos Mendez · Harshit Nayak

IECON26-001362 **Quantifying the Unintentional Islanding Risk: A Comparative Study on Active Distribution Network**
Harshit Nayak, Edoardo Dacco, Jose Luis Rueda, Davide Falabretti

IECON26-000603 **Multi-Higher-Order Simplicial Neural Networks for Cyber Attack Detection in Power Systems**
Salma Aboelmagd, Rachad Atat, Muhammad Ismail, Shady Khalil, Abdulrahman Takiddin

IECON26-001433 **Feasibility Investigation of a Supercapacitor-Assisted Grounding Scheme for DC Microgrids**
Sahan Gunathilaka, Dulsha Kularatna-Abeywardana

IECON26-001435 **Fault-Injection-Driven Validation of Software Applications for Digital Energy Systems**
Denis Vettoretti, Filip Prostl Andren, Catalin Gavriluta

IECON26-001473 **Modulus Based Augmentation of Distribution Networks for Enhanced Reliability**
Niranjana Unnithan, Balasubramaniam Natarajan, George Amariucai

IECON26-000256 **A Three-Stage Unsupervised GRU-Autoencoder and Pseudo-Labeling Architecture for Intrusion Detection in Smart Microgrids**
Safa Safsafi, Safia Ines Benguiar, Mariem Bouslimani, Mohamed Benbouzid, Yassine Amirat

08:00–09:30
Online Room-02
ONLINE

Online-TT-105: Power Electronics Converters

Chairs: Eman Hammad · Bishwas Basnet

IECON26-001051 **Electro-Thermal Comparison of Airgap Techniques in High-Frequency Planar Inductors Considering Series and Parallel Windings**
Bishwas Basnet, Nishan Withana, Prasad Jayathurathnage, Tero Halkosaari, Tomi Roinila, Paavo Rasilo

IECON26-001106 **Dual Update Loop Model Predictive Control for Active Power Decoupling and Reactive Power Optimization in Triple-Active-Bridge Converters**
Wei Jiang, Quanxue Guan, Yun Mou, Yuqian Fan, Xiaojun Tan, Likai Zheng

IECON26-001143 **A Low-CMV Switching-Sequence Design Framework for Fixed-Switching-Frequency Model Predictive Control of Vienna Rectifiers**
Abdul Nazer P, Harish Sudhakaran Nair

IECON26-001196 **Real-Time Hardware-in-the-Loop Simulation of an 18-Pulse Thyristor Rectifier for Renewable Energy Applications**
Manal Jaleel Poovathingal, Shriram Subramanian, Anirudh Guha

IECON26-001197 **Transferable Open-Circuit Fault Diagnosis for Matrix-type Single-stage Charging Power Modules**
Xin Jin, Yuxin Zheng, Wangzhang Cao, Wei Jiang, Chenyun Yu, Quanxue Guan

IECON26-001214 **A Unified Open-Circuit Fault Diagnosis Method for Dual Inverters with Isolated Supplies Using Line-Voltage Values**
Jie He, Haoyu Wan, Jian Yang, Daoliang You, Wanqiang Feng, Zhen Huang

08:00–09:30
Online Room-03
ONLINE

Online-TT-106: Electric Machines and Industrial Drives

Chairs: Enrique Romero-Cadaval · Mehdi Jafari Javadi

IECON26-001764 **Active Disturbance Rejection Control of Induction Motor Drives Using a Higher-Order Extended State Observer**
Austin Allan, Uddhav Surve, Srirama Srinivas

continues on next page ▸

Day 4 - Wednesday October 21

08:00–09:30
Online Room-03
ONLINE
cont'd

Online-TT-106: Electric Machines and Industrial Drives · continued

IECON26-000861 **Performance and Design of Induction Excited and Induction Assisted Synchronous Generator(IISyG)**
Lokenath Chakraborty, Chandan Chakraborty, Debranjan Mukherjee

IECON26-000884 **Residual Based Data Driven Modelling for Early Inter Turn Short Circuit Detection in Inverter-Fed PMSM Drives**
Mehdi Jafari Javadi, Antonio Griffo, Rashid Ahmed Khan

IECON26-001324 **Autoregressive Kriging-based Variable-dimensional Space Mapping Surrogate Model for Small-Sample Multi-Objective Optimization of IPMSM**
Junzheng Zhang, Xin Ba, Qingyang Wei

IECON26-001359 **Predictive Current Control for Five-Phase Permanent Magnet Synchronous Motor Under High-Speed and Low-Carrier-Ratio Conditions**
Xinyue Zhang, Fufeng Yang, Yiqiao Zhou

IECON26-001334 **Non-Contact Estimation of Operator Physical Workload for Human-Centric Manufacturing: A Depth-Sensor and Cyber-Physical Systems Approach**
Alex Vinicios Telocken, Guilherme Von Ahn Avila, Yuri Oliveira Serra, Fernando da Cruz de Mello, Marcelo Malheiros, Cesar Augusto Otero Vaghetti, Alessandro Bicho

08:00–09:30
Online Room-04
ONLINE

Online-TT-107: Renewable Energy and Energy Storage Systems

Chairs: Mustafa Ersan · Renchong Yang

IECON26-000836 **State of Health Estimation for Lithium-ion Batteries based on Adaptive Feature Weighting and Hybrid Deep Learning**
Renchong Yang, Ruoyu Wang, Hangkai Zhang, Jinhai Jiang, Shenyihang Tan, Jinlei Sun

IECON26-000792 **Distributed Deep Reinforcement Learning for Energy-Aware Control of Multi-Agent Vertical Farm**
Vahid Ehteshami Bojnurdi, Mohammadreza Kaheni, Udayanto Dwi Atmojo, Valeriy Vyatkin

IECON26-001074 **Reinforcement Learning inspired to build an adaptive per-cell SOC estimator for Second-life batteries**
Joelton Gotz, Nathan Mendes, Alceu De Souza Brito Junior, Alceu Andre Badin

IECON26-001003 **Effects of Temperature on Sodium-Ion Battery Electrical Circuit Model**
Cesare Sandri, Roberto Di Rienzo, Niccolo Nicodemo, Federico Baronti, Roberto Roncella, Roberto Saletti

IECON26-001017 **Techno-Economic Analysis of an Autonomous System for a University Building Using Grey Wolf and Whale Optimization**
Majdi Amin

IECON26-001057 **Characterization and Modeling of Self-Discharge in Second-Life Lithium-Ion Batteries for Photovoltaic Self-Consumption Systems**
Ane Perez, Idoia San Martin, Alfredo Ursua, Pablo Sanchis

08:00–09:30
Online Room-05
ONLINE

Online-TT-108: Transportation Electrification and Automotive Technologies

Chairs: Vitor Monteiro · Tianji Zheng

IECON26-001049 **Distributed Optimal String Stability Control for Vehicular Platoon with Privacy Security**
Yejie He, Yong Chen

IECON26-001545 **A MABAC-Based Multi-Criteria Decision-Making FCS-PTC for Induction Motor Drives**
Ahmed Abouzeid, Ahmed Elsanabary, Mahmoud Saeed, Mokhtar Aly, Mohamed Abido, Jose Rodriguez

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Day 4 - Wednesday October 21

08:00–09:30
Online Room-05
ONLINE
cont'd

Online-TT-108: Transportation Electrification and Automotive Technologies · continued

IECON26-001710 **Enhanced Interleaved Boost-Based Converter with Coupled Inductor and Quasi-Resonant Operation for Fuel-Cell Electric Vehicles**
Erfan Azimi, Qiang Wei

IECON26-001503 **Data-Driven Spatial Multi-Criteria Decision Analysis for Equitable Electric Vehicle Charging Station Deployment in Hyderabad, India**
Kurapati Abhijeeth, Prakhar Sharma, Pratyush Chakraborty

IECON26-000041 **Compact Low-Cost Single-Switch Multi-functional SiC Flyback EV Charger for G2V, S2V, and V2V**
Dhawal Dwivedi, Akshay Kumar Rathore

IECON26-001249 **Post-Collision Phased Self-Stabilization Control for 6WID-EV**
Tao Jiang, Yong Chen, Yejie He

08:00–09:30
Online Room-06
ONLINE

Online-TT-109: Control Systems and Applications

Chairs: Ameer Hamza Khan · Li Jin

IECON26-000630 **An EKF Radar-Camera Tracking Framework with Fog-Aware Adaptive Camera Covariance Scaling**
Shayma Alteneiji, Mohamed Alkhatib, Aleksej Makarov, Omar Alzaabi, Ahmed Altunaiji, Engy Farouk, Maryam Alhmoudi, Hind Albastaki

IECON26-000656 **Sparse Subsystem Identification for Reduced ESO Bandwidth in ADRC of a Maglev System**
Jeremy Scerri, Kevin Theuma

IECON26-000663 **Uncertainty-Triggered Active Sensing for UAV Maritime Rescue Prioritization under Wave Occlusion**
Nguyen Trinh Quy, Tran Thanh Vu, Pham Nguyen Khanh Nguyen, Thu Le

IECON26-000737 **LSTM-Based System Identification of a Quadcopter**
Osama Nagee, Mohammed Al-Ghaili, Sami Elferik

IECON26-000740 **Agent-Based Task Allocation and Deconfliction for Track-Bound Robots Operating in Shared Workspaces**
Shubhada Patil, Omar Ismail, Geritt Kampmann, Felix Gehlhoff

IECON26-000099 **Observer-Based Adaptive Finite-Time Fuzzy Control for Nonlinear Cyber-Physical Systems under Multiple Sensor Faults and Deception Attacks**
Xiangning Deng, Ning Zhao, Hao Sun, Zhaonan Chen

08:00–09:30
Online Room-07
ONLINE

Online-TT-110: Mechatronics and Robotics

Chairs: Sanjeevikumar Padmanaban · Sota Shimizu

IECON26-000806 **Congestion-Aware Coupled Task Allocation and Reservation-Based Path Planning for Warehouse AMR Fleets in a Simulation-Based Digital Twin Environment**
Jingze Zhang

IECON26-000865 **Programming and execution of skill-based human-robot-crane collaborative tasks**
Taneli Lohi, Markku Suomalainen, Roope Mellanen, Tapio Heikkila

IECON26-000869 **ILMPC for a Pneumatic Muscle Actuated Ankle Rehabilitation Robot Using DE-Optimized Fuzzy NARX**
Shenglong Xie, Rui Wang, Jintao Chen, Xiuwen Hao, Hongxing Yuan, Shiyuan Bian

IECON26-000905 **Does Visual Perception Improve Pedestrian Trajectory Prediction for Autonomous Driving**
Dmytro Zabolotnii, Naveed Muhammad, Yar Muhammad

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Day 4 - Wednesday October 21

08:00–09:30
Online Room-07
ONLINE
cont'd

Online-TT-110: Mechatronics and Robotics · continued

IECON26-000912 **Clutter-Resistant Vector Mapping for Industrial Environments using Kalman-Managed Features**
Caio Felipe Trindade Zehnder, Marco Teixeira, Marcelo Eduardo Pellenz

IECON26-000046 **Adaptive Quaternion Filter for Attitude Estimation Using IMU and MARG**
Abd Alati Ahmed, Gerry Geyer, Steven Liu

08:00–09:30
Online Room-08
ONLINE

Online-TT-111: AI Applications in Control, Mechatronics, and Robotics

Chairs: Naheel Kamal · Hyo Jin Park

IECON26-000676 **A Physics-Informed Explainable Vision Framework for Bow Wave Disturbance Modeling and Drogue Motion Prediction in Probe-and-Drogue Aerial Refueling**
Linhan Qiao, Zehua Zhang, Su Yang, Zicheng Fan, Zimeng Wu, Yaohong Qu

IECON26-000720 **GuardedLC: A Rule-LLM Interface for Lane-Change Command Interpretation**
Sun Hong Jung, Young Hoon Suh, Hyo Jin Park, Hye Hyeon Park, Hyejun Hong, Jae Jeon

IECON26-000536 **Residual-Aware Ellipsoidal Set-Membership Filtering for Ackermann-Steered UGVs with Unknown-but-Bounded Uncertainties**
Xinyu Qiu, Yilian Zhang, Xianwen Zhou, Dan Zhang

IECON26-000370 **A Saturation-aware Model for Adaptive Gain Control in Seismic Signal-based Elephant Detection**
Jaliya Wijayaraja, Malitha Wijesundara, Rasanga Edirisinghe, Janaka Wijekoon

IECON26-000812 **Delay-Bypassing Safe GNE Seeking for ICV Platooning via a Three-Tier Control Barrier Mechanism**
Dongjie Yang, Mingxin Kang, Yang Liu, Xinkai Chen

IECON26-000936 **End-to-End Driving Stabilization Using World-Model-Based Action Disagreement Detection**
Hyo Jin Park, Young Hoon Suh, Hye Hyeon Park, Hyejun Hong, Seung Yun Noh, Jae Jeon

08:00–09:30
Online Room-09
ONLINE

Online-TT-112: Instrumentation, Sensors, Actuators, and Micro-Nano Technology

Chairs: Jie Sheng · Shengming Chang

IECON26-000235 **Polarization-Tuned Inverse Faraday Effect in Gold Nanorod Dimers**
Ye Mou, Qianyin Zheng, Peihong Cheng, Wenli Huang, Xingyu Yang, Yana Cui

IECON26-001454 **A Slot-Fed Rectangular Dielectric Resonator Antenna With Flat-Top Radiation Pattern for Indoor Microwave Wireless Power Transfer at 2.45 GHz**
Elham Norouzzadeh, Javad Ebrahimi, Alireza Bakhshai

IECON26-001489 **Thin Film Heat Flux Sensor for Ceramic Matrix Composite Engine Components**
Kevin Rivera, Otto Gregory

IECON26-001646 **Design and Experimental Validation of a Modular AS7265x-Based Testbed for Optical Water-Quality Sensing**
Abdellah Touhafi, Souhail Fatimi, Mimoun Lamrini

IECON26-000243 **Reliability-Aware TinyML Soft Sensing of Dissolved Oxygen on STM32 under Temporal Distribution Shift**
Kaiwen He, Anqi Huang, Xiaoping Yang

IECON26-000007 **Robust Secure Localization for WSNs Against Malicious Node Attacks**
Shengming Chang, Haojun Lin, Dongdong Lv

Day 4 - Wednesday October 21

08:00–09:30
Online Room-10
ONLINE

Online-TT-113: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Amir Abdallah · Rui Pinto

IECON26-000969 **Time Series Data Integration for the Web of Things**
Max Thoma, Tobias Schwarzinger, Leonhard Esterbauer, Valentin Just

IECON26-000973 **PTERO: A Collaborative Browser-Native Engineering Environment for IEC 61499 Distributed Automation**
Pedro Beirao, Rui Pinto, Gil Goncalves

IECON26-000074 **Blockchain-based Cross-platform Service Trust Evaluation Using Probabilistic Linguistic Term Sets and Platform Heterogeneity Parameter**
Yan Wang, Senfeng Cen, Yuhan Zheng

IECON26-001035 **Graph Neural Digital Shadows for AI-Assisted Vertical Direct Chill Casting**
Anahid Wachsenegger, Michela Vignoli, Rodrigo Gomez Vazquez, Siamak Rafiezadeh, Leo Schwarzmeier, Sofija Milicic, Juan Vanerio, Laura Bernado, Pedro Casas

IECON26-000479 **MCGuard: Memory-Controller-Assisted Detection of Memory Safety Violations in IoT Systems**
Chaochao Zhang, Chaoze Lu

IECON26-000582 **Hardware-Independent Temporal Synchronization of Distributed Camera Sensors Using the Lingua Franca Coordination Framework**
Mateus Oliveira, Lorenzo Oliveira, Angelo Perkusich

08:00–09:30
Online Room-11
ONLINE

Online-TT-114: Signal & Image Processing Methodologies

Chairs: Maulid M. Kivambe · Hangbeom Kim

IECON26-000692 **Learning from Sparse Longitudinal EEG Recordings for Neurological Outcome Prediction in Post-Cardiac Arrest Comatose Patients**
Dhaladhuli Jahnavi, Nirmalya Ghosh, Amit Patra

IECON26-000708 **Real-Time Industrial Safety Violation Detection in Smart Construction Sites via Multi-Stage Feature Refinement and Pose-Semantic Association**
Wenkang Zhang, Wenba Li, Liang Wang, Xiaohai Li, Yuqin Yang, Zhanpeng Jin

IECON26-000753 **Two-Stage Cascaded Inspection Framework for Battery Defect Detection: From Known to Unknown Anomalies**
Hangbeom Kim, Toni Ly, Niklas Kesten, Andreas Frommknecht, Marco Huber

IECON26-000838 **Resource-Constrained Edge-Cloud Triage for Biomedical Images Through Validation-Locked Governance**
Shrey Shah, Nishi Miteshkumar Doshi, Meet Raval, Mridul Shah, Neil Doshi, Dhvani Upadhyay

IECON26-000840 **Prediction of the Effects of Electrical Defibrillation Based on Wavelet Transforms and Natural Observation Methods**
Yuki Ichiba, Hiroki Matsumoto, Kodai Yasuda, Takayuki Okai, Hidetoshi Oya, Rahman Md. Masudur, Minoru Yoshida

IECON26-000859 **Advances in Optimization Techniques for Spatio-Temporal Backpropagation-based Training of Spiking Neural Networks**
Qu Wei

08:00–09:30
Online Room-12
ONLINE

Online-TT-115: Industrial Informatics, Cloud Computing, Big Data

Chairs: Nassma Mohands · Hussain Nizam

IECON26-000915 **Enhancing Random Feature Subspace Selection in Varying Feature Space Scenarios**
Fabricio Enembreck, Jean-Paul Barddal, Andre Kusakariba

IECON26-001199 **When Alarm Metrics Disagree: Fixed-Score Decoder Sensitivity in Industrial Time-Series OOD Detection**
Li-Ming Zhan, Xiaotao Pan, Kaiying Wang

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Day 4 - Wednesday October 21

08:00–09:30
Online Room-12
ONLINE
cont'd

Online-TT-115: Industrial Informatics, Cloud Computing, Big Data · continued

IECON26-001048 **SmartAirFusion: Agentic AI-Driven Compressed Air Optimisation for Energy-Efficient SME Manufacturing**
Risul Islam Jim, Sreehari Soman, Anwar Latheef, Abed Ahmed, Md Mahmudul Hasan

IECON26-001081 **Assay-Anchored Latent Ordinary Differential Equation for Between-Assay Grade Soft Sensing in Industrial Flotation**
Zhiqiang Qian, Yongfang Xie, Shiwen Xie

IECON26-001088 **A Real-Time Unsupervised Anomaly Detection Framework for Industrial IoT Streaming Data**
Hussain Nizam, Xiaopeng Hu, Fan Wang, Samra Zafar

IECON26-001148 **Techno-Economic Limits of Rooftop PV and Battery Storage for Saudi Residential Villas Under Block Tariffs and Climate Variability**
Ahmed Al-Haj, Mustafa Hafiz, Mohsen Aldaadi, Mohamed Arbi Khlifi

08:00–09:30
Online Room-13
ONLINE

Online-TT-116: Power Electronics Converters

Chairs: Ahmad Darwish · Sajjad Mohammadi

IECON26-000950 **Nonlinear Control of MMC-Based Shunt Active Power Filter: A Review**
Osama Ejhan, Mo Sleiman, Kamal Al-Haddad

IECON26-001451 **Coordinated LLC Resonant and Dual Active Bridge Converters for Hybrid PEMFC BESS Integration into a Vessel LVDC Bus**
Afonso Oliveira, Agostinho Rocha, Jose Vicente

IECON26-001700 **A Park Transformation Equations for AC Single-Phase Systems**
Arsene Missanda Mavoungou, Kamal Al-Haddad

IECON26-001860 **Control Penalty Design for Reinforcement Learning Based Control of Single-Phase Full-Bridge Inverter**
Yu Lei, Shadi Khodakaramzadeh, Azadeh Kermansaravi, Wenjuan Song, Mohammad Yazdani-Asrami, Hani Vahedi

IECON26-001863 **Physics-Informed Neural Networks for Magnetic Components in Power Electronic Converters**
Abdelrahman Abdelmagid, Sajjad Mohammadi

IECON26-001514 **3D FEM Simulation of Partial Discharge in Stator Bar Insulation Under Multilevel PWM Excitation: Effect of Inverter Level Count**
Dennis Giancarlo Laura Portugal, Mateus Giesbrecht

08:00–09:30
Online Room-14
ONLINE

Online-TT-117: Control Systems and Applications

Chairs: Yong Chen · Weixin Cheng

IECON26-001206 **Symmetry-Mapped Neural-HJB Optimal Fault-Tolerant Control for Actuator-Faulted UUVS**
Yefan Shi, Zixuan Wang, Zimo Zhang, Jiongming Wang, Yibing Wang, Wei Zhang

IECON26-001244 **An Input State Load Plant for a Balloon-Mounted Steerable Paraglider Under Frozen-Base Constraints**
Weixin Cheng, Wenbo Chen, Xuedong Jing, Zhen Hua

IECON26-001272 **Safe Fast Charging Robust to Battery Aging: A Solver-Free Safety Filter Without a Health Oracle**
Keshav Krishnan

IECON26-001283 **Self-Tuning of Extremum Seeking Control Transient Response in PMSM Drive PSOE Self-Healing**
Gayan Vimukthi Dissanayake Dissanayake Mudiyanselage, Sandun Kuruppu

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Day 4 - Wednesday October 21

08:00–09:30
Online Room-14
ONLINE
cont'd

Online-TT-117: Control Systems and Applications · continued

IECON26-001292 **Robust Passivity-Based Sliding Mode Control for Speed Regulation of Coreless Motors**
Wensheng Luo, Li Haofei, Jose I. Leon, Sergio Vazquez, Leopoldo Garcia Franquelo, Dianguo Xu

IECON26-001345 **Online Effective Delay-Time Estimation for State-Predictive Adaptive Bandwidth Hysteresis Current Control**
Noritaka Kinjo, Shin Kawai, Triet Nguyen-Van

08:00–09:15
Online Room-15
ONLINE

Online-TT-118: Mechatronics and Robotics

Chairs: Omar Abedrabboh · Fengqi Zhang

IECON26-001541 **Design and Control of a Soft Pneumatic Finger**
Anusree Mandali, Liangyu Pang

IECON26-001631 **Deep Learning-Based Robot Operating Condition Recognition Using Multi-Joint Motor-Current Time-Frequency Representations**
Kiwon Kim, Minseok Kim, Youngman Park, Seongsin Kim

IECON26-001645 **Kinematics-Aware Encoder--Gyro Preintegration for State Estimation of Spherical Rolling Robots**
Song Jin, Fengqi Zhang, Xiaoqing Guan, Bixuan Zhang, Wei Ren, You Wang

IECON26-001687 **Inverse Kinematics for Robot Arm Control with Learned Warm Starts: A Comparison of Classical, Neural and Hybrid Solvers**
Md Ebrahim Hossain, Saikat Das, Arif Sarwat

IECON26-001709 **Data-Driven Control for Omnidirectional Platform**
Vitor Anello, Vinicius Oliveira

08:00–09:30
Online Room-16
ONLINE

Online-TT-119: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Haitham Al-Shami · Eman Hammad

IECON26-001557 **Trusted Repository and Verification Registry Architectures for Authenticity of Digital Twins**
Haitham Al-Shami, Zijad Sivic, Riku Ala-Laurinaho, Juuso Autiosalo, Raine Viitala

IECON26-001571 **Belief Propagation-based Clock Synchronization for Large-Scale Multi-Hop TSN**
Jiahao Xu, Haoze Xue, Qimin Xu, Cailian Chen, Xinping Guan

IECON26-001599 **Towards Cyber-Physical Cognition: A Unified Ontology-Driven Knowledge Graph for Real-Time Autonomous Grid Operations**
Eman Hammad, Michael Mandulak, Ibrahim Shahbaz, Sathvik Sankaranarayanan

IECON26-001650 **A Protocol-Agnostic Edge Tool for OT/IT Integration: A Brownfield OPC UA Deployment**
Caio Oliveira, Flavia Pires, Jose Barbosa

IECON26-001653 **Data Partitioning Effects in Quantum Industrial Fault Detection**
Kaua Dalla Riva Cucco Barbosa, Everson Da Silva Flores, Bruna Guterres, Silvia Silva Da Costa Botelho, Marcelo Pias

IECON26-001654 **SpectraRAG: Dynamic Percentile-Threshold Routing for Low-Latency, Cross-Domain Hybrid Information Retrieval**
Shahid Rafique, Naveed Anwar, Muhammad Idrees, Naveed Akhtar, Sawera Arshad, Aziza I. Hussein

Day 4 - Wednesday October 21

08:00–09:30
PR1 Office
ONLINE

Online-TT-120: Transportation Electrification and Automotive Technologies

Chairs: Mohamed A. Mohamed · Zhang Chen

IECON26-000446 **Inband Communication for 1 kW Wireless Charging System for Electric Bikes**
Muhammad Hashir Waqass, Syed Muhammad Ahmed Mujeeb, Irteza Sanaullah Chaudhry, Abdullah Baig, Asif Ali, Tauseef Tauqeer

IECON26-001026 **Configuration-Aware Motion Control of a Reconfigurable Wheeled Robot**
Xiangyu Sun, An Zhao, Yuhui Guo, Boyi Wang, Yang Deng, Zhang Chen

IECON26-001657 **Active Disturbance Rejection Control Based on Virtual Synchronous Generator for Grid-Forming Inverters in Weak Grids**
Chiagozie Emmanuel Anekwe, Uchenna Chibuzor Ngwu, Chisom Benedicta Nwabuisi, Hendel Huanca Choque, Jose Luis Azcue

IECON26-000994 **An Isolated Two-Stage DC-DC Power Module With Differential Power Processing for Modular Stacked Data Center Servers**
Niwton Gabriel Feliciani dos Santos, Kristjan Uus, Edivan Laercio Carvalho, Andrii Chub

IECON26-000841 **Risk-Predictive AEB and Lane-Change Planning with Uncertainty-Aware Validation in PreScan VRU Scenarios**
Gao Yu, Xu Zhao, Wen Liu, Lianpeng Li

IECON26-000671 **Optimal Flux Trajectory Tracking Control of High-Speed PMSM Drives Using Synchronous Optimal Pulse-Width Modulation**
Tamás Horváth, Denes Fodor, Krisztián Horváth

08:00–09:30
Ginan
ONLINE

Online-TT-121: Post Journal Session

Chairs: Uppuluri Suryavalli · Ali Sharida

IECON26-PJ029 **A Generalized Analytical Approach to Evaluate the Input Current Ripple of a VSI With Space-Vector-Based PWM Techniques**
Uppuluri Suryavalli, Vss Pavan Kumar Hari

IECON26-PJ012 **Series Voltage Injection Based Dual-Port Triple Active Bridge Converter With Reduced Link Current Stress and Enhanced Performances for Wide Operating Ranges**
Silpashree Sahu, Dipankar De, Alberto Castellazzi

IECON26-PJ038 **The Dynamic Model of the UR10 Robot and Its ROS2 Integration**
Vincenzo Petrone, Enrico Ferrentino, Pasquale Chiacchio

IECON26-PJ037 **Zero Speed Sensorless Scheme for PMSM Drives Using Virtual Flux Signal Injection Based Hybrid Active Flux Observer**
Tong Jin, Wei Sun, Guoqiang Zhang, Gaolin Wang, Dong Jiang, Dawei Li, Dianguo Xu

08:00–09:30
Online Room-17
ONLINE

Online-TT-163: Electric Machines and Industrial Drives

Chairs: Amir A. Abdallah · Azzam Abu-Rayash

IECON26-000650 **Adaptive Disturbance Rejection Composite Control for Suppression of Unknown Multifrequency Periodic Magnetic Field Disturbances**
Zhaoxin Duan, Tengyue Long, Bangcheng Han

IECON26-000464 **Data-Driven Modelling of Current-Limiting Control of Grid-Following Inverter-Based Resources**
Soheil Abafat, Alexandros Paspatis, Bamidele Adebisi, Panagiotis Papadopoulos

IECON26-001381 **Real-Time Koopman-Based Reference Trajectory Compensation for Main Secondary Synchronization in Wafer Scanners**
Longbin Jiang, Manni Li, Xiaofeng Yang

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Day 4 - Wednesday October 21

08:00–09:30
Online Room-17
ONLINE
cont'd

Online-TT-163: Electric Machines and Industrial Drives · continued

IECON26-000359 **Research on a Novel Compact-axial-size Unidirectional-axial and Radial Hybrid Magnetic Bearing**
Yifan Ren, Jing Ou, Zhuojun Li, Yingzhen Liu, Dawei Liang, Xu Wang, Dianguo Xu

IECON26-001803 **Resilient Battery State Estimation Under Modeling Errors using Observer-Assisted Transformer**
Muhammad Saeed, Hafiz Muhammad Jawaad, Sheroz Shahid Tabassum, Jiani Shen, Yijun He

IECON26-001152 **LSTM-Based Prediction and Classification of High- and Low-Impedance Faults in Active Distribution Networks**
Mohammad Alzyod, Suhail Hussain

08:00–09:30
Room - PR4

Onsite-SS-35: Integrated Motor Drive Systems for Robotics: From Component Design to Motion Control

Chairs: Dong Xu · Yupeng Liu

IECON26-000327 **Enhanced Overload Capability Design of an Integrated AFPM Drive for Compact Robotic Joint Applications**
Tong Xu, Le Sun, Minghao Tong, Yizhou Cong

IECON26-001862 **From Thin-Film Synthesis to Device Simulation of a Lead-Free Double Perovskite for Optoelectronic Applications**
Saad Ullah, Firoz Khan, Namra Hadi

IECON26-001894 **Bearing Fault Diagnosis Based on Vibration Signal Analysis and Artificial Neural Networks**
Abdelhak Oulmane, Mohamed Mesroua

08:00–09:30
Room - PR6

Onsite-SS-36: Power Quality and Grid Support for Converter-Dominated Power Systems

Chairs: Ahmed Elottri · Abdellah Kouzou

IECON26-000277 **Robust Distributed Cooperative Control of Multi-Aerial System for Unknown Target Fencing**
Umair Javaid, Muhammad Imran Baig, Michael Basin

IECON26-000295 **Physics-Informed Open-Set Fault Diagnosis of Inverter Output LC Filters and IGBT Modules Under Source-Free Domain Adaptation**
Chunxiao Wang, Jilun Tian, Zijian He, Gen Qiu, Kai Chen, Yuhua Cheng, Jiusi Zhang

IECON26-000133 **Enhancing Network Frequency Stability via Modular Self-Tuning MRAC Control of Grid-Forming Converters**
Alaa Altawallbeh, Abdulrahman Alassi, Nader Meskin, Mohammed Al-Hitmi, Ahmed Massoud

IECON26-000192 **Impact of Charger Capacity and State of Charge on Harmonic Emissions from Electric Vehicles Under AC Charging Scenario**
Aiman Ul Haque, Mustafa Eltayeb, Hazem Kasem, Aishwaryaa Kannan, Selma Khalid Elhaj Awadallah

IECON26-000261 **Novel Design of a Discrete-Time PIMR Controller for Three-Phase Shunt Active Power Filters Based on H Optimization and D-Stability Constraints**
Rachid Errouissi

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08:00–09:30
Room - PR7

Onsite-SS-37: Advanced Signal and Image Processing Technologies for Condition Monitoring of Electric Machines and Drives

Chairs: Jose A Antonino-Daviu · Larisa Dunai

IECON26-000746 **Explainable Hybrid CNN-BiLSTM Framework for Non-Invasive Biofouling Detection in Tidal Stream Turbines Using Multi-Channel Electrical Signatures**
Haroon Rashid, Seyed Mostafa Owji, Youcef Belkhier, Yassine Amirat, Abdeslam Mamoune, Mohamed Benbouzid

IECON26-001205 **Eccentricity fault detection in induction motors using thermographic analysis and the DOST method**
Jonathan Cureno Osornio, Geovanni Diaz Saldana, Emmanuel Resendiz-Ochoa, Israel Zamudio, Jose Antonino Daviu, Luis Morales Velazquez

IECON26-000187 **Impact of Time Series Forecasting Models on Rule-Based Energy Management in Grid-Connected PV-Battery Microgrid**
Mayra Ramirez-Chavez, Miguel Delgado-Prieto, Mario Mallea-Ruz, Gisela Pujol-Vazquez, Joan Valls Perez, Alvaro Luna-Alloza

IECON26-001688 **TFMNN: Transient Fourier Mapping Neural Network for Full-Waveform Prediction of Dual-Active-Bridge Converters**
Xiyun Wang, Tanjing Xie, Yinxiao Zhu, Yongheng Yang

IECON26-000991 **A Multi-Task Deep Conditional Adversarial Domain Adaptation Network for Bearing Fault Diagnosis**
Pansheng Ding, Chenxu Qiu, Boqun Wang, Gejinlan Wang, Jianbin Qiu

08:00–09:30
Room - PR8

Onsite-SS-38: Advanced Modeling, Control and Emerging Applications of Multiphase Electric Drives

Chairs: Alejandro Yepes · Galina Demidova

IECON26-000180 **Optimization of Current Lookup Tables for Minimum Stator Copper Loss and Torque Ripple in the Full Torque-Speed Range for a Six-Phase PMSM With Nonsinusoidal Back-EMF**
Alejandro Yepes, Shirin Rahmanpour, Oscar Lopez, Wessam Abdel-Azim, Petros Karamanakos, Ayman Abdel-Khalik, Jesus Doval-Gandoy

IECON26-000288 **Interturn-Fault Mitigation With Magnetic-Flux Nulling in Faulty Turns for Six-Phase Single-Layer FSCW PMSMs With Any Back-EMF**
Wessam Abdel-Azim, Alejandro Yepes, Ahmed Hemeida, Ayman Abdel-Khalik, Shehab Ahmed, Jesus Doval-Gandoy

IECON26-000605 **Model Predictive Flux Control With Direct Switching-State Synthesis for Symmetrical Six-Phase Induction Motor Drives**
Hamdihun Dawed, Khaled Al Jaafari, Balanthi Beig, Kaif Ahmed Lodi

IECON26-000633 **Current References for Minimum Copper Loss and Torque Ripple in the Full Torque-Speed Range for Symmetrical Six-Phase PMSMs With Nonsinusoidal Back-EMF Under an Open-Phase Fault**
Alejandro Yepes, Wessam Abdel-Azim, Oscar Lopez, Petros Karamanakos, Ayman Abdel-Khalik, Jesus Doval-Gandoy

IECON26-001499 **Design of a 4-Phase Switched Reluctance Motor with Low Torque Ripple**
Lam Pham, Hao Chen, Timophey Maslennikov, Ksenia Fedorova, Anton Dianov, Galina Demidova, Dmitry Aliamkin, Alecksey Anuchin

IECON26-001564 **Electrothermal and Demagnetization Analysis of Fault-Tolerant Control Under Interturn Faults in a Single-Layer FSCW Six-Phase PMSM**
Wessam Abdel-Azim, Alejandro Yepes, Ahmed Hemeida, Ayman Abdel-Khalik, Shehab Ahmed, Jesus Doval-Gandoy

Day 4 - Wednesday October 21

08:00–09:30
Mitras

Onsite-TT-099: Power Electronics Converters

Chairs: Giampaolo Buticchi · Md Shafiullah

IECON26-001120 **Robust H Voltage Control of Grid-Forming Inverter across Leading, Lagging, and Nonlinear Loads**
Mikolaj Kadzielawski, Tomasz Swiechowicz, Mariusz Malinowski

IECON26-001745 **Model Predictive Control for Fast Grid-Forming and Grid-Following Mode Transition**
Jianwei Zhang, Huilai Lv

IECON26-000326 **SOS-Based Dynamic Event-Triggered Voltage Regulation for Polynomial DC Microgrid**
Zaineb Smida, Hamdi Gassara, Ahmed El Hajjaji

IECON26-001031 **A Single-Phase Non-Isolated AC-AC Converter Based on Switched-Inductor Cell With Inherent Commutation**
Deniz Zargariafshar, Ebrahim Babaei, Vida Ranjbarizad

IECON26-000366 **Transfer Learning-Based ITSC Severity Diagnosis Between Different PMSMs Using CWT and CNN**
Danya Al-Hindawi, Maher Al-Greer, Imran Bashir

IECON26-000377 **A Quasi-Single-Stage Isolated Three-Phase DC/AC Converter Based on Minimal-Transition DPWM Enabling Wide-Range ZVS and Reduced Common-Mode Voltage in Renewable Energy Applications**
Mohamed Atef Tawfik Abdelkader, Ramkrishan Maheshwari, Thomas Ebel

08:00–09:30
Haloul

Onsite-TT-100: Power Electronics Converters

Chairs: Ramazan Bayindir · Sobhi Barg

IECON26-000228 **Frequency Division Multiplexing Modulation-Based Multichannel Talkative Power Conversion**
Zhao Zhang, Dehong Zhou, Xin Liu, Jianxiao Zou

IECON26-000981 **A Clamp Circuit Based Wireless Battery Charging System With Inherent CC-CV Output for Shared E-Micromobility**
Zihan Tian, Shihao Cheng, Shuren Liu, Chenbo Wang, Nikhil Bejrajh, Sampath Jayalath, Udaya Madawala, Jinping Kang, Haisen Zhao

IECON26-000949 **Quality Prediction in Complex Industrial Process via Local-Global Relational Fusion**
Jiadong Lou, Jiaxin Li, Wenfeng Deng, Nan Zhou, Guangfu Ma, Xiaojun Liang

IECON26-000539 **Optimal Position Angle Control of Five Phase Switched Reluctance Motor for Enhanced Torque Performance**
Saifullah Payami, Mausam Kumari

IECON26-001198 **A Transfer Learning Approach to Dictionary Learning-Based Attack Detection and Classification in Power Systems**
Moustapha El Haj, Rachad Atat, Muhammad Ismail, Erchin Serpedin, Hamza Noureddine, Md Rakibul Ahasan, Abdulrahman Takiddin

08:00–09:30
Room - PR5

Onsite-TT-101: Signal & Image Processing Methodologies

Chairs: Nassma Mohandes · Mahmoud Elmorshedy

IECON26-001887 **A Frequency-Domain Cascaded ML Surrogate Model for Stability Assessment of Grid-Following Inverters**
Sara Hamed, Alamera Nouran Alquennah, Ahmed Lakhdar Kouzou, Sertac Bayhan, Haitham Abu-Rub

IECON26-001256 **Robust EMG-Driven Upper-Limb Joint Angle Estimation for Exoskeleton-Supported Motion by an Optimized LSTM Kalman Framework**
Md Ferdous Wahid, Jubaer Luthfullah, Mohammad Wahir, Hamza Seddek, Reza Tafreshi

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Day 4 - Wednesday October 21

08:00–09:30
Room - PR5
cont'd

Onsite-TT-101: Signal & Image Processing Methodologies · continued

IECON26-001418 **Enhanced Inpainting Diffusion for Few-Shot Weld Defect Detection in X-ray Images**
Junzi Xia, Yingying Guo, Yuan Gao, Bin Han

IECON26-001300 **GenTwin: A Generative Industrial Immunosystem for Autonomous Resilience in Smart Manufacturing**
Anirudh Pratap Singh Yadav, Harshit Divekar, Parth Shrivastava, Rajanikanth Aluvalu, Sai Prashanth Mallellu, Sathwik Narkedimilli

IECON26-001442 **A General Method for Traceable and Verifiable Extraction from Engineering Documents**
Benedikt Schmetz, Bowen Chen, Torben Miny, Tobias Kleinert, Birgit Vogel-Heuser

08:00–09:30
Room - PR3

Onsite-TT-102: Signal & Image Processing Methodologies

Chairs: Oktoviano Gandhi · Ahmed Elotri

IECON26-000551 **Comprehensive Benchmarking of Deep Convolutional Neural Networks for Automated Multi-Class Fault Classification in Solar Photovoltaic Modules**
Rahmouni Djemaa, Mohamed Benbouzid, Mohamed Djamel Mouss, Leila-Hayet Mouss

IECON26-000127 **Complexity-Aware Lightweight Cloud Segmentation for Optical Remote-Sensing Imagery Using EfficientNet-B0 U-Net**
Ayman Abdallah, Hatem Keshk

IECON26-001086 **Physics-Informed Transformer Encoder for Single-Window Fault Classification and Location in Distribution Feeders**
Eduardo Salazar, Veronica Rosero, Sebastian Salazar-Perez, Francisco Gonzalez-Longatt

IECON26-001328 **Enhanced Virtual Synchronous Machine (eVSM) versus WECC REGFM_B1 models: System Frequency Response Comparison**
Francisco Gonzalez-Longatt, Amos Boah, Valdo Ayuk Ngang

IECON26-001002 **Transfer Learning-Based Photovoltaic Fault Classification Using Outdoor Infrared Thermography Images**
Muhammad Hanzla Tahir, Yusuf Bicer, Dhanup Somasekharan Pillai

IECON26-001383 **Embedded Coral-Health Classification on Jetson AGX Orin: Accuracy Latency Tradeoffs of Transfer-Learned CNNs**
Andrea Canaria, Thea Lorraine Daniel, Ameen Zarif, Mohammed Al Mansoori, Khalid Almansouri, Mohammed Al-Meraikhi, Ali Al Seari, Rabab Benotsmane, Morcos Metry

08:00–09:30
Salwa 2

Onsite-TT-103: Power Electronics Converters

Chairs: Jaroslaw Guzinski · Sobhan Mohamadian

IECON26-000251 **Hydro-Barrier Performance and Mechanical Integrity of SiR-based Insulation: Multifactor Aging under DC Excitation**
Israr Ullah, Antonis Theofanous, Hadi Naderiallaf, Chris Gerada, Michele Degano, Michael Galea

IECON26-000476 **Physics-Informed Control-Coupled Structural Decomposition and Residual-Aware MPC for Inverter-Dominated Microgrids**
Fatemeh Nasr Esfahani, Javad Ebrahimi, Alireza Bakhshai, Neeraj Suri, Xiandong Ma

IECON26-001517 **A PI Cascaded Lag Compensator for Output Voltage Fluctuation Suppression in High-Speed Dynamic Wireless EV Charging**
Hassan Khalid, Saad Mekhilef, Hussain Bassi, Ahmed S. Alghamdi, Amr Mohamed Mahmoud, Hajer H. Albutuwaybh

IECON26-001490 **Systematic Workload Partitioning for Low-Cost Rapid Control Prototyping of FCS-MPC: A Grid-Connected Inverter Case Study**
Mostafa Mohamed, Morcos Metry

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Day 4 - Wednesday October 21

08:00–09:30 Salwa 2 *cont'd*

Onsite-TT-103: Power Electronics Converters · continued

IECON26-001154 **High Performance AI Data Center Cooling with Integrated Thermal Energy Storage**
Ahmad Ijaz, Reza Behnam, Alejandro Macarron Alberti, Yana Galazutdinova, Mohammad Shadmand, Monica Cook, Said Al-Hallaj

09:30 — 2 parallel sessions

09:30–10:30 Salwa 3 — **Panel 3**

09:30–10:30 Salwa 1 — **Panel 4**

10:00

10:00–11:00 Salwa 2 — **IES Publications Committee and Journals Associate Editors**
Chair: Haitham Abu-Rub

10:30

10:30–11:00 Dafna - Foyer — **Coffee Break**

11:00

11:00–12:00 Salwa 3 — **Keynote**
Prof. Sudip K. Mazumder
Actuation by Light: A New Era in Power Electronics

12:30

12:30–14:00 Dafna - Foyer — **Lunch Break**

14:00 — 28 parallel sessions

14:00–15:30 Salwa 3 — **Workshop -3 (Siemens)**

14:00–15:30 Online Room-06 ONLINE

Online-SS-42: Stability Control, Analysis and Implementation of Grid-following/Grid-forming Renewable Energy Systems

Chairs: Wei Li · Yanmin Wang

IECON26-000141 **Virtual Inertia and Damping Feedback Control for Enhanced Grid-Forming Inverter Performance Under Disturbances**
Xia Zhengbang, Zhilei Yao

IECON26-000208 **Concept of Asymmetric and Symmetric Grid-Forming Control From a Power-Regulation Perspective**
Zheran Zeng, Shimiao Chen, Dongsheng Yang

IECON26-000501 **Forced Low Frequency Oscillation of A GFM-GFL Mixed MG: A Duffing Oscillator-Based Evaluation**
Xinyue Wu, Shu Gao, Changyue Li, Yuhua Du, Yigeng Huangfu, Aili Fan, Yongcan Zhu, Meng Cheng, Qinmian Li

IECON26-000664 **Impedance Analysis of an Islanded Microgrid Considering the Fundamental Frequency Dynamics**
Pablo Rodriguez-Ortega, Dionysios Moutevelis, Milan Prodanovic, Javier Roldan-Perez

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Day 4 - Wednesday October 21

14:00–15:30
Online Room-06
ONLINE
cont'd

Online-SS-42: Stability Control, Analysis and Implementation of Grid-following/Grid-forming Renewable Energy Systems · continued

IECON26-000707 **Predictive Impedance-Shaped Synchronization for Island-to-Grid Reconnection of Grid-Forming DER Inverters**
Xinrui Li

IECON26-001212 **Cyber-Resilient Practical Predefined-Time Power and SoC Coordination of Converter-Interfaced BESS Clusters in Industrial DC Microgrids**
Peiyu Guo, Yang Cao, Dezhi Xu, Wangli He

14:00–15:30
Online Room-10
ONLINE

Online-SS-43: Intelligent Defect Analysis, Quality Prediction, and Optimal Control for Precision Electronics Assembly

Chairs: Zhengkai Li · Ruiyun Yu

IECON26-000184 **Adaptive Coordinate Compensation for Surface Mount Technology Using Post-Reflow AOI Feedback**
Lei Gao, Zhengkai Li, Jinyong Yu, Hao Sun, Xinghu Yu, Zhihong Zhao, Tong Wang

IECON26-000332 **Component-Guided Paired Segmentation of SPI-Pre-AOI Images for Pre-Reflow SMT Process Monitoring**
Yang Cheng, Qin Zhao, Ruohong Xu, Jingyu Ding

IECON26-000519 **A Hierarchical Imitation Learning Framework for Microscopy Autofocus and Brightness Adjustment**
Aohan Li, Zhihui Lu, Gang Huang, Mingsi Tong

IECON26-000530 **CLRA-TTT: Cross-Layer Residual Attention with Mild Test-Time Training for Few-Shot Remote Sensing Scene Classification**
Qiansong Cheng, Zhiming Zheng, Nannan Liu, Pinhe Wang

IECON26-000774 **Process-Parameter-Decomposed Bayesian Optimization for Reflow Soldering Conveyor Speed Control**
Wenhao Su, Qin Zhao, Ruohong Xu, Jingyu Ding, Zhitai Liu

IECON26-000844 **A Gradient Boosting Regression Approach for Solder Joint Strength Prediction Under Varying SMT Conditions**
Yuqing Ran, Wan Tai, Jiayun Feng, Hanwen Feng, Taohan Wang

14:00–15:30
Online Room-01
ONLINE

Online-TT-127: Power Systems and Smart Grid

Chairs: Kundan Kumar · Gabriel Salazar

IECON26-001504 **Analytical Sensitivities of a Voltage Collapse Proximity Indicator for Remedial-Action Ranking**
Abdelrahman Abdelkader, Sobhy Abdelkader, Mohammed Ben-Idris

IECON26-001274 **Reserve-Aware Stochastic Dispatch for Energy Security Coordination in Converter-Dominated Islanded Microgrids: The San Cristobal Case Study**
Sebastian Salazar Perez, Jaime Cepeda, Gabriel Salazar Yepez, Edison Novoa, Eduardo Salazar, Sebastian Vaca

IECON26-001678 **Optimal Operating Point of TMR Sensor for Wide Range of Current Measurement in Metering and Protection Applications**
Siva Alagappa Kulathuran, Sukumar Brahma

IECON26-000052 **Adaptive Frequency-Selective Privacy Protection for Smart Meter Data**
Lincan Li, Shengming Chang

IECON26-001786 **Monetizing Data-Centre Flexibility Across French Day-Ahead and Intraday Continuous Markets**
Saif Ahmad, Seifeddine Ben Elghali, Hafiz Ahmed

IECON26-001801 **Physics-Constrained Human-in-the-Loop LLM Framework for Voltage-Violation Mitigation in Distribution Feeders**
Alaa Selim, Junbo Zhao, Wai Yan Win Aung

Day 4 - Wednesday October 21

14:00–15:30
Online Room-02
ONLINE

Online-TT-128: Power Electronics Converters

Chairs: Xin Sui · Bo Guan

IECON26-001223 **An Open-Circuit Fault Diagnosis Method for Five-Level Active Neutral-Point-Clamped Converters Based on Multi-Hypothesis Current Residuals**
Yujie Chang, Bo Guan, Hailong Zhao, Shujie Gu

IECON26-001242 **Loss-Share-Adaptive Fixed-Budget Screening of Paired MOSFET Libraries for Synchronous Buck Converters**
Jiaxuan Hu, Weiqi Luo

IECON26-001253 **Mission-Profile and Uncertainty-Aware Coefficient Boundaries for Asymmetric MOSFET Sizing in Synchronous Buck Converters**
Jiaxuan Hu, Weiqi Luo

IECON26-001287 **Bidirectional Power Packet Transmission Using an Inductive Energy Buffer**
Yoshito Imanishi, Shiu Mochiyama

IECON26-001305 **Digital Zero-Crossing Distortion in CCM Totem-Pole PFC: A Mechanism-Oriented Analysis**
Amirali Mostaghis, Amirhosein Akbari, Sheldon Williamson

IECON26-001367 **Hybrid Control of LLC Resonant Converters via a Reduced-Order DPWA Model**
Amirreza Marandi, Farzad Tahami, Reza Heydaridizji, Ali Chahkandinezhad

14:00–15:30
Online Room-03
ONLINE

Online-TT-129: Electric Machines and Industrial Drives

Chairs: Mustafa Ersan · Noritaka Ishiyama

IECON26-001752 **An Enhanced Four-Phase Y-Type Converter and Fault-Tolerant VF-FCS-MPC for SRM Drives Under IGBT Open- and Short-Circuit Faults**
Raul Intriago, Gabriel Andres Intriago Velasquez, Joao P. Carvalho Silveira, Tarcio Andre Dos Santos Barros, Marcelo Vinicius De Paula

IECON26-000750 **Adaptive Observer-Based Detection of Inter-Turn Short-Circuit and Demagnetization Faults in Permanent Magnet Synchronous Motors**
Ge Yang, Yebin Wang, Dehong Liu, Chungwei Lin, Bingnan Wang

IECON26-001841 **High-Performance Induction Motor Drive Topologies for Different Operation Modes Based on SAPF**
Makaruos Tallat, Mahmoud Saeed, Essam Ebeed, Abdelraheem Yosef, Mokhtar Aly, Jose Rodriguez

IECON26-001717 **Halbach Magnet Array Coreless Generator for Savonius Wind Turbines**
Noritaka Ishiyama, Shunichi Sakurai, Daiki Sodenaga, Seiichiro Katsura

IECON26-001823 **Which Renewable Technology Carries the Most Materials-Price Risk A Mineral Transmission Network Projected onto Bills of Materials**
Abdulla Al-Haddad

IECON26-001829 **Multi-Sampled PWM Enabled Passivity Enhancement and Voltage-Feedforward Simplification for Grid-Following Doubly-Fed Induction Generator Systems**
Zixiang Qin, Shan He, Xin Sui, Shuang Zhao, Wei Wu, Lijian Ding

14:00–15:30
Online Room-04
ONLINE

Online-TT-130: Renewable Energy and Energy Storage Systems

Chairs: Li Jin · Raj Mani Shukla

IECON26-000921 **A Reduced-Switch Dual-Source Inverter with Voltage-Summation Capability for PV Battery Integrated Systems**
Javad Ebrahimi, Hosein Ghojavand, Suzan Eren

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Day 4 - Wednesday October 21

14:00–15:30
Online Room-04
ONLINE
cont'd

Online-TT-130: Renewable Energy and Energy Storage Systems · continued

IECON26-001131 **Analysis and Mitigation of Induction Motor Starting Transients in Islanded PV-ESS Microgrids**
Li Sun, Bingwen Dang, Tiancheng Zhou, Ye Cao, Yanan Wang

IECON26-000824 **Homomorphically Encrypted Unsupervised Federated Learning for Condition Monitoring in Wind Turbines**
Chibuike Azubuine, Raj Mani Shukla, Bernardi Pranggono

IECON26-001188 **Electrochemical Impedance Spectroscopy Controller Based on a CLLC Resonant Converter For Battery Energy Storage System**
Shivam Saini, Kaushik Rajashekara, Krishna Raj Ramachandran Potti

IECON26-001211 **Dynamic Modeling and Nonlinear Predictive Control of a Parachute-Based Airborne Wind Energy System**
Xinhao Li, Wenbo Chen, Jianning Lu, Zhen Hua

IECON26-001259 **Intelligent battery management system composed of hardware and random forest model to identify and interrupt the failures for lithium-ion battery**
Joelton Gotz, Nathan Mendes, Alceu De Souza Brito Junior, Alceu Andre Badin

14:00–15:30
Online Room-05
ONLINE

Online-TT-131: Transportation Electrification and Automotive Technologies

Chairs: Vitor Monteiro · Abdelali El Aroudi

IECON26-001572 **Converter-Wide DFMEA and System-Level Fault Propagation Analysis of an Isolated EV Charging System**
Chinmaya Joshi, Gaurang Vakil, Saul Lopez Arevalo

IECON26-001669 **Endpoint Conditional QoS Enforcement for Zenoh over Automotive Time-Sensitive Networking**
Beomgi Suh, Sung Bhin Oh, Young Soo Do, Jae Jeon

IECON26-001556 **Middleware Deployment Trade-offs in Zonal E/E Architectures: The Cost of Composing Zenoh Routing with DDS Interoperability**
Seung Min Ma, Seung Uk Son, Beomgi Suh, Young Soo Do, Sung Bhin Oh, Min Young Chung, Jae Jeon

IECON26-000596 **Pitch Suppression and Regenerative Energy Evaluation of a Rear-Wheel-Drive Electric Vehicle**
Kunpeng Wu, Kan Akatsu

IECON26-001768 **Coordinated Backstepping Control of an EV Charger Based on a Three-Phase LCL-Filtered Rectifier and an Interleaved DC-DC Converter**
Abdelmajid Abouloifa, Chaouqi Aouadi, Oumaima Joraiche, Abdelali El Aroudi

IECON26-001237 **Safety-Critical Cooperative Pursuit-Evasion Game for UAV-UGV Systems with Self-Triggered Intermittent Communication**
Hongye Zhang, Yong Chen

14:00–15:30
Online Room-07
ONLINE

Online-TT-132: Mechatronics and Robotics

Chairs: Carlos Mendez · Narasimha Ganta

IECON26-000313 **Study on a Universal Pick-and-Place Method for Multiple Grippers Based on Alternating Odd and Even Rows**
Yana Cui, Peihong Chen, Jianyu Bao, Ye Mou, Ka Zhang

IECON26-001066 **Place Recognition for UAVs by Sparse Visual Inertial Mapping and 3D Point Cloud Descriptor**
Sayan Pal, Alok Kanti Deb

IECON26-001068 **BEAST: Design and Development of a Bio-Engineered Octopod Mechanism for Heavy Payload Transportation**
Narasimha Ganta, Umanand L, Gopakumar K

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Day 4 - Wednesday October 21

14:00–15:30
Online Room-07
ONLINE
cont'd

Online-TT-132: Mechatronics and Robotics · continued

IECON26-001102 **Actuator-Space Modeling and Control of a Dual-Axis Thrust-Vectoring Platform**
Lundon Salley, Connor Calme, Luis Zapata-Rivera, Aldo Munoz-Vazquez

IECON26-001260 **Trajectory Optimization of Lumbar Massage Robot with Minimum Joint Impact as Optimization Objective**
Juntao Wang, Shenglong Xie, Hongxing Yuan

IECON26-001308 **A ROS2-Based Omni-Directional AGV for Indoor Industrial Mobility with LiDAR-Guided Obstacle Response and Vision-Based Command Recognition**
Mahdi Yazdanpour, Nick Delaet, Seth Burghard, Mason Powers

14:00–15:30
Online Room-08
ONLINE

Online-TT-133: AI Applications in Control, Mechatronics, and Robotics

Chairs: Mohamed Elgaili Mohamed · Hiroki Tsukoshi

IECON26-000886 **Deep Reinforcement Learning for Dynamic Interception of Quadruped Robots in Sparse Reward Environments**
Chao Guan, Pinyan He, Qiubo Zhong

IECON26-000974 **Topological Mapping via Visual Place Recognition Using Circular Shifts of 360-degree Panoramic Images and Spatial Consistency Check**
Hiroki Tsukoshi, Yoshitaka Hara, Yoji Kuroda

IECON26-000988 **Game-Guided Disturbance Utilization for Spacecraft Attitude Tracking Control**
Boqun Wang, Runkun Lin, Chenxu Qiu, Jianbin Qiu

IECON26-001020 **UltraLight Luma: A Novel Edge-Deployable Perception Network for Crop-Row Segmentation in Agricultural Robotics**
Dhanushka Balasingham, Shamod Ginigaddarage, Hanojhan Rajahrajasingh, Nuwan Kodagoda, Rajitha De Silva

IECON26-000808 **Explainable Deep Learning for Photovoltaic Thermal Anomaly Classification Using Infrared Images**
Naveed Anwar, Aziza I. Hussein, Ervina Efzan Mhd Noor

IECON26-001217 **An RD-RRT Method for Safe Obstacle-Avoidance Path Planning of Industrial-Grade UAVs Integrating Reinforcement Learning and Rhombus Sampling**
Zongqi Du, Chaoze Lu, Qifeng Zou, Haixuan Wang, Zhiyong Yang

14:00–15:30
Online Room-09
ONLINE

Online-TT-134: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Zakria Qadir · Rambabu Budithe

IECON26-001157 **AWS Integrated Smart Irrigation System Using Internet of Things and Machine Learning**
Khadijah Umair, Zakria Qadir, Zawar Shah, Mukter Zaman, Javad Rezazadeh

IECON26-001170 **Distributed Optimization of Modular Production Systems using Model-based Reinforcement Learning with Inverse Models**
Andreas Schwung, Steve Yuwono, Sofiene Lassoued, Dorothea Schwung

IECON26-001171 **A Privacy-Preserving Crowdsourced Localization Scheme with Fitness-Based Anchor Selection**
Sunkang Lin, Shengming Chang, Davy Tsz Kit Ng, Tuozhong Yao, Na Yang, Artur Madal

IECON26-000360 **Model-based Solution Towards an Adaptable Function Implementation for Industrial CyberPhysical Systems**
Michael Zeise, Martin Wollschlaeger

IECON26-000168 **PriVerLoc: A Privacy-Preserving and Verifiable Localization Algorithm for Resource-Constrained WSNs**
Yifan Pang, Shengming Chang, Tuozhong Yao

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Day 4 - Wednesday October 21

14:00–15:30
Online Room-09
ONLINE
cont'd

Online-TT-134: Cyber-Physical Systems and Internet of Things in Industry · continued

IECON26-000849 **DC-DC Converter Based on Differential Connection with Partial Power Processing, Wide Conversion Range, and Reduced Switch Voltage Stress**
Vitor Pires, Armando Cordeiro, Daniel Foito, Joaquim Monteiro, Edivan Laercio Carvalho, Joao Martins

14:00–15:30
Online Room-11
ONLINE

Online-TT-135: Industrial Informatics, Cloud Computing, Big Data

Chairs: Murat Akin · Paulo Portugal

IECON26-000998 **Edge-Fog IoT Architecture for Real-Time Electrical Monitoring of a Pyrolysis Furnace**
Mauro Leme, Gregor Umbelino, Ana Julia Bezerra, Pedro Zanini, Ana Paula Ferreira, Silvana Costa, Bernardo Garcia, Joao Paulo Coelho, Helder T. Gomes, Flavia Pires, Jose Barbosa

IECON26-001277 **Reinforcement Learning-Based Process Knowledge Reuse and Sequence Revision**
Bo Fu, Jiahui Zheng, Kaiwen Zheng, Yuhan Zheng, Weiwei Qian

IECON26-001310 **A Lightweight Approach to Software Defined 5G Campus Networks With DevOps**
Maximilian Dietrich, Konrad Junkes, Markus Ammon, Sebastian Treib, Manuel Utsch, Eike Lyczkowski, Nour Ben Kebaier, Wolfgang Kiess

IECON26-001369 **LLM-Guided Three-Stage Conditional Evolution for Automatic Cache Policy Design**
Zitao Zhang, Yingnian Wu, Siyuan Jin, Jing Zhang, Lechen Zhang

IECON26-001464 **Downstream Evaluation of Missing-Data Handling for Reliable Sensor Time-Series Forecasting**
Lucas Ricce Correa, Alessandro Bicho, Rafael Berri, Giancarlo Lucca, Vagner Rosa

IECON26-001652 **WindowLog for Measuring the Action Window in Proactive Log Anomaly Detection**
Felipe Messias Duarte Dos Santos, Erico Leao, Ricardo Rabelo, Francisco Vasques, Paulo Portugal

14:00–15:30
Online Room-12
ONLINE

Online-TT-136: Power Electronics Converters

Chairs: Shuo Wang · Thiago Oliveira dos Santos

IECON26-000078 **Broadband SPICE Modeling of Common-Mode Chokes Including Core Saturation and Dispersion**
Christoph Brillinger, Christian Manfred Riener, Herbert Hackl, Mehtab Hussain, Martin Stoiber, Jose Romero Lopera, Bernhard Auinger

IECON26-001221 **Chattering-Free Super-Twisting Sliding Mode Control of Cascaded DC-DC Converters for Fuel Cell Integration in Shipboard Power Systems**
Liang Guo, Mohamed Trabelsi

IECON26-001444 **Generalized Current Ripple Analysis and Sizing Criteria for Interleaved Buck Converter Applied to Electrolyzer Systems for Hydrogen Production**
Alessandro Mazzola, Muhammad Muzammil Farooqi, Rosalinda Inguanta, Gioacchino Scaglione, Teresa Vitturi, Filippo Pellitteri, Rosario Miceli

IECON26-001582 **Current and Voltage Control of an Electrolyser through a Stacked-Interleaved Buck Converter**
Francesco Cherchi, Mario Porru, Alessandro Serpi

IECON26-000823 **ORION: Operational Reasoning and Intelligent Orchestration Network for LLM/SLM-Based Operational Intelligence**
Luiza Lopes, Vinicius Oliveira

IECON26-000972 **Enhancing the Fault Diagnosis Process in the Oil and Gas Industry via LLM-based Agent**
Nilo Monteiro, Theo de Sa, Alexandre Rodrigues, Flavio Varejao, Gabriel Baldon, Philipe Grippa, Thiago Oliveira-Santos

Day 4 - Wednesday October 21

14:00–15:30
Online Room-13
ONLINE

Online-TT-137: Control Systems and Applications

Chairs: Yong Chen · Chaoqun Dai

IECON26-001293 **Observer-Based Robust Safety-Critical Control of Nonlinear Affine Systems with Input Saturation**
Haoyu Chai, Yong Chen

IECON26-001351 **Multi-Source Meteorological Time-Series Fusion with CNN-LSTM for Forest Surface Dead Fine Fuel Moisture Content**
Bo Peng, Kaichao Chen, Mingxin Kang, Xinkai Chen

IECON26-001380 **Asymptotical Output Feedback Stabilization of Probabilistic Logical Networks**
Chaoqun Dai, Yuqian Guo, Mingxin Kang, Xinkai Chen

IECON26-001401 **Feasible at Every Update: Time-Distributed Spiking-Driven MPC for Voltage-Constrained AC Drives on FPGA**
Ameer Hamza Khan

IECON26-001406 **Concurrent Learning-Based Resource-Constrained MPC for Multiple Nonlinear Systems under Limited Parallel Computing Resources**
Changyang Deng, Jicheng Chen, Dan Zhang, Marek Jasinski

IECON26-001410 **Cooperative Formation Path Following of USV Cluster Based on LOS-Backstepping Strategy**
Siying Wang, Yong Chen, Yejie He

14:00–15:30
Online Room-14
ONLINE

Online-TT-138: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Siva Prakash · Amir A. Abdallah

IECON26-001685 **Calibrated Evidence-to-Risk Learning for Cyber-Physical Attack Triage in Power Systems**
Mohamed Massaoudi, Khandaker Akramul Haque, Maymouna Ez Eddin, Katherine Davis, Mahmoud Kabalan, Hassan Salamy

IECON26-001733 **Ontology-assisted LLM prompting framework for skill-based automation and robotic task planning**
Jingyun Zhao, Birgit Vogel-Heuser, Xinlong Wang, Haori Zhang, Yansong Wu, Dominik Hujo, Fan Wu, Andre Kraft, Gabriel Wiedon, Alois Knoll

IECON26-001750 **Joint Task Offloading and Uplink-Downlink Resource Allocation via 3C Co-Design for Industrial Multi-AGV Systems**
Qiaoni Han, Zimeng Qin, Qimin Xu, Xinping Guan

IECON26-001711 **Layer-Wise Attribute Sensitivity and Adaptive Fusion with Mixture of Experts in Deep Models for Color and Texture Classification**
Arlete Beuren, Leonardo Pinto, Jonathan Mastos, Jean Barddal, Alceu de Souza Britto Jr

IECON26-001693 **Physics-Grounded FMEA Knowledge Graphs for Label-Scarce Fault Detection at the Industrial Edge**
Diogo Rocha, Rui Pinto, Gil Goncalves

IECON26-001721 **Improving Embeddings Using the Distributional Hypothesis in Evolving Textual Data Streams**
Cristiano Garcia, Alessandro Koerich, Alceu De Souza Britto Jr, Jean Paul Barddal

14:00–15:30
Online Room-15
ONLINE

Online-TT-139: Signal & Image Processing Methodologies

Chairs: Sanjeevikumar Padmanaban · Leiyu Chen

IECON26-001522 **Mining Parametric Signal Temporal Logic for Interpretable Fault Detection in HVAC Systems**
Thomas Ederer, Gernot Steindl, Jurgen Pannosch, Philipp Zech, Michael Houzar, Tobias Schwarzinger

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Day 4 - Wednesday October 21

14:00–15:30
Online Room-15
ONLINE
cont'd

Online-TT-139: Signal & Image Processing Methodologies · continued

IECON26-001525 **AeroFST: Few-Shot Source-to-Target Airfoil Flow Reconstruction from Sparse Measurements**
Yunfei Zhu, Haiteng Wang, Lei Ren

IECON26-001533 **Modality Reliability Estimation and Adaptive Fusion for Low-Altitude Aerial Target Classification**
Leiyu Chen, Xiao Dai, Shifan Chen, Songyin Mo, Ruiqi Shu, Xinggao Liu

IECON26-001535 **Calibration-First Detector-VLM Routing for Fixed-View Roadside Traffic-State Assessment**
Tong Zhang, Zhengzheng Fang, Tianqi Sun, Guiping Wang, Weiping Pan, Xiaotao Li, Yawen Niu

IECON26-001613 **CT-P2-YOLO: Dual-Similarity Foreign-Matter Detection for Transparent PPR Pellets**
Shibo Lin, Xuedong Jing

IECON26-001625 **Frequency-Domain Filtering Fails on Simulated Multipath Ghosting in Aerial Imagery**
Naaga Kartheek Eadara, Ishidevesh Behera

14:00–15:30
Online Room-16
ONLINE

Online-TT-140: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Paulo Leitao · Haojun Lin

IECON26-000484 **S2-IRLS: Dropout-Resilient Privacy-Preserving Localization via CRT Secret Sharing and Dual Masking**
Haojun Lin, Dongdong Lv, Shengming Chang

IECON26-000488 **DRIPL: Distributed Robust Iterative Privacy-Preserving Localization for Industrial IoT**
Haojun Lin, Dongdong Lv, Shengming Chang

IECON26-000550 **A Multimodal Sensing System for Real-Time Bolt Preload Monitoring Based on Strain Sensing and Ultrasonic Guided Waves**
Zhuowen Liu, Zicong Zhang, Hailing Fu, Deng Fang

IECON26-001395 **When Does Value-of-Information Targeting Pay Off for Photovoltaic Fleet Inspection**
Hasan Iqbal, Arif Sarwat

IECON26-000179 **Two-Stage Conditional Value-at-Risk Optimization for Risk-Aware Energy Management in Multi-Energy Microgrids**
Hadi Mojtaba, Elhoussin Elbouchikhi, Josep M. Guerrero, Maher Jridi, Daniel Morinigo-Sotelo, Abdelhakim Saim

IECON26-000524 **Resilient Secondary Control of Islanded Microgrids Against Heterogeneous False Data Injection Attacks via Channel-Wise Link Reputation**
Xiaofeng Li, Rongwu Zhu

14:00–15:30
PR1 Office
ONLINE

Online-TT-141: Signal & Image Processing Methodologies

Chairs: Camilo Garcia · Muhammad Umair Danish

IECON26-001584 **Grid-Forming Strategies for Single-Stage PV Inverters Considering PV dynamics**
Andoni Urtasun, Javier Puy, Luis Marroyo, Octavian Curea, Gerardo Becerra

IECON26-000552 **Single Image Super-Resolution with Adaptive Blocked Multi-axis Attention Transformer**
Bin-Cheng Yang, Gangshan Wu

IECON26-001325 **Cognitive Effects of Textual, Graphical, and Interactive Explanations in Explainable Artificial Intelligence**
Muhammad Umair Danish, Memoona Aziz, Umair Rehman, Katarina Grolinger

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Day 4 - Wednesday October 21

14:00–15:30
PR1 Office
ONLINE
cont'd

Online-TT-141: Signal & Image Processing Methodologies · continued

IECON26-001327 **Human-Centered Explainable Artificial Intelligence and the Effects of Explanation Modalities on Trust, Understanding, and Decision Making**
Muhammad Umair Danish, Memoona Aziz, Umair Rehman, Aleksandra Zecevic, Katarina Grolinger

IECON26-001058 **Physics-Informed Neural Ordinary Differential Equations for Condition Monitoring of a DC-DC Converter**
Camilo Garcia Tenorio, Bashir Bakhshideh Zad, Olivier Deblecker

IECON26-000390 **Hybrid Control Converter: Improving IBR Grid Support Capabilities and Flexibility**
Francisco Kleber Lima, Luiz Andre Lima, Edson Watanabe, Camila Fernandes, Gleydson Neves, Marcelo Soares, Behrouz Zoghdar, Moataz El Sied

14:00–15:30
Ginan
ONLINE

Online-TT-142: Power Electronics Converters

Chairs: Saleh Edhah · Khan Mohd Arif

IECON26-000975 **Impact of Fixed-Frequency Grid-Forming Control on Frequency Stability and PLL-based Dynamics of Grid-Following Converters**
Lasse Peltonen, Nida Riaz, Pertti Jarventausta, Sami Repo

IECON26-001758 **Airgap Magnetic Field-Based Investigation of Cogging Torque Mechanism in Permanent Magnet Vernier Machines**
Saleh Edhah

IECON26-000011 **Minimal-Loss-Informed Neural Network for Permanent Magnet Synchronous Motors**
Zhenxiao Yin, Xueyan Wang, Yang Shen, Fobao Zhou, Yujia Zhang, Yonghang Zang, Hang Zhao

IECON26-000514 **Adaptive Integral Sliding Mode Predictive Control for PMSM Speed Regulation based on Back Propagation Neural Network**
Xueping Li, Tian Liu, Yongxi Yang, Shulin Wang, Jianzhen Qu, Xin Yuan

IECON26-000223 **A Novel Wireless Motor Position Transmission Method for Wireless Motors Drives**
Junjie Hao, Longfei Liu, Wen Ding, Yang Xiao

IECON26-000019 **A Novel Distributed Secondary Controller for Cable Impedance Compensation and Voltage Recovery in a Droop-Controlled Telecom DC Microgrid**
Mohd Khursheed, Shirazul Islam, Mohd. Arif Khan

14:00–15:30
Online Room-17
ONLINE

Online-TT-164: Instrumentation, Sensors, Actuators, and Micro-Nano Technology

Chairs: Mohamed Gamal · TBA

IECON26-000281 **Benchmarking Classical and Deep Learning Methods for Direction-of-Arrival Estimation in Acoustic Drone Localization**
Christian Baker-Davidson, Rakiba Rayhana, Sergii Baidachnyi, Lixin Tu, Hao Liu, Yihe Wang, Zheng Liu

IECON26-001671 **Green-ZTPG: Energy-Aware Zero-Trust LLM Prompt Governance for 5G-assisted Manufacturing**
Sameer Kumar, Rounak Mishra, Samyak Jain, Pronaya Bhattacharya, Sandip Roy, Kwok Tai Chui, Brij B. Gupta, Thippa Reddy Gadekallu

IECON26-000346 **Super-Twisting Sliding Mode Control for a Dual-Axis Thrust-Vectoring Octarotor UAV**
Rumo Chen, Yipeng Yang, Zhan Li

IECON26-001422 **A Novel Design of Three-Phase Multilevel Inverter Topology**
Marif Daula Siddique, Mohammad Samiullah, Ali T. Al-Awami, Mohamed Abido

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Day 4 - Wednesday October 21

14:00–15:30
Online Room-17
ONLINE
cont'd

Online-TT-164: Instrumentation, Sensors, Actuators, and Micro-Nano Technology · continued

IECON26-001254 **Q-ASP: A NISQ Benchmark for Critical-Error-Aware Adaptive Security-Profile Selection at the Digital-Twin Edge**
Mohamed Gamal, Mohamed Tabaa, Azeddine Khiat, Hassna Bensag, Essaadia Aoula, Mohamed Youssfi

IECON26-000314 **AIS-to-Energy Profiling of Tugboat Operations for Berth-Level Shore Power Planning**
Muhammad Sadiq, John Licari, Maurice Apap, Alexander Micallef

14:00–15:30
Room - PR5

Onsite-SS-39: Advanced Modeling, Control and Emerging Applications of Multiphase Electric Drives

Chairs: Prathap Reddy B · Kotb Tawfiq

IECON26-001555 **Application of gate-based quantum computing for site energy dispatch optimization**
Karen Wintersperger, Hila Safi, David Almagro-Cabrera, Jeremy Ralph Wiles, Brian Schmidly

IECON26-001516 **A Reliability-Enhanced PWM Strategy for Symmetrical Six-Phase Drives With Zero Common-Mode Voltage and Reduced Zero-Sequence Current**
Kotb Tawfiq, Ehab El-Saadany

IECON26-000237 **Fault-Tolerant Operation of a Six-Phase Symmetrical Open-End Winding Induction Motor Drive**
Yousef Alkayyali, Balanthi Beig, Khaled Al Jaafari

IECON26-000568 **A Temperature-Feedback-Based Dynamic DPWM Active Thermal Control Strategy for SiC MOSFET Inverters**
Wu Wei, Zehua Fu, Junliang Chen, Hao Xu

IECON26-000803 **Analytical Modeling of Common-Mode Voltages for PWM Inverter-Fed 3-Phase and Multiphase Machines**
Monika Jain, Prathap Reddy B

IECON26-000835 **Unified Model Predictive Control of LCL-Filtered Compact Multilevel Inverters with Seamless Islanding/Grid Transitions**
Mohammad Babaie, Majid Mehrasa, Amirhossein Hosseini, Kamal Al-Haddad

14:00–15:30
Room - PR6

Onsite-SS-40: Advanced data-driven performance assessment and fault-tolerant control for industrial automation systems

Chairs: Ayman Abdel-Khalik · Ahmed Awad

IECON26-000380 **Physics-Informed Instruction-Guided LLM Reasoning for Chiller Fault Diagnosis Under Uncertainty in smart buildings**
Maissa Boukaf, Fodil Fadli, Nader Meskin

IECON26-001183 **Lookback-Window Sensitivity in Multi-Step Household Energy Forecasting: LSTM, GRU, and SimpleRNN on the UCI Dataset**
Ali Jassim Lari, Morcos Metry, Yasen Harrye, Hassan Ali, Muhammad Sheikh, Ahmed Abdulla

IECON26-000164 **Breaking the black-box bottleneck:interpretability analysis of sparse filtering for fault diagnosis based on inner product transformation and time-frequency plots**
Zhenhuan Sun, Zhiqiang Zhang, Wei Sun, Tao Yang, Zhi Li, Jiaming Li

IECON26-001686 **Vehicle-to-Grid Emulation and Interface Study Based on the ISO 15118-20**
Paponson Indrachai-Ea, Anna Larsson, Xiaoliang Huang

IECON26-000375 **Ship Motion Displacement Prediction Based on VMD and Improved AOA-GRU for Wave Compensation Systems**
Hao Chen, Zijun Zhang, Qin Zhang, Xiong Hu, Youcef Belkhier, Mohamed Benbouzid

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Day 4 - Wednesday October 21

14:00–15:30
Room - PR6
cont'd

Onsite-SS-40: Advanced data-driven performance assessment and fault-tolerant control for industrial automation systems · continued

IECON26-000185 **Spatial-Harmonic-Based Variable Excitation for Global Loss Minimization in a Multiphase FSCW Self-Excited WRSM**
Ayman Abdel-Khalik, Hassan Ali, Taha Al Saadi

14:00–15:30
Room - PR7

Onsite-SS-41: AI-2.0-Driven Strategies for Condition Monitoring and Prognosis in Power and Energy Systems: From Digital Twins and Cybersecure Predictive Maintenance to Emerging Foundation and LLM-based Models

Chairs: Mohamed Benbouzid · Demba Diallo

IECON26-000024 **Foundation and Large Language Models in Digital Twin-Centric Condition Monitoring and Prognosis for Power and Energy Systems**
Mohamed Benbouzid

IECON26-000266 **Probabilistic Intra-Hour GHI Forecasting with TimesFM and Sky-Image Covariates**
Lu Zhang, Demba Diallo, Junjie Yang, Claude Delpha, Mohamed Benbouzid

IECON26-000454 **Bearing Fault Diagnosis using Convolutional Neural Networks and Decision Fusion**
Iman Makrouf, Mourad Zegrari, Demba Diallo, Weiqing Lu, Yujie Xu, Khalid Dahi

IECON26-000553 **Transformer-Based Biofouling Detection on Tidal Stream Turbines Under Severe Data Scarcity**
Ehsaan Ali, Youcef Belkhier, Haroon Rashid, Mohamed Benbouzid

IECON26-001329 **AI-Driven Oil and DGA Forecasting for HV Transformers**
Mohamed Shahawy, Janet Francis, Ateeq Ur Rehman

IECON26-001638 **Real-Time Weighting-Factor-Free Fuzzy Decision-Making Model Predictive Current Control for Three-Level NPC IPMSM Railway Drives**
Mannan Hassan, Muhammad Shahid Mastoi, Md Shafiullah, Rao Atif

14:00–15:30
Mitras

Onsite-TT-122: Power Systems and Smart Grid

Chairs: Mohammad Alshaikh Saleh · Abdullah Baraean

IECON26-001813 **Impact of VSC Harmonic Modeling Representation on Harmonic Distortion and Resonance Prediction in Power Distribution Networks**
Tareq Foqha, Arash Beiranvand, Malabika Basu

IECON26-001824 **PLL Tuning and Grid Strength Govern Slow-Interaction Converter-Driven Stability of Grid-Following Inverters in Medium-Voltage Distribution Networks**
Samuel Ngotho, Malabika Basu, Michael Conlon

IECON26-001868 **Sub-Synchronous Oscillation Assessment of a VSC-HVDC Link Using dq Frequency Scanning**
Raghad Aljindi, S M Muyeen, Sertac Bayhan, Haitham Abu-Rub, Ahmed Massoud

IECON26-000086 **Spatial Propagation of Subsynchronous Oscillations in Multi-PMSG Wind Farm Systems under Weak Grid Conditions**
Tassneem Zamzam, Yazan Qiblawey, Abdulrahman Alassi, Haitham Abu-Rub, Miroslav Begovic, Ali Ghrayeb

IECON26-001872 **Small-Signal Modeling and Modal Analysis of a Type-4 Wind Turbine for Sub-Synchronous Oscillation Analysis in Weak Grids**
Jana Sheikh Ali, Haitham Abu-Rub, Ahmed Massoud, S M Muyeen, Sertac Bayhan

IECON26-001814 **Simultaneous State and Fault Estimation in Wind Turbines Using Unknown Input Observer**
Abdulwahid Saif, Sami Elferik

Day 4 - Wednesday October 21

14:00–15:30
Haloul

Onsite-TT-123: Power Electronics Converters

Chairs: Giampaolo Buticchi · Nurettin Sezer

IECON26-000577 **Priority Fitted Network-Based Optimization of Ferrite Structure in DD Coil WPT System**
Hafiz Adnan, Zihan Tian, Ali Muqtadir, Haisen Zhao

IECON26-001067 **Dynamic Reconfigurable Multilevel Modulation Strategy for ANPC-H Converters in Wide-Speed-Range Motor Drives**
Yiming Sun, Chengming Zhang, Yang Wu

IECON26-001901 **Comparative Review of Large-Scale Energy Storage Technologies**
Nahin Kabir, Nurettin Sezer

IECON26-000364 **Modelling, Operation, and Planning of Vehicle-Integrated Photovoltaic Systems: A Review**
I Safak Bayram, Mohammed Qais, Stuart Galloway, Hugo Morais

IECON26-000047 **Explainable AI Analysis for the Influence of Toroidal Core Geometry on High-Frequency Six-Port SST Efficiency**
Alamera Nouran Alquennah, Sertac Bayhan, Ali Ghrayeb, Haitham Abu-Rub, Sunil Khatri

IECON26-001890 **An Electrode-Referenced Framework for Reinterpreting Depth of Discharge in Lithium-Ion Aging Models**
Anas Karaki, Ahmed Karaki, Sertac Bayhan, Haitham Abu-Rub

14:00–15:30
Room - PR4

Onsite-TT-124: Power Electronics Converters

Chairs: Yanmin Wang · Krzysztof Gorecki

IECON26-001807 **Harmonic Analysis of Phase Shift Modulation Schemes for Single Phase Dual Active Bridge DC/DC Converter: Generalization and Challenges**
Yasen Harrye, Ali Jassim Lari, Hassan Ali, Muhammad Sheikh, Muhammad Zubair, Permjit Soora

IECON26-000697 **Novel Modelling Analysis for Resonant Converters using Advanced Mathematical Functions**
Piyush Singh

IECON26-001889 **Adaptive Virtual Impedance for Fault Ride-Through of VSG-Based Grid-Forming Inverters**
Ahmed Lakhdar Kouzou, Muhammad F. Umar, Ali Sharida, Hussein Alnuweiri

IECON26-001893 **Multi-Objective Optimal Control of PV-Storage Systems by Combining MPC with Variable Prediction Horizon**
Yanmin Wang, Yangqing Li, Yuxiao Li, Fengling Han

IECON26-001588 **Torque-Balancing Method Based on Steady-State Equations for Independent Sensorless Control of Dual Three-Phase IPMSMs**
John Jairo Gelpud, Sami Ouazine, Ramkrishan Maheshwari

14:00–15:30
Room - PR8

Onsite-TT-125: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Shady Khalil · Mohammad Amera

IECON26-000135 **Performance Optimization of Underwater Vehicles Power Architecture with Direct DC-Bus Supercapacitor and Predictive Energy Management**
Youcef Belkhier, Adel Oubelaid, Abdeslam Mamoune, Mohamed Benbouzid

IECON26-000229 **GTLeak: Graph Isomorphism Networks with Transformers for Water Leakage Detection**
Md Rakibul Ahasan, Mehna Lakshminarayanan, Rachad Atat, Erchin Serpedin, Abdulrahman Takiddin

continues on next page ▸

Day 4 - Wednesday October 21

14:00–15:30
Room - PR8
cont'd

Onsite-TT-125: Cyber-Physical Systems and Internet of Things in Industry · continued

IECON26-001216 **Design and Implementation of a TinyML-Based Predictive Maintenance System fo Ball Mill Condition Monitoring**
Takudzwa Haparimwe, Sibongile Natasha Malindi, M Takawira

IECON26-000821 **Edge-Conditioned Contrastive Graph Learning for False Data Injection Detection in Transmission Power Systems**
Mariam Elnour, Rachad Atat, Hasan Kurban, Abdulrahman Takiddin, Muhammad Ismail, Katherine R. Davis, Erchin Serpedin, Mariam Elnour

IECON26-000460 **Leveraging Asset Administration Shells to Achieve an Interoperable Manufacturing App Ecosystem**
Mohammed Ismael Ahmed, Basem Elshafei, David Sanderson, Jack Chaplin, Svetan Ratchev

IECON26-000003 **Black Flag Breach: ROP Attacks on Software PLCs**
Wael Alsabbagh, Kai Lehniger, Peter Langendorfer, Sam Tareque

14:00–15:30
Room - PR3

Onsite-TT-126: Power Electronics Converters

Chairs: Oktoviano Gandhi · Mohamed Orabi

IECON26-001276 **Time-Series Planning of Localized Voltage Support in DER-Intensive Compact Urban Feeders**
Ahmed Ismail, Ziad Zaatar, Yazan Nakad, Ahmed Awad, Maged Baoumy, Morcos Metry

IECON26-001251 **GPT-assisted physics-informed electric motor sizing**
Victor Goman, Jamal Alsawalhi

IECON26-001158 **Analysis of a Postregulated system based on a DCX Converter and Partial Power Converter for more efficient Data Centers**
Diego Rojas, Freddy Flores-Bahamonde, Hugues Renaudineau, Edivan Laercio Carvalho, Andrii Chub

IECON26-001101 **Reconfigurable Full- to Partial-Power Converter for Flexible Residential Battery Energy Storage Application**
Edivan Laercio Carvalho, Niwton Gabriel Feliciani dos Santos, Neelesh Yadav, Vitor Pires, Freddy Flores-Bahamonde

IECON26-001789 **Mitigating Power Sources Degradation in Hybrid PV-FC-Battery USVs via Deep Reinforcement Learning**
Malek Nedjar, Mohamed Nadir Boukoberine, Bekheira Tabbache, Youcef Belkhier, Mohamed Benbouzid

IECON26-000850 **Computational Fluid Dynamics-Based Thermal Modeling of Liquid Cooled Electric Vehicle Charger**
Abdul Wadood Fathah, Naheel Kamal, Ali Sharida

15:30

15:30–16:00
Dafna - Foyer

Coffee Break

16:00

27 parallel sessions

16:00–17:30
Salwa 3

Workshop - 4 (Typhoon)

16:00–17:30
Mitras

TC Meeting - 2

16:00–17:30
Haloul

TC Meeting - 3

Day 4 - Wednesday October 21

16:00–17:30
Room - PR5

TC Meeting - 4

16:00–17:30
Room - PR6

TC Meeting - 5

16:00–17:30
Room - PR7

TC Meeting - 6

16:00–17:30
Room - PR3

Workshop - 5 (Digital Twin Applications in Power Systems)

Instructors: Mustafa Ersan and Ridvan Canbaz

16:00–17:30
Room - PR4

Workshop - 6 (Edge Intelligence for Energy Management)

Instructors: Ashraf Alsharawi, Ahmad Hammoud, Bayan Shaer, Hiba Hijazi

16:00–17:45
Online Room-01
ONLINE

Online-TT-143: Power Systems and Smart Grid

Chairs: Mohamed Trabelsi · Kundan Kumar

IECON26-000525 **Synchronization Stability Mechanism of Hybrid Grid-Forming and Grid-Following Control With Current Constraint**
Haoran Wang, Rongwu Zhu, Ji Qi, Yong Yi

IECON26-001510 **Distributed Multi Objective Scheduling of ESS and V2G in Microgrids**
Yunlun He, Zehua Ye, Fanghong Guo, Dan Zhang, Marek Jasinski

IECON26-001356 **Multi-Agent Battery Digital Twin for Robust State of Charge Estimation via Spatial Temporal Graph Attention Networks**
Muhammad Usman Shoukat, Wang Wenshuo, Awais Khan, Muhammad Usman Shams, Muhammad Imtiaz, Muhammad Yousuf

IECON26-000471 **Enhanced Impedance Scanning Method for Assessment of Multi-Converter Power System Stability in Real-Time Simulator**
Muassar Hameed, Maria Camila Castrillon-Franco, Peter Palensky, Jose Luis Rueda

IECON26-001623 **Protection-Constrained Allocation of BESS Converter Ratings for Data-Center Ride-Through and Frequency Support**
Yansong Pei, Chandan Chaudhary, Abanish Tiwari, Mohammed Ben-Idris, Joydeep Mitra

IECON26-000363 **An Integrated Active Sensing System for On-Board Bolt Preload Monitoring**
Zicong Zhang, Hailing Fu, Zhuowen Liu, Deng Fang

IECON26-001118 **Comparative Financial Assessment of Conventional BESS, Shared Energy Storage, and Energy Storage as a Service Models for Small-Scale Enterprises**
Oguzhan Karaagac, Erdal Bekiroglu, Ugur Fesli

16:00–17:45
Online Room-02
ONLINE

Online-TT-144: Power Electronics Converters

Chairs: Mohammad Yazdani-Asrami · Hafiz Ahmed

IECON26-001695 **Optimal Fractional-Order PID Controller-Based Voltage Regulation in Buck Converter Feeding Constant Power Loads: A Hardware-in-the-Loop Validations**
Diego Obando Beltran, Alvaro Hoffer, Moslem Dehghani, Daniel Pensantez, Patricio Burgos, Freddy Flores-Bahamonde, Jose Rodriguez, Alvaro Prado

IECON26-001457 **Nested Soft-Switching Criteria and a Closed-Form Optimal Dead Time for SiC Dual-Active-Bridge Modules in Medium-Voltage ISOP Solid-State Transformers**
Motasem Talafha

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Day 4 - Wednesday October 21

16:00–17:45
Online Room-02
ONLINE
cont'd

Online-TT-144: Power Electronics Converters · continued

IECON26-001547 **Switching Loss Distribution for Dual Inverter With Isolated Supplies Using Fixed Clamping Regions**
Yuhang Hu, Fangzhe Li, Shihua Xu, Daoliang You, Zhen Huang

IECON26-001589 **A Time-Division Carrier-Based Modulation Strategy for Multi-Port Three-Phase DC-AC Converters**
Xinyi Yan, Yi Wang, Hao Qin, Celine -, Yan Deng, Abhishek Kumar

IECON26-001675 **RE-INTEGRATE: Electromagnetic Transient Modeling and Benchmarking of Single-Phase Front-End Converters for Data-Center Applications**
Kazi Ishrak Ahmed, Shamim Hasan, Suman Debnath

IECON26-001684 **Interval Type-2 Fuzzy Fractional-Order PID Controller Based on a Partial Power Converter for Fast Charging of Lithium-Ion Batteries in Electric Vehicles**
Daniel Pensantez, Moslem Dehghani, Kevin Marlon Soza Mamani, Alvaro Hoffer, Freddy Flores-Bahamonde, Jose Rodriguez, Alvaro Prado

IECON26-000492 **From AI-assisted to AI-native Industrial Control: Architecture, Agent Design, and Challenges**
Lisi Liu, Bin Wang, Quan Tang, Chuan Pang, Feng Gao, Shengkai Liu

16:00–17:45
Online Room-03
ONLINE

Online-TT-145: Renewable Energy and Energy Storage Systems

Chairs: Qiang Wei · Niccolo Nicodemo

IECON26-001294 **Multi-Temperature Adaptive Extended Kalman Filtering for Robust Lithium-Ion Battery SOC Estimation Under Dynamic Operating Conditions**
Tofik Seid Ali, Yong Chen, Haoyu Chai

IECON26-001331 **Optimal Fixed and Tracking PV System Configurations under Time-of-Use Scheduling: A Comparative Techno-Economic Analysis**
Md. Zobair Kabir, Md. Nafizul Islam Neion, A S M Jahid Hasan

IECON26-001831 **Adaptive Source-Based Normalization for Improved RNN Energy Prediction in Digital Twins**
Adel Mounir Said, Hossam Afifi, Michel Marot, Hassine Moungle, Heba Allah Sayed

IECON26-001566 **Mission-Profile-Oriented Design of a High-Current Dual Active Bridge Converter for Low-Voltage Wave Energy Converters**
Victor Bailesteanu, Anand Krishnamurthy Iyer, Luc Hogervorst, Thiago Batista Soeiro

IECON26-001574 **Comparative Analysis of Unscented Kalman Filter-based State of Charge Estimation in Aged Sodium-Ion Batteries**
Cesare Sandri, Niccolo Nicodemo, Roberto Di Rienzo, Federico Baronti, Roberto Roncella, Roberto Saletti

IECON26-001576 **MVDC-Tied Modular Battery Energy Storage System with Partial Power Processing**
Mohammadjavad Hassani, Milad Rasoulikhatir, Qiang Wei

IECON26-000082 **A Simple and Efficient Method for Eliminating Weighting Factors in FCS-MPC**
Recep Yildiz, Emrah Zerdali, Marco Rivera, Mert Altintas, Patrick Wheeler, Murat Barut

16:00–17:45
Online Room-04
ONLINE

Online-TT-146: Transportation Electrification and Automotive Technologies

Chairs: Jicheng Chen · Wei Wang

IECON26-001363 **Multi-Library Feature Engineering and Statistically Validated Classification for Power Swing Detection and Stability Assessment**
Samita Rani Pani, Pallav Kumar Bera, Ranjeeta Patel

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Day 4 - Wednesday October 21

16:00–17:45
Online Room-04
ONLINE
cont'd

Online-TT-146: Transportation Electrification and Automotive Technologies · continued

IECON26-000764 **Common-Mode MATD3-Assisted Distributed PI Secondary Control for CPL-Dominated DC Microgrids**
Wei Wang, Imen Bahri, Demba Diallo

IECON26-001167 **Graph Reconstruction and Generation of DC-DC Converters Using Heterogeneous Graph VAE**
Sima Azizi Aghdam, Xin Zhang, Mohammed Agamy

IECON26-001347 **A Neural Network-Based Surrogate Modeling Framework for Multi-Objective Optimization of Inductive Power Transfer Systems**
Chi Fong Ieong, Io-Wa Iam, Yuying Luo, Muxing Wu, Chi-Seng Lam

IECON26-001478 **DC-Link Stabilisation of Wireless Power Transfer Systems Using Supercapacitor-Battery Hybrid Energy Storage**
Zhixing Liu, Sadeeshvara Silva Thotabaddadurage, Tek Tjing Lie

IECON26-000221 **A Comparative Study of Optimal PMU Placement in IEEE MATPOWER Test Cases**
Zubair Khan Mohammed, Shady Khalil, Mostafa Farrag, Amira Mohammed, Ziyad Shafik, Mohamed Trabelsi

IECON26-001853 **Hierarchical Energy Management and Centralised Finite Control Set MPC for Hybrid Islanded DC Microgrids**
Marco Rivera, Mehmet Cecen, Ricardo Perez, Zahra Esfahani, Aleksandra Lekic, Jakson Bonaldo

16:00–17:45
Online Room-05
ONLINE

Online-TT-147: Control Systems and Applications

Chairs: Shengzeng Zhang · Fengqiu Liu

IECON26-000756 **Large-Scale Electric Vehicle Charging Scheduling Using Genetic Algorithm Discrete Projection Neural Network**
Shizhen Li, Fengqiu Liu, Xinkai Chen

IECON26-001030 **Control-Oriented Physico-Chemical pH Modeling in Bubble Column Photobioreactors**
Ylanna Bandeira, Manoela Almeida, Fernando Piva Mendes, Luis Henrique Guerra Dytz, Sthevan Oliveira, Marcos Villela Rodrigues, Fabricio Ferrari, Letieri Avila, Vinicius Oliveira

IECON26-000757 **Dynamic Trust and Incentive-Based Consensus Model for Group Decision-Making With Application to Photovoltaic Plant Siting**
Meng Zhao, Fengqiu Liu, Xinkai Chen

IECON26-001063 **LAC-HOCBF: Lag-Aware Certified High-Order Control Barrier Functions with Feasibility Guarantees for Cascaded Systems**
Zixi Peng, Li Jin

IECON26-000090 **Stackelberg Game-Based Event-Driven Control for Trajectory Tracking of Nonlinear Systems**
Jianmin Wang, Hongxu Zhang

IECON26-001191 **A Liquid Actor Critic Based Fault-Tolerant Control Scheme for a UAV Octarotor**
Zainab Akhtar, Salman Ijaz, Qadeer Ahmed, Sidra Ghayour Bhatti

IECON26-001728 **Robust Observer-Based Control for Three-Phase Islanded Microgrid Under Parametric Uncertainty**
Omaima Smouni, Meriem Labourel Nachidi, Abdelhamid Rabhi, Jerome Bosche

16:00–17:45
Online Room-06
ONLINE

Online-TT-148: Mechatronics and Robotics

Chairs: Florian Kerber · Jingze Zhang

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Day 4 - Wednesday October 21

16:00–17:45
Online Room-06
ONLINE
cont'd

Online-TT-148: Mechatronics and Robotics · continued

IECON26-000236 **Autonomous Drone-to-Drone Interception via Real-Time Visual Tracking and Servoing with a Gimbal Camera**
Hao Liu, Yu Hu, Kangnan Wang, Sergii Baidachnyi, Rakiba Rayhana, Zheng Liu

IECON26-001453 **An EMR model of a Power-HIL Mobile Platform for Full-Scale AGV Emulation**
Fernando Gaspar Lopes, Joao Trovao, Nuno Miguel F. Ferreira

IECON26-001456 **Collision-Oriented Knee Control for Stability Enhancement of a Passive Dynamic Walker**
Vahid Ehteshami Bojnurdi, Fateme Ranjbaran, Mahyar Naraghi, Valeriy Vyatkin

IECON26-001472 **Design and Vision-Guided Control of a Compact Wheel-Legged Stair-Climbing Transport Robot**
Jingze Zhang

IECON26-001492 **Mimoso: Small-Scale Platform for Biped Sim-to-Real Locomotion Research**
Murilo Bicho, Vinicius Oliveira

IECON26-001531 **A Multi-UUV Cooperative Planning Method for Post-Detection Revisit of Non-Cooperative Underwater Targets**
Jiajia Zhou, Yang Wu, Shuxin Yang

IECON26-001558 **Decentralized Swarm Resilience Under Stochastic Gamma Noise: A Computational Model for Pressure Vessel Inspection**
Dhyan Ishwar Shaji

16:00–17:45
Online Room-07
ONLINE

Online-TT-149: AI Applications in Control, Mechatronics, and Robotics

Chairs: Muhammad Usman Sajid · Ramiro Barbosa

IECON26-001279 **AI-based Trust Recommendation Model:A Hybrid Approach Combining Cloud Model and Probabilistic Linguistic Term Set**
Yan Wang, Michael Basin, Yuhan Zheng

IECON26-001323 **Design of a Multi-sensor Data Fusion Pipeline for depth-of-cut Estimation**
Vianney Papot, Atal Anil Kumar, Ines Chihi

IECON26-000533 **A Robust Privacy-Preserving Indoor Localization System via Bayesian Grid Intersection and Threshold Secret Sharing**
Haojun Lin, Shengming Chang, Tuozhong Yao

IECON26-001399 **Enhancing Performance and Reducing Conservatism of LPV Systems: A Reinforcement Learning Approach with Stability Guarantees**
Yongkang Zhang, Qian Shi, Hui Zhang

IECON26-001466 **Classification of physical activity intensity using PPG and acceleration signals from wearable devices**
Simao Soares, Vasco Fonseca, Ramiro Barbosa, Luis Conceicao

IECON26-001526 **An Embodied Agent Framework for Flexible Industrial Robotic Sorting Across Diverse Objects**
Lingyuan Yang, Jiabao Dong, Jingheng Yan, Lei Ren

IECON26-001563 **Explainable Risk-Based Trustworthiness Modeling for Industrial AIoT Systems**
Oumayma Zeddini, Mohamed Yessin Zeddini

16:00–17:45
Online Room-08
ONLINE

Online-TT-150: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Flavia Pires · Gautam Srivastava

IECON26-001187 **Digital Assistance System for Knowledge Management in Production**
Akashkumar Chovatiya, Andreas Schwung, Gerrit Pohlmann

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Day 4 - Wednesday October 21

16:00–17:45
Online Room-08
ONLINE
cont'd

Online-TT-150: Cyber-Physical Systems and Internet of Things in Industry · continued

IECON26-001089 **Asset Administration Shell Enabled Real-Time Digital Twin for Automated Production Systems**
Jiayang Li, Jingyun Zhao, Dominik Hujo, Birgit Vogel-Heuser

IECON26-001264 **CALNet: Convolutional Autoencoder for Time and Energy-Based Attack Localization in EVCS**
Md Rakibul Ahasan, Alex Burnside, Rachad Atat, Shahriar Rahman Fahim, Abdulrahman Takiddin

IECON26-001307 **GridShield-IoT: An Explainable AI Framework for Cyberattack Detection in Smart Grid Networks**
Prabhjot Kaur, Richa Sharma, Tarun Kashyap, Gautam Srivastava

IECON26-000227 **A Digital Twin-Based Dynamic Scheduling Method for Discrete Manufacturing Workshop**
Yupeng Fu, Weili Wang, Fan Xu, Weiwei Qian

IECON26-000481 **Cross-Sensor Chained Diamond Model for Enhancing GRC Practices in ICS**
Kousei Sakata, Junya Fujita, Shota Fujii, Nobutaka Kawaguchi, Hideaki Ishii, Satoshi Takemoto

IECON26-001723 **Does Sub-Byte Quantization Pay Off for Offline Mobile Retrieval? A Cross-Device Android Study with Chest X-ray Embeddings**
Gabriel Tavares, Verissimo R. C. Neto, Joao Victor Neves Machado da Silva, Alfredo Barros, Andre Assis Bernardes, Vicente Lucena, Carlos Alberto Oliveira de Freitas, Vandermi Joao da Silva

16:00–17:45
Online Room-09
ONLINE

Online-TT-151: Signal & Image Processing Methodologies

Chairs: Barisha Chowdhury · Eduardo Borges

IECON26-001421 **FGS-MoE: Frequency-Guided Spatial MoE for Oriented SAR Object Detection**
Zheng Chen, Senxian Zhang, Wenli Huang, Ye Deng, Yizhe Huang, Shuichao Zhang

IECON26-001440 **Automated Region-of-Interest Detection for Targeted Geotechnical Borehole Scanning**
Gabriella Muscat, Brian Azzopardi, Evan Dimech, Christian Schembri, Adrian Mifsud, Andrew Sammut

IECON26-001471 **Silhouette-based Groove Profile Tracking for Automotive Rotor Inspection**
Gabriel Rocha De Souza, Juliana Dos Santos, Rafaella Quaresma Lourenco, Mateus Pinto, Victor Coch, Eder Mateus Goncalves, Nelson Duarte Filho, Eduardo Borges, Vinicius Oliveira, Marcelo Pias, Marcelo Malheiros

IECON26-001506 **How Many Measurements Are Needed Data Efficient LTE Sector Orientation Inference from Spatial RSRP Measurements**
Srivathsan Chakaravarthi Narasimman, Jackson Juliet Roy, Gnanaprakash Sebastian

IECON26-001509 **Automated Extraction of Quantitative Data from Biomedical Figures Using Vision-Language Models**
Shrish Goel, Chetan Anand P, Jeuti Talukdar, Binil Benny

IECON26-001373 **Soft Actor-Critic Assisted Model Predictive Current Control of Permanent-Magnet Synchronous Motors**
Dong Xu, Guanda Yang, Hongxing Wei, Zeyu Li, Yupeng Liu, Marco Rivera, Patrick Wheeler, Yukun Wang

IECON26-001446 **The Impact of Numerical Energy Consistency on Friction Identification**
Heyang Feng, Xiaoguang Hu, Dong Xu, Yupeng Liu, Marco Rivera, Patrick Wheeler

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16:00–17:45
Online Room-10
ONLINE

Online-TT-152: Industrial Informatics, Cloud Computing, Big Data

Chairs: Sudheer Obbu · Siva Prakash

IECON26-001821 **Zero-Shot Fault Diagnosis of an Aircraft Fuel System via Model Context Protocol-Based Knowledge Graph Querying and LLMs**
Franz Christopher Kunze, Felix Janzen, Manjinder Singh, Tom Westermann, Alexander Diedrich, Gianluca Manca, Felix Gehlhoff, Oliver Niggemann, Alexander Fay

IECON26-001467 **Horizon-Time Limits in Real-Time Iteration MPC for Agile Quadrotor Flight, and When FPGA Offload of the Condensed Hessian Pays**
Jie Sheng, Souleymane Dembele

IECON26-001606 **Zephyr for the Industrial Internet of Things: A Case Study Using Ethernet-APL and MQTT**
Nicolas Coppik, Tobias Dorr, Roland Braun, Philipp Bauer

IECON26-001538 **An EV Fast Charger Utilizing a Six-Switch Rectifier and Three-Phase Interleaved Buck Converter with Soft Switching and CP CV Charging Protocol**
Ahmed Alfouly, Hugo Valderrama-Blavi, Rachid Errouissi, Abdelali El Aroudi

IECON26-000999 **RHP-Zero-Constrained PIR Control Design for Three-Phase Differential Boost Inverters**
Yang Zhang, Xiao Li, Yushan Liu, Marco Rivera, Patrick Wheeler

IECON26-000092 **Electromagnetic Interference Prediction of Synchronous Buck Circuits Based on Hierarchical Attention Deep Neural Networks**
Qiang Zhou, Ruitong Yan, Yuhang Shang, Xiao Li, Marco Rivera, Patrick Wheeler

IECON26-001286 **Implementation of a Double-Tail Dynamic Latch CMOS Comparator with Modified Widlar Current Source in a 45nm 3-Bit Flash ADC**
Amatul Kuteja, Rangayya A

16:00–17:45
Online Room-11
ONLINE

Online-TT-153: Power Electronics Converters

Chairs: Bo Guan · Asif Jamadar

IECON26-001699 **Moving Target Defense via D-FACTS Reactance Perturbation Against False Data Injection Attacks: Effectiveness and Hiddenness Analysis**
Md Abu Taher, Anwer Shees, Mohammad Ashiqur Rahman, Arif Sarwat

IECON26-001741 **Optimized Event-Driven Resilient Control for FDI Attacks on DER Reactive Power Coordination**
Mengzhi Wang, Raja Ayyanar, Vijay Vittal

IECON26-001594 **A Seven-level Switched-Capacitor Inverter With Equal-Voltage Flying Capacitors and Expanded Switching-State Redundancy**
Arshia Esmail Tehrani, Javad Ebrahimi, Alireza Bakhshai

IECON26-000922 **Five-Degree-of-Freedom Modulation with ZVS for Neutral-Point-Balanced Three-Level NPC Dual-Active-Bridge Converters**
Seyed Hamidreza Mousavi Tabar, Javad Ebrahimi, Alireza Bakhshai

IECON26-000929 **A Deep Reinforcement Learning-Based Control Approach for a DC-DC Bidirectional DISO Power Converter in a DC Microgrid**
Amirhossein Hosseini, Saeed Hosseinnataj, Majid Mehrasa, Mohammad Babaie, Kamal Al-Haddad

IECON26-000931 **Secure Sensing Framework of a Multiport DC-DC Converter Using a Deep Learning-based Nonlinear Controller**
Amirhossein Hosseini, Saeed Hosseinnataj, Majid Mehrasa, Mohammad Babaie, Kamal Al-Haddad

IECON26-000831 **Failure-Driven Enhancement for Crack Detection in Photovoltaic Panels Using Electroluminescence Images**
Ali Teta, Kouzou Abdellah, Derradji Bakria, Ahmed Chennana, Jose Rodriguez, Mohamed Abdelrahem

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16:00–17:45
Online Room-12
ONLINE

Online-TT-154: Power Electronics Converters

Chairs: Erfan Shahsavargar · Prince Baah-Mensah

IECON26-001641 **Output Stage Design Options for the High-Frequency Isolated Full-Bridge DC-DC Converter**
Ersin Aksu, Ahmet Masum Hava, Can Gurtunca

IECON26-000459 **Experimental Data-Based Static and Dynamic Modeling of a Proton Exchange Membrane Electrolyzer Interleaved Buck Converter System**
Hoda El Assal, Mamadou Bailo Camara, Damien Guilbert

IECON26-000559 **Active Damping Gain Impact on Inverter Loss and Junction Temperature in Multi-Mass Drive Systems**
Jingru Zhou, Xiong Liu, Zhifeng Huang, Jishnu Kavil Kambrath

IECON26-001130 **Radial Bias Function Neural Network Based Hall Sensor Fault Diagnosis and Reconstruction of Signal for Speed Control of BLDC Motor Drive**
Amit Kumar, Ganesh Chandramouleeswaran, Saravanan G, Roland Ryndzionek, Raja Krishnamoorthi, Gianluca Gatto

IECON26-001463 **Exogenous Feature Value Under Chronological Validation of Data Center PUE Forecasting Models**
Mouna Nassim, Mohamed Bezza

IECON26-001413 **Optimized Design of Non-Integer ADRC Speed Control for PMSM Using Marine Predator Algorithm**
Mokhtar Aly, Mahmoud S. R. Saeed, Ahmed Elsanabary, Ahmed Shawky, Ahmed Abouzeid, Mohamed Abido, Abdallah Kouzou, Jose Rodriguez

IECON26-000825 **A Structural Modeling Framework for Modular Multi-Active Bridge Converters with Application to Renewable-Powered Hydrogen Production**
Amir Ghasemian, Alfonso Damiano, Carlo Cecati, Sobhan Mohamadian

16:00–17:45
Online Room-13
ONLINE

Online-TT-155: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Jose Barbosa · Miguel Calle Zuniga

IECON26-000500 **Using Zero-shot Large Language Models for Smart-Meter Energy-Theft Identification**
Emran Altamimi, Moaz Jemmieh, Abdulaziz Al-Ali, Qutaibah Malluhi

IECON26-001139 **Deterministic Execution of Containerized Virtual PLCs on IT-Based Hardware: An Experimental Evaluation for Motion-Control Workloads**
Nour Ben Kebaier, Svenja Strauss, Eike Lyczkowski, Riccardo Venanzi, Luca Foschini, Mike Barth

IECON26-000384 **Experimental Evaluation of an Edge-Enabled IoT Smart Meter for Real-Time Energy Monitoring**
Anibal Calle-Zuniga, Washington Velasquez Vargas, Fabio Garcia-Gomez

IECON26-000937 **Evaluating AEAD Cryptography for IoT Smart Metering under Variable Wireless Conditions**
Anibal Calle-Zuniga, Washington Velasquez Vargas

IECON26-000983 **Towards Protection of Privacy-Related Information in Telexistence Robot Operations**
Katsuki Hosokawa, Naoki Hirakura, Kohei Tokoi, Sousuke Nakamura, Hiroyuki Okada, Arvin Agah, Eimei Oyama

IECON26-000686 **Adaptive Super-Twisting Integral Nonsingular Terminal Sliding Mode Control for Precision Motion Systems**
Liang Xia, Hu Li, Xiaoqing Li, Yifeng Shao, Yixin Xu, Zhenlong Cao

IECON26-001386 **Deep Reinforcement-Learning-Powered PID Control for Multirotor Unmanned Aerial Vehicle (UAV)-Various Reinforcement-Learning Algorithms**
Shafiqul Islam

Day 4 - Wednesday October 21

16:00–17:45
Online Room-14
ONLINE

Online-TT-156: Power Systems and Smart Grid

Chairs: Lixun Zhu · Amirhosein Gohari Nazari

IECON26-001370 **Magnetic Signature Reconstruction of Closely Spaced Hall-Effect Sensor Arrays for Reliable Ammunition Bin Identification in Armoured Fighting Vehicle Autoloaders**
Sushanthika Jambukesan, Selvathai T, Rajaseeli Reginald

IECON26-000440 **Integral Design of Observer for Ultra-Local Model-Free Controller in Electric Motors**
Zhenxiao Yin, Chencheng Dong, Shi-Wei Ricky Lee

IECON26-001408 **Model-Free Predictive Control for Grid-Forming Inverters Using Coupling-Based Regressor Vectors**
Min Huang, Liuting Wang, Kangan Wang, Lixun Zhu, Zhilei Yao, Weimin Wu

IECON26-001830 **Transition between Grid-connected and Islanded Operation of AI Data Centers Using Grid-Forming Inverters**
Amirhosein Gohari Nazari, Uzair Asif, Harsha Vardhan Reddy Modugu, Mohammad Shadmand

IECON26-001319 **Soiling Detection and Its Discrimination from Confounders in an Off-Grid Single-String PV System Using a Digital Shadow**
Halil Ertas, Ugur Fesli, Sevki Demirbas, Kemal Celik, Mustafa Bahadir Ozdemir

IECON26-000477 **Dynamic droop specifications for Grid-Forming Inverter-Based Resources**
Jennifer Bui, Dominic Gross, Deepak Ramasubramanian

IECON26-001282 **RAG-Based Auto-Configuration for Industrial Fieldbus Devices**
Aadil Gani Ganie, Saad Ezzini, Naveed Farooz Marazi

16:00–17:45
Online Room-15
ONLINE

Online-TT-157: Renewable Energy and Energy Storage Systems

Chairs: Hamidreza Arasteh · Xin Sui

IECON26-001617 **A Modular Edge IoT-based Architecture for Smart Public Lighting Infrastructure: Intra-Pole Communication Tests**
Luis Lopes, Carlos Alcantara, Flavia Pires, Jose Barbosa, Beatriz Cristina De Faria, Tiago Pedrosa, Tiago Silva, Joao Paulo Coelho

IECON26-001774 **Quantifying Zenoh-Based OTA for Zonal SDVs: Integration Depths and Completion Semantics**
Jeong Ho Ahn, Young Soo Do, Sung Bhin Oh, Young Min Kim, Seung Uk Son, Beomgi Suh, Min Young Chung, Jae Jeon

IECON26-001145 **A Sparse Polynomial Degradation Model with Bayesian Online Updating for Lithium-Ion Battery Remaining Useful Life Prediction**
Bac Viet Nguyen, Hieu Le Van, Jae Jeon

IECON26-000294 **Adaptive Obstacle Avoidance Control for Mecanum-Wheeled Robot System with Input Delay**
Zhihong Zhao, Zhengkai Li, Mariusz Malinowski, Juan J. Rodriguez-Andina

IECON26-000960 **Modulation Strategy Assessment for Optimized Dual Active Bridge DC-DC Conversion**
Erdal Bekiroglu, Mucahit Hakan Mun

IECON26-001784 **Kramers-Kronig-Consistent Gaussian Process Prediction of Lithium-Ion Battery Impedance Spectra Across States of Charge**
Fahrettin Ay, Ahmet Kutay Aydogan, Anas Karaki, Sertac Bayhan, Haitham Abu-Rub, Erchin Serpedin

IECON26-001896 **Thermal Performance of GNP, NiFe2O4, and Hybrid Nano-Enhanced PCMs in a Simulated Battery Thermal Management System**
Irem Karaaslan, Coskun Yuksel, Tayfun Menlik, Furkan Bugra Oztaskin, Adnan Sozen

Day 4 - Wednesday October 21

16:00–17:45
Online Room-16
ONLINE

Online-TT-158: Transportation Electrification and Automotive Technologies

Chairs: Alireza Zare · Islam Sayed

IECON26-001567 **Energy Fusion: High Gain DC-DC Converter Integrating Fuel Cell and Battery in Multi-Operational Modes**
Shahbaz Ahmad Khan, Jamal Alsawalhi, Balanthi Beig, Vinod Khadkikar

IECON26-000465 **Multi-Agent Multi-Objective Actor Critic Energy Management for Battery Supercapacitor Hybrid Storage in Electric Vehicles**
Islam Sayed, Yousef Mahmoud

IECON26-000842 **High-Power Powertrain DC Architectures for Non-Road Mobile Machinery**
Md Nasim Sarkar, Pasi Peltoniemi

IECON26-001000 **Section-Level Inconsistency Detection in Safety Data Sheets Using Structured LLM Prompting**
Josias Borba, Thiago Paixao, Filipe Mutz, Alberto De Souza, Claudine Badue, Thiago Oliveira-Santos

IECON26-000624 **Implementation-Aware Evaluation of Industrial PID Tuning Strategies on a Siemens PLC under Real-Time Constraints**
Utkaarsh Saha, Shabnam Sadeghi Esfahlani

IECON26-000207 **Neural A* Path Planning with Data-Driven Learning and Spatial Attention Decoupling**
Shiwen Chen, Junsuo Qu, Dan Yang, Heng Yao, Jiahao Zhang, Zhuangzhuang Jin

IECON26-000124 **Generalized Relative Degree-Based Control of Non-Minimum Phase Converters: A Boost Converter Case Study**
Farzaneh Bagheri, Hasan Komurcugil, Naki Guler, Samet Biricik

16:00–17:45
PR1 Office
ONLINE

Online-TT-159: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Rambabu Budithe · Joao A Martins

IECON26-000864 **Robust Jacobian Estimation in Continuum Robots: A Sliding-Window Least-Squares Approach**
Xinyi Xiao, Wang Xiang, Bo Xiao, Tiangliang Li, Ziwei Wang

IECON26-001315 **Hard-Safe Runtime Scheduling of Hard and Soft Typed DAGs for Reconfigurable Heterogeneous Satellite Platforms**
Yulu Mao, Jinglong Zhang, Kaixuan Fang, Qingwei Sun, Xiaolin Wang, Cailian Chen, Xinping Guan

IECON26-000574 **Physics-Informed Neural Network for Broken Rotor Bar Fault Severity Estimation in Squirrel Cage Induction Motors via MCSA**
Haraprasad Badajena, Ayushman Behera, Debranjan Mukherjee, Mamata Jenamani, Aurobinda Routray, T P Yuvaraj

IECON26-001691 **Multi-Scale Fruit Capsules: Dilated Convolutions and Dynamic Routing for In-the-Wild Explainable Fruit Recognition**
Subhankar Chattoraj, Sawon Pratiher, Samiran Das, Hubert Konik

IECON26-000101 **A Dynamic Simulation Model of Heterogeneous Cyber-Physical Microgrids Driven by Prior Knowledge Cellular Automata**
Leijiao Ge, Yuning Wang, Rubo Lu, Zhouyue Meng, Luyang Hou, Yue Zhuo

IECON26-000299 **Feedforward and PI-Based Output Current Control for a Secondary Resonant Single Active Bridge Converter**
Mohamed Abdelrazek, Wataru Kitagawa, Takaharu Takeshita

IECON26-001065 **Techno-Economic Optimization of Local Energy Markets: A Comparative Study of Heuristic, Dynamic, and Evolutionary Clearing Mechanisms in Renewable Energy Communities**
Joao Martins, Tiago Sousa, Rui Amaral Lopes, Pedro Pereira, Vitor Pires

Day 4 - Wednesday October 21

16:00–17:45
Ginan
ONLINE

Online-TT-160: Cyber-Physical Systems and Internet of Things in Industry

Chairs: Youmin Zhang · Artem Popov

IECON26-000795 **A Real-Time Adaptive Framework for Coordinated Multi-Link Replay Attack in DC Microgrids**
Saqib Ali, Andrii Chub, Hayretdin Bahsi

IECON26-000971 **A Credit-Based Framework for Fair Access to Shared Battery Energy Storage in Local Energy Communities**
Izviye Fatimanur Tepe, Erdal Irmak

IECON26-000769 **UAV-based Smart Terrain Following**
Xiaobo Wu, Youmin Zhang, Amin Taherzadeh, Huajun Dong

IECON26-000770 **ITB-PP Planner for Aerial Firefighting**
Xiaobo Wu, Youmin Zhang, Linhan Qiao

IECON26-000957 **CLIPTrack-SAM: Fast-Adapting Semantic Tracking for Industrial Assembly via CLIP and SAM**
Sheng Liu, Shijun Yan, Haiyue Zhu, Jingbing Zhang

IECON26-000096 **Hybrid Fourier-Neural-Expert Model for Early Rubbing Detection in Steam Turbine Flow Path**
Fedor Mitin, Artem Popov

IECON26-001718 **Non-Invasive Prediction of Leaf Electric Field Harvester Output Using Vision-Derived Hydration**
Hernan Chuga, Tito Arevalo, Oswaldo Menendez

16:00–17:45
Online Room-17
ONLINE

Online-TT-165: Electric Machines and Industrial Drives

Chairs: Mohamed Gad · TBA

IECON26-001544 **From Halbach to Surface-Mounted PM Rotor: Electromagnetic Performance Evaluation and Design Trade-Offs**
Sarang Satheesh, Muhammad Khowja, Liya Tom, Naveen Sundaram, Gopinath Sengupta, Kuldeep Singh, Gaurang Vakil, Chris Gerada

IECON26-000963 **A High-Gain Single-Source Switched-Capacitor Multi-Level Inverter with Reduced Component Count**
Fatemeh Esmaeili, Hamid Reza Koofigar, Frede Blaabjerg

IECON26-001333 **A GaN-Based Seven-Level Current-Fed Cascaded H-Bridge Inverter with Open-Circuit Protection for Grid-Connected PV Systems Switch**
Amirhossein Ramezankhani, Mostafa Marvasti, Amir Masoud Nouki, Mohammad Ali Mirshafiee, Sobhan Mohamadian, Carlo Cecati

IECON26-001384 **VMD-CMCSNet: A Cross-Mode Context-Guided Residual Shrinkage Network for Bearing Fault Diagnosis Under Strong Noise and Load Variations**
Jun Yang, Xuedong Jing

IECON26-001664 **Acoustic-Attention UAV Inspection for ROI-Oriented 3D Reconstruction: A Preliminary Field Study**
Taise Batista, Marlon M. Lopez-Flores, Hebert Azevedo, Paulo Fernando Ferreira Rosa

IECON26-001849 **A Parallel Hybrid LSTM-XGBoost Architecture for Short-Term Photovoltaic Power Forecasting on the PVOD Dataset**
Abbas Babaei Birag, Sasan Azad, Hamidreza Arasteh, Anand Rajendran, Josep Guerrero, Sanjeevikumar Padmanaban

IECON26-001635 **Residential EV Smart Charging Using Proximal Policy Optimization**
Amirreza Shafieinejad, Sasan Azad, Mohammad Taghi Ameli, Hossein Ameli, Goran Strbac, Hamidreza Arasteh, Sanjeevikumar Padmanaban, Cesar Diaz-Londono, Josep M. Guerrero

Keynote Speaker: Prof. Xiaohong Guan



Xian Jiaotong University, China

Professor Xiaohong Guan received his B.S. and M.S. degrees in Control Engineering from Tsinghua University, Beijing, China, in 1982 and 1985, respectively, and his Ph.D. degree in Electrical and Systems Engineering from the University of Connecticut in 1993.

He was a Senior Consulting Engineer with Pacific Gas and Electric, San Francisco, United States, from 1993 to 1995. He visited the Division of Engineering and Applied Science, Harvard University, from 1999 to 2000.

Since 1995, he has been with Xian Jiaotong University, Xian, China, where he has served as the Cheung Kong Professor of Systems Engineering since 1999, and as the Dean of the Faculty of Electronic and Information Engineering from 2008 to 2025.

Since 2001, he has also been affiliated with the Center for Intelligent and Networked Systems at Tsinghua University, Beijing, China, and served as the Head of the Department of Automation at Tsinghua University from 2003 to 2008.

Professor Guan is a Member of the Chinese Academy of Sciences and an IEEE Fellow. His research interests include economics and security of networked systems, optimization-based planning and scheduling of electrical power and energy systems, manufacturing systems, and cyber-physical systems.

Cyber-Physical Systems in the Age of Intelligence and Networking

Networking, intelligence, and integration of cyber and physical systems represent a major trend in the development of information science and technology. Cyber-physical systems form the foundation of the industrial, energy, and technological revolutions, presenting tremendous challenges in cyber-physical modeling, intelligent design, system optimization, and control.

Hydrogen-enabled zero-carbon energy systems provide an ideal infrastructure and offer cost-efficient solutions for energy supply and consumption without carbon emissions or pollution. Within such systems, it is crucial to synergize the design and operation of renewable, hydrogen, electrical, and thermal energy production, storage, and utilization systems in order to minimize overall energy supply costs.

Production results demonstrate that hydrogen-enabled zero-carbon energy systems significantly outperform current power grids, city heating utilities, and HVAC cooling systems in terms of total energy costs. Cyber-physical integration, hydrogen-enabled zero-carbon energy storage and conversion, and advanced system optimization are key drivers of the energy revolution toward addressing the global warming crisis.

Keynote Speaker: Prof. Maryam Saeedifard



Georgia Institute of Technology, USA

Maryam Saeedifard received the Ph.D. degree in electrical engineering from the University of Toronto, in 2008. Since January 2014, she has been with the School of Electrical and Computer Engineering at Georgia Institute of Technology, where she is currently a Ken Byers Professor.

She is a recipient of the IEEE Modeling and Control Technical Achievement Award (2024), the IEEE Bimal Bose Award for Industrial Electronics Applications in Energy Systems (2024), Roger Webb's Excellence in Mentorship Award from the School of Electrical and Computer Engineering at Georgia Tech (2023), the 8th Nagamori Award from the Nagamori Foundation (2022), Roger Webb's Outstanding Mid-Career Faculty Award (2021), the U.S. Clean Energy Education and Empowerment (C3E) Technology Research & Innovation Award from the Department of Energy (2021), the First Place Prize Paper Award from IEEE Transactions on Power Electronics (2023, 2022, 2021), the Best Transactions Paper Award of IEEE Transactions on Industrial Electronics (2018, 2016), the IEEE J. David Irwin Early Career Award (2018), the U.S. National Academy of Engineering Frontiers in Engineering in Education (2012), the U.S. National Academy of Engineering Frontiers in Engineering (2011), and the IEEE Richard M. Bass Outstanding Young Power Electronic Engineer Award (2010).

She is an IEEE Fellow and currently serves as the Editor-in-Chief of IEEE Transactions on Power Electronics Letters. Her research interests include power electronics and its applications in terrestrial and mobile power systems.

Next-Generation Grid Architectures in the Era of Power Electronics & AI

Power systems are undergoing a fundamental architectural transformation driven by high renewable penetration, declining system inertia, and the rapid emergence of large, dynamic AI-driven load centers. In this context, power electronics are evolving from peripheral interfaces into the primary enablers of stability, flexibility, and resilience in modern power networks.

This keynote explores next-generation grid architectures in which power-electronic interfaces play a central and coordinated role across transmission systems, distribution networks, and large-scale load integration. Recent advances in converter design, control, protection, and interoperability are examined.

By highlighting international initiatives and emerging research directions, the presentation outlines a unified architectural vision for a resilient, flexible, and sustainable power grid suited to the era of power electronics and AI.

Keynote Speaker: Prof. Huijun Gao



Harbin Institute of Technology, China

Huijun Gao is a Chair Professor and Director of the Research Institute of Intelligent Control and Systems at Harbin Institute of Technology. His research focuses on intelligent control, intelligent instruments and equipment, and intelligent robotic systems.

Prof. Gao is a Foreign Member of the Academia Europaea and an IEEE Fellow, and serves as President-Elect of the IEEE Industrial Electronics Society. He served as Editor-in-Chief of the IEEE/ASME Transactions on Mechatronics from 2023 to 2025, and currently serves as Editor-in-Chief of the IEEE Transactions on Systems, Man, and Cybernetics: Systems.

He has been awarded two National Natural Science Awards and one National Technological Invention Award. He is the recipient of the IEEE Norbert Wiener Award and the IEEE Dr.-Ing. Eugene Mittelmann Achievement Award. He has been an ESI Highly Cited Researcher since 2014.

Intelligent Robotic System for Organoid Regeneration

Organoids are in vitro biological models that can recapitulate the structural and functional features of native tissues and organs. They represent a leading biomedical research frontier with broad application prospects. This report introduces the technologies, systems, and translational applications of intelligent robotic systems for organoid regeneration.

To address the challenge of controllable, batch-scale organoid regeneration, this report covers core theories and enabling technologies. These include robotic multimodal sensing of organoid growth, robotic micromanipulation of organoid cells, as well as modeling and intelligent control of organoid developmental dynamics based on robotic micromanipulation framework.

We have established an intelligent robotic system for organoid regeneration, enabling scientific exploration of organoids in pathological studies, drug screening and personalized precision medicine. This report concludes by introducing organoid intelligence as an emerging frontier, and discusses the future directions of carbon-based intelligence empowered by intelligent robotic systems.

Keynote Speaker: Prof. Biplab Sikdar



National University of Singapore (NUS), Singapore

Biplab Sikdar is the Provost's Chair Professor and Head of Department in the Department of Electrical and Computer Engineering at the National University of Singapore (NUS). At NUS, he also leads the $54 million Cisco–NUS Corporate Research Laboratory.

He received the B.Tech. degree in Electronics and Communication Engineering from North Eastern Hill University, Shillong, India, in 1996; the M.Tech. degree in Electrical Engineering from the Indian Institute of Technology, Kanpur, India, in 1998; and the Ph.D. degree in Electrical Engineering from Rensselaer Polytechnic Institute, Troy, NY, USA, in 2001.

His research interests include IoT and cyber-physical system security, network security, and network performance evaluation. Dr. Sikdar is an IEEE Fellow, IEEE Distinguished Lecturer, ACM Distinguished Speaker, and a member of Eta Kappa Nu and Tau Beta Pi.

He has served on the editorial boards of IEEE Transactions on Communications, IEEE Transactions on Mobile Computing, IEEE Internet of Things Journal, and IEEE Transactions on Network and Services Engineering, and as the Technical Program Committee (TPC) Co-Chair of symposia in IEEE SmartGridComm and IEEE Globecom.

AI-Driven Cyber Defense for Next-Generation Power Grids

The rapid digitalization of power systems—driven by distributed energy resources, advanced sensing, and wide-area communication—has significantly expanded the cyber-attack surface of modern grids. Traditional security mechanisms, built around static rules and manual response, are no longer sufficient against adaptive, stealthy, and fast-moving threats.

This talk explores how Artificial Intelligence (AI) can serve as a foundational layer of cyber defense for next-generation power grids. It examines recent advances in machine-learning-based intrusion detection, real-time anomaly detection using multimodal grid data, and AI-enabled threat prediction that anticipates adversarial behavior before it impacts operations.

The presentation also addresses the challenges of deploying AI at scale in safety-critical environments, including data scarcity, model robustness, explainability, and the risk of adversarial manipulation.

By highlighting emerging research directions and practical deployment insights, this keynote outlines a pathway toward an autonomous, resilient, and intelligent cybersecurity architecture capable of defending tomorrow's power grids at machine speed.

Keynote Speaker: Prof. Sudip K. Mazumder



University of Illinois Chicago, USA

Dr. Sudip K. Mazumder received his Ph.D. degree from Virginia Tech. He is a Distinguished Professor, the Robert Uyetani Professor of Engineering, and the Director of the Laboratory for Energy and Switching-Electronic Systems (LESES) at the University of Illinois Chicago.

He also holds a joint appointment with the U.S. Argonne National Laboratory and has served as the President of NextWatt LLC since 2008. He has more than 30 years of professional experience.

He is a Fellow of the IEEE and a Fellow of the American Association for the Advancement of Science (AAAS). He is the recipient of the 2023 IEEE Power & Energy Society Ramakumar Family Renewable Energy Excellence Award. He has served as a Distinguished Lecturer for the IEEE Power Electronics Society and as the Editor-at-Large for IEEE Transactions on Power Electronics.

Starting in 2025, he serves as the Deputy Editor-in-Chief of the IEEE Journal of Emerging and Selected Topics in Power Electronics (JESTPE).

Actuation by Light: A New Era in Power Electronics

Photonically controlled power semiconductor devices and electronics represent a game-changing technology in power electronics. With the advent of new wide and ultra-wide bandgap materials, semiconductor devices are beginning to switch at progressively higher speeds and voltages.

The impact of such near-impulse actuation and its effects on reliability can potentially be better managed through photonics. Moreover, emerging threats such as intentional adversarial intrusion can be mitigated through optical control technologies.

Optical power semiconductor devices enable ultrafast, high-voltage, high dv/dt and di/dt resilient, EMI-immune, and cyber-secure power electronics solutions with wide industrial applications including aerospace, high-performance computing (e.g., AI hyperscalers), pulsed power, HVDC, EVs and AVs, radar-based systems, 5G/6G systems, multilevel converters, drives, electric ships and submarines, solid-state circuit breakers, and many more.

This keynote provides an engaging overview of photonically controlled device and electronics technologies, covering historical developments, current advancements, and emerging perspectives for the IECON 2026 audience.

Keynote Speaker: Prof. Francisco Gonzalez-Longatt



University of South Eastern Norway & Loughborough University, UK

Francisco M . G onzalez-Longatt is the Chief Scientist and Co-Founder of fglongatt LTD, a consultancy specialising in Digital Energy Systems, and he is currently a professor of electrical power engineering at Institutt for elektro, IT og kybernetikk, Universitetet i Sørøst-Norge, Norway. Also, he is with the Wolfson School of Mechanical, Electrical and Manufacturing Engineering and a member of the Centre for Renewable Energy Systems Technology (CREST) at Loughborough University, UK.

He is the author or editor of several books (Spanish and English), including: “Power Factory Applications for Power System Analysis”, Springer; “Advanced Smart Grid Functionalities Based on PowerFactory”, Springer, and “Dynamic Vulnerability Assessment and Intelligent Control for Sustainable Power Systems”, Wiley.

He has written 30+ book chapters, 100+ journal and magazine papers and 200+ conference papers. His work has over 8.0k+ citations, and his h-index is 40 (January 2025), according to Google Scholar. He is ranked in the top 2% of the scientific list by Elsevier and Stanford University (ranked 2138 in the energy subfield).

His research interests include innovative (operation/control) schemes to optimise the performance of future energy systems. His research is or has been supported by the Royal Society, the British Council, and the UK-India Education Research Initiative (UKIERI). He has been collaborating in European research projects, including “Integration of Offshore wind power into the Spanish Power System using HVDC”, Universidad Carlos III and Universitat Politecnica de Catalunya, Spain.

Protection in the Era of Power Converter-Dominated Systems

In an increasingly electrified world, electrical power systems are undergoing a profound transformation as power converter–dominated networks become the new backbone of generation, transmission, and distribution.

This keynote explores how the shift from synchronous machines to fast-acting, digitally controlled converters is redefining the foundations of protection philosophy, challenging long-held assumptions about fault signatures, system inertia, coordination, and stability.

As traditional protection methods confront reduced fault currents, fluctuating impedances, and complex control interactions, a new mindset is required—one that blends advanced signal analytics, real-time intelligence, adaptive protection strategies, and converter-aware system models.

Protection in the era of power-converter-dominated systems is not merely a technical imperative; it is a call to innovate boldly, rethink engineering heritage, and lead the industry toward a resilient, flexible, and secure future powered by next-generation electrical systems.

Keynote Speaker: Prof. Samir Kouro



Luxembourg Institute of Science and Technology

Samir Kouro received the M.Sc. and Ph.D. degrees in electronics engineering from Universidad Técnica Federico Santa María (UTFSM), Valparaíso, Chile, in 2004 and 2008, respectively. In 2026, he joined the Luxembourg Institute of Science and Technology (LIST) as Head of the Intelligent Clean Energy Systems (ICES) Unit. He joined UTFSM in 2007, where he is currently an Affiliated Professor. From 2009 to 2011, he was a Postdoctoral Fellow at Toronto Metropolitan University, Canada, and from 2022 to 2023, he held a María Zambrano Research Fellowship at Universidad de Sevilla, Spain.

His research interests include power electronics and advanced control for energy-transition applications, with emphasis on renewable energy systems, green hydrogen production, energy storage, and electromobility. He has led more than 45 R&D projects and was a co-founder and Principal Investigator of the Solar Energy Research Center (SERC Chile, 2012–2025) and the Advanced Center for Electrical and Electronic Engineering (AC3E, 2014–2026), two major Chilean centers of excellence. He has coauthored two books, 15 book chapters, and more than 250 refereed journal and conference papers.

Dr. Kouro served as Associate Editor of IEEE Industrial Electronics Magazine from 2022 to 2024 and currently serves as its Editor-in-Chief for the 2025–2027 term. He has also organized and chaired 30 special sessions at international conferences and served as Guest Editor for five Special Sections in IEEE journals.

He was elevated to IEEE Fellow in 2025 for contributions to power converter topologies and control for the energy transition. His distinctions include the 2025 Nagamori Award, the 2016 IEEE Industrial Electronics Society Bimal K. Bose Award, the 2015 IEEE Industrial Electronics Society J. David Irwin Early Career Award, and the 2012 IEEE Power Electronics Society Richard M. Bass Outstanding Young Power Electronics Engineer Award. He was also recognized as a Clarivate Highly Cited Researcher in 2018 and has received seven IEEE Best Paper Awards.

Partial Power Conversion: Enabling More Efficient Energy Transition Technologies

Power converters have become a critical technology for many energy transition applications, including renewable energy conversion, energy storage, electromobility, and green hydrogen production and utilization. The rapidly increasing penetration of power electronics in these systems, particularly in applications involving multiple power conversion stages, has made converter efficiency, reliability, cost, and power density more important than ever.

Partial power conversion offers an attractive approach to addressing these challenges. Rather than processing the full power transferred by the system, partial power converters process only a fraction of it, thereby reducing power conversion losses and potentially decreasing converter size, cost, and component stress. The underlying concept is already well established in applications such as doubly fed induction generator (DFIG)-based wind turbines, using indirect AC-DC-AC conversion.

This plenary presentation will review recent advances and developments in partial power conversion, with particular emphasis on DC–DC converter architectures. It will discuss how the concept can be adapted to different system requirements and how it has been implemented and experimentally validated across several energy transition applications. The presentation will also examine the main technical challenges and limitations that must be addressed to enable wider adoption, and will provide an outlook on the future role and opportunities of partial power conversion in next-generation power conversion systems.

Tutorial 1: Condition Monitoring and Prognosis in Power and Energy Systems

From Advanced Signal Processing and Hybrid AI to Digital Twins and LLM-Enabled Decision Support

Prof. Mohamed Benbouzid
University of Brest, CNRS, France
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Prof. Demba Diallo
University Paris-Saclay, CNRS, France
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ABSTRACT

Condition monitoring, fault diagnosis, and prognosis are essential for ensuring the reliability, availability, and safety of modern power and energy systems, including electric machines, power electronic converters, renewable energy systems, and energy storage technologies. Among the available monitoring techniques, electrical and signal-based approaches, such as current, voltage, vibration, and thermal analysis, offer non-invasive, cost-effective, and widely deployable solutions. These techniques have been extensively studied and standardized, as reflected in international standards such as ISO FDIS 20958 for electrical signature analysis. However, the operating conditions of contemporary power and energy systems are increasingly non-stationary, characterized by variable-speed operation, intermittent renewable sources, frequent transients, and cyber-physical interactions. Under such conditions, classical spectral analysis techniques often exhibit limited robustness, motivating the development of advanced signal processing methods and, more recently, machine learning and deep learning-based approaches. While data-driven methods have demonstrated strong performance in fault diagnosis and remaining useful life (RUL) estimation, their practical deployment is constrained by data scarcity, lack of labeled degradation histories, limited generalization across assets, and challenges in interpretability. This tutorial provides a structured and progressive overview of failure diagnosis and prognosis methodologies for power and energy systems, starting from advanced signal processing techniques and evolving toward hybrid AI, digital twin-based approaches, and AI-2.0 paradigms. Particular emphasis is placed on physics-guided and hybrid modeling, which combine physical insight with data-driven learning to improve robustness, interpretability, and industrial relevance. As a recent extension, the tutorial introduces large language models (LLMs) and related foundation models as system-level support tools for condition monitoring and prognosis. In line with current research perspectives, LLMs are not presented as replacements for signal processing or machine learning models, but rather as high-level cognitive layers capable of interpreting diagnosis and prognosis outputs, integrating heterogeneous information (e.g., maintenance records and operational context), and supporting human-in-the-loop decision-making within digital twin-centric architectures.

Tutorial 2: How Model Predictive Control is Revolutionizing The High-Power Drives Industry

Tobias Geyer
ABB Motion High Power Solutions, Turgi, Switzerland
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ABSTRACT

This tutorial discusses what it takes for model predictive control (MPC) to make a break-through in industry. While the low-power drive industry has been slow in adopting the most widely investigated MPC methods, MPC has started to revolutionize high-power drives by increasing their rated power, lowering their cost and ensuring their safe operation in the presence of grid disturbances and faults. In particular model predictive pulse pattern control (MP3C) fully exploits the performance potential of high-power drives by combining the benefits of MPC with the optimal steady-state performance of optimized pulse patterns. The MP3C principle can be applied to a wide range of applications, including medium-voltage drives, low-voltage traction converters, and modular multilevel converters. For load commutated inverter drives, model predictive torque control (MPTC) increases the drive's efficiency and robustness to grid disturbances. Both methods have been commercialized and will be discussed in detail. To complete the tutorial, finite control set MPC, which is the predictive control method most academic researchers have been focusing on, will also be discussed. To maximize its performance potential, it will be shown how control problems with long prediction horizons can be formulated and solved efficiently using a specific branch and bound method. The tutorial provides an in-depth insight into industrial needs and requirements regarding new control methods, and provides a balanced mix of theory and application-related material. Special care is taken to ensure that the presented material is intuitively accessible to the drives practitioner.

Tutorial 3: Recent Advances, Challenges And Future Trends of Model Predictive Control Applied To Power Electronics

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ABSTRACT

Recently, the rapid advancement of modern microcontrollers has revolutionized power converter control, enabling the development and implementation of new intelligent control and modulation strategies. Among these, Model Predictive Control (MPC) has emerged as a powerful and versatile alternative, getting significant attention from both academia and industry. MPC offers numerous advantages over classical linear controllers, including its intuitive design, elimination of linear controllers and modulators, and seamless integration of nonlinearities and constraints into the control law. These features make MPC strategies a highly promising solution for tackling complex control challenges in various areas of power electronics. This tutorial will address the latest advancements and trends in MPC for power converters, highlighting its practical benefits and potential for widespread industrial adoption. Participants will gain insights into the fundamental principles of MPC, explore state-of-the-art applications, and learn about challenges and opportunities regarding MPC implementation. The tutorial will provide a comprehensive understanding of how MPC is reshaping power electronics and drives, bridging the gap between academic research and real-world implementation.

Tutorial 4: Industrial Intelligence for the Smart Grid: IEC 61850 Process Bus and Digital Substations in the Era of ICT and Artificial Intelligence

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ABSTRACT

The digitalisation of electric power systems is accelerating rapidly, driven by the global push toward sustainable energy, decentralised generation, and intelligent, data-centric operation of critical infrastructure. At the core of this transformation stands IEC 61850, the international standard for Protection, Automation, and Control Systems (PACS). Beyond its foundational role in substation automation, IEC 61850 has evolved into a key enabler for next-generation smart energy systems—providing advanced communication frameworks, data modelling, and interoperability capabilities essential for the modern grid. This tutorial presents a comprehensive, application-oriented exploration of IEC 61850's Process Bus concept and the emerging Digital Substation paradigm, highlighting how recent advances in Information and Communication Technologies (ICT) and Artificial Intelligence (AI) are reshaping the Industrial Electronics landscape. IEC 61850 introduces a unified, object-oriented architecture that ensures seamless data exchange between Intelligent Electronic Devices (IEDs), sensors, control systems, and supervisory platforms. Its standardised information models and service interfaces support multi-vendor interoperability—one of the principal challenges faced by utilities during grid modernisation. As power systems integrate more renewables, electric vehicles, flexibility services, and distributed energy resources, the scalability, responsiveness, and efficiency offered by IEC 61850 become indispensable. The Process Bus, in particular, represents a significant shift from traditional copper-based hardwiring to high-speed, Ethernet-based digital communication for Sampled Values (SV) and GOOSE messages. This transition reduces installation costs, increases system reliability, enhances maintainability, and enables new digital functionalities across the substation lifecycle. The tutorial will highlight how ICT innovations—including real-time Ethernet networking, edge computing, virtualisation, cybersecurity technologies, and time-sensitive networking (TSN)—strengthen the robustness and intelligence of IEC 61850-based architectures. Moreover, the emergence of AI-enabled analytics, distributed machine learning, and intelligent anomaly detection is opening new frontiers for adaptive protection, predictive maintenance, and operational optimisation in Digital Substations. These developments directly support the IEEE Industrial Electronics Society (IES) focus areas spanning industrial cyber-physical systems, embedded intelligence, advanced control, and smart energy conversion. By integrating ICT and AI capabilities with standardised digital communication, the Digital Substation becomes a cornerstone of the smart grid. Enhanced situational awareness, improved fault detection, flexible automation, and secure remote operability are among the most transformative outcomes. This tutorial will explore practical examples, implementation challenges, and recommended engineering practices to guide participants from foundational concepts to advanced applications. Emphasis will be placed on leveraging IEC 61850 within intelligent, data-driven industrial energy systems, aligning with IES themes such as energy efficiency, resilient control, computational intelligence, and industrial communications. By the end of this tutorial, participants will gain a clear and actionable understanding of how the Process Bus operates, how Digital Substations are architected, and how ICT and AI advancements unlock new capabilities for smart, cyber-secure, and sustainable power systems. The content is designed to benefit industry practitioners, researchers, and system integrators seeking to contribute to the next generation of intelligent energy infrastructures within the scope of IEEE IES.

Tutorial 5: Sub-Synchronous Oscillations in Modern Power Systems

Mechanisms, Detection, and Mitigation for Large-Scale Renewable Energy Integration

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ABSTRACT

The rapid and large-scale integration of inverter-based resources (IBRs) - including wind farms (DFIG/Type-3 and PMSG/Type-4), photovoltaic plants, battery energy storage systems (BESS), and VSC-HVDC transmission links - is fundamentally changing the dynamic characteristics of modern power networks. One of the most critical consequences is the emergence of Sub-Synchronous Oscillations (SSOs) at frequencies from approximately 5 Hz to 50 Hz. Unlike classical torsional Sub-Synchronous Resonance (SSR) triggered by series-capacitor compensation in conventional thermal plants, modern IBR-driven SSOs arise from complex interactions between converter control loops and network impedances—often manifesting without series compensation and in grids with no rotating machinery. Real-world SSO events have caused significant disruptions: the Hami (China) incident in PMSG/Type-4 wind farms in 2015; the Texas (ERCOT) Sub-Synchronous Control Interaction (SSCI) events in 2009; the Guyuan (China) DFIG-SSR case in series-compensated transmission; and IBR-driven oscillations (8-10 Hz and 17-20 Hz) documented by the Australian Energy Market Operator (AEMO). With Qatar's National Renewable Energy Ambition targeting 20% renewable generation by 2030 - and the GCC interconnection progressively integrating large solar and wind capacity - SSO risks in the Gulf grid are no longer hypothetical; they are an engineering imperative. This workshop unites world-class academic researchers from Qatar University (QU) and Hamad Bin Khalifa University (HBKU) with industrial expertise from Iberdrola QSTP to deliver a comprehensive, practice-oriented half-day tutorial. Attendees will gain a rigorous understanding of SSO physics, learn state-of-the-art analysis and screening tools (impedance-based analysis, open-loop modal analysis, frequency scanning, EMT modeling), and explore proven mitigation strategies, all grounded in real system data and GCC-relevant case studies.

Tutorial 6: Insulation and Bearing Reliability in Wide Bandgap Motor Drives

Challenges, Mechanisms, and Mitigation

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ABSTRACT

Wide-bandgap (WBG) power semiconductor devices, especially silicon carbide (SiC) MOSFETs and gallium nitride (GaN) HEMTs, are transforming the design of modern motor drives by enabling higher efficiency, faster switching, higher power density, and greater system integration than conventional silicon-based technologies. These advantages are particularly attractive in electric transportation, industrial automation, renewable energy systems, and aerospace applications, where compactness, efficiency, and dynamic performance are increasingly important. However, the very features that make WBG devices attractive also introduce serious machine-side reliability challenges. In particular, the high dv/dt and high switching frequency of WBG converters can significantly intensify motor overvoltage, insulation stress, bearing currents, and EMI, creating failure risks that are far less pronounced in traditional silicon IGBT motor drives. This tutorial will address these issues with a specific focus on motor insulation and bearing degradation in WBG-based drive systems. The tutorial will first establish the link between the fast-switching characteristics of SiC and GaN devices and the resulting voltage stress imposed on electrical machines. It will show how, under WBG excitation, motor terminals and stator winding neutral point can experience substantial overvoltage even with much shorter cables than those typically associated with silicon IGBT drives. It will further explain how the steep voltage wavefronts generated by WBG converters lead to highly non-uniform voltage distribution inside the machine winding, with a large portion of the electrical stress concentrated across the first few turns near the motor terminal or neutral point. This localized stress is of particular importance because it can accelerate insulation degradation and increase susceptibility to partial discharge. A major part of the tutorial will then focus on the mechanisms by which high dv/dt and high switching frequency affect both winding insulation and motor bearings. For insulation systems, the tutorial will explain how repetitive steep-fronted pulses contribute to overvoltage stress, partial discharge activity, and long-term aging. For bearings, it will discuss how common-mode voltage and parasitic capacitive couplings create bearing currents that may lead to electrical discharge machining, lubricant degradation, and premature bearing failure. The tutorial will emphasize the physical understanding of these phenomena and show how converter behaviour, machine construction, and cable-drive interactions combine to determine the severity of the problem. To provide a strong practical dimension, the tutorial will include experimental results obtained from SiC- and GaN-based motor drive platforms. These results will illustrate the influence of switching speed, switching frequency, and drive configuration on winding overvoltage, insulation stress, and bearing current behaviour. The observed effects will be interpreted using both time-domain and frequency-domain analysis so that attendees gain not only awareness of the challenges but also a clear understanding of the theory behind them. The tutorial will also present a set of mitigation techniques aimed at improving the reliability of high-frequency WBG motor drives. These will include passive and active filters, waveform shaping through optimized gate-drive design and soft-switching, alternative converter topologies, and quasi-multilevel modulation strategies. Practical SiC/GaN motor drive examples will be used throughout to demonstrate both the challenges and the effectiveness of the proposed countermeasures. By concentrating on the machine reliability implications of WBG adoption, this tutorial addresses a timely and important gap between device-level progress and system-level implementation. It will provide IECON attendees with both fundamental insight and application-oriented guidance, helping researchers and practicing engineers better understand, evaluate, and mitigate insulation and bearing issues in next-generation WBG motor drives.

Tutorial 7: Multi-Scale Resilience Enhancement and Coordinated Orchestration of Next-Generation Networks for Energy and Coupled Traffic V2G Systems

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ABSTRACT

The large-scale integration of electric vehicles (EVs), renewable energy resources, intelligent transportation infrastructures, and vehicle-to-grid (V2G) technologies is transforming urban energy ecosystems into highly interconnected cyber-physical systems. While these developments offer unprecedented opportunities for decarbonization and operational flexibility, they also introduce significant challenges related to resilience, scalability, uncertainty, cybersecurity, and real-time coordination across power and transportation networks. This tutorial presents emerging methodologies for the modeling, control, resilience enhancement, and coordinated orchestration of coupled power-traffic-energy systems. Particular emphasis is placed on next-generation V2G-enabled microgrids operating under dynamic and uncertain urban conditions. The tutorial introduces multi-scale modeling frameworks that capture interactions among energy sources, converters, EV charging infrastructures, grid assets, users, and transportation networks. Participants will learn advanced techniques in source-load demand forecasting, distributed energy management, resilience assessment, fault detection, and digital twin-enabled system operation. Recent developments in artificial intelligence, machine learning, distributed optimization, and parallel intelligence systems will be discussed as enabling technologies for future urban energy and transportation ecosystems. The tutorial will further demonstrate how digital twins and parallel simulation environments can be utilized for real-time testing, validation, and decision support. Practical examples, case studies, and research challenges will be presented to bridge the gap between theoretical developments and real-world deployment of resilient V2G-enabled urban microgrids.

Tutorial 8: Partial Power Processing Converters, A Myth or the Reality

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ABSTRACT

Power electronics and power conversion in general is today part of every segment of our life. Any piece of electric equipment we have today is somehow based on power electronics and converters; home appliance, industrial equipment, renewable energy, automotive, avionic, etc., etc. Conversion efficiency, specific power, power density and converter cost are today the most critical requirements for new converters. One way to increase the efficiency and reduce cost/size/weight is to deploy multi-level and/or multi-cell converters and partial power processing power converters. A novel solution to ultra-high efficiency and specific power dc/dc converters has been proposed and theoretically investigated in this tutorial. The solution is based on the fact that in most of application we do not need to process entire dc bus voltage and output current. We can process a fraction of the dc bus voltage and/or the load current. In other words, we do not need to process the converter total rated power; we would process just a fraction of the rated power. This is so-called concept of Partial Power Rated Converters (PPRC). Typical target applications are PV boost converters, energy storage (batteries and ultra-capacitors) interface converters, isolated ac/dc power supplies, electric drives, etc., etc. Advantages of the PPRC concept, such as significant reduction of the input/output filter size & weight, voltage rating of power devices and conduction/switching losses are theoretically investigated and discussed in the tutorial. Various applications such as energy storage interface converters, isolated ac-dc converters and double feed electric machines are also discussed. Several case studies and design examples are given in concluding part of the tutorial. One particular design example presented in the tutorial is 25kW battery interface dc/dc converter. An extraordinary efficiency of 99.5%, specific power of 30kW/kg and power density of 50kW/dm3 have been achieved. This tutorial is aimed at power electronics engineers, professionals and graduate students who want to improve their knowledge and understanding of advanced concepts of power conversion, such as Partial Power Rated Converters and applications.

Tutorial 9: Industrial Medium-Voltage Converters and Drives: From Components to Systems and Applications

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ABSTRACT

This tutorial provides a comprehensive introduction, overview and assessment of medium-voltage converters and drives. Such converters and drives are vital to decarbonize the planet by generating renewable energy and electrifying transportation systems and heavy industry. A particular emphasis is laid on system aspects, i.e., the integration of the transformer, converter, electrical machine and load into a high-performance drive system. To increase the reliability, redundancy can be added on the converter level. To minimize the cost of such drive systems - or conversely - to maximize their hardware capability in terms of rated voltage and current, model predictive pulse pattern control (MP3C) offers a disruptive way of achieving this, as will be shown in this tutorial. The classic control methods, scalar control, field-oriented control and direct torque control will be introduced as well. Medium-voltage drives are highly tailored to their specific application. Therefore, the understanding of the key applications is vital, such as Marine propulsion, rolling mills in the Metals industry, crushers and mine hoists in the Mining industry, Wind power generation, and pumps and compressors used in the Oil and Gas industry. Besides the classic motoric applications, non-motoric applications are quickly growing in market size, among them static frequency converters (SFCs) and power electronics grid simulators. SFCs provide electrical power to berthed ships or remote locations, whereas grid simulators allow the testing and verification of renewable energy systems. Both applications are much more challenging to control and operate than classic variable speed drives, providing fruitful research problems. This tutorial will introduce the exciting world of medium-voltage converter and drive systems, it will showcase the opportunities they offer, and will point out challenging research problems for academics and researchers working in industry alike.

Tutorial 10: Optimization Design, Analysis and Control of High-Performance Special Permanent-Magnet Machine Systems

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ABSTRACT

This tutorial focuses on optimization design, analysis and control of high-performance special permanent-magnet machine systems. Three typical PM machines including the multi-phase fault-tolerant permanent-magnet synchronous machine (PMSM), variable-flux machine and compound structure PM machine are taken as the representatives. First, the multi-phase fault-tolerant PMSM with strong fault-tolerant capability will be introduced, focusing on the new topologies, hybrid single/double-layer winding design and less-harmonic winding design, fault-tolerant control methods for both the open-circuit and short-circuit faults, and fault detection methods. Next, a prospective drive system scheme for multiphase fault-tolerant PMSM based on current-source inverter (CSI) topology will be introduced, focusing on virtual-impedance active damping, disturbance modeling and suppression, multi-dimensional current vector modulation, reconstruction and tolerance control under typical inverter fault scenarios. Besides, the variable-flux machine which has wide operation region and high efficiency at high-speed condition will be introduced. Several series/parallel topologies, nonlinear hysteresis modelling method, high-precision magnetic circuit model, and on-line magnetization-regulation control method of the variable-flux machine will be presented. Finally, the compound structure PM machine, which can be used as the electronic continuously variable transmission (E-CVT) in hybrid electric vehicle (HEV) will be introduced. The novel topologies, precise two-dimensional analytical method, magnetic decoupling design method, and processing and manufacturing method of the compound-structure PM machine will be presented.

Tutorial 11: Resilient Power Grid of the Future with High Voltage DC Transmission

Developments, Challenges and Opportunities

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ABSTRACT

The global energy landscape is undergoing a profound transformation, driven by the imperative to integrate renewable sources and interconnect diverse grids. High-Voltage Direct Current (HVDC) technology has emerged as the critical enabler for this new era, moving beyond its traditional niche to become the backbone of the future power system. This tutorial explores the HVDC systems, outlining its transformative potential to unlock remote renewable energy resources, establish resilient transnational supergrids, and enhance grid stability through advanced control capabilities. The key technological advancements propelling this evolution, including the maturation of Voltage-Source Converter (VSC) technology, the development of hybrid and multi-terminal systems (MTDC), and innovations in power electronics and semiconductor devices will be discussed. Furthermore, the discussion extends to the symbiotic relationship between HVDC and digitalisation, highlighting how artificial intelligence and real-time data analytics are optimising operation, predictive maintenance, and fault management. Looking ahead, the application of HVDC is expanding into new and unprecedented domains. The technology is now seen as a cornerstone for massive offshore wind integration and the development of intercontinental 'supergrids' that can balance renewable generation across time zones. Furthermore, the concept of 'green hydrogen' production, coupled with HVDC links from remote solar and wind farms, presents a viable pathway for decarbonising industrial sectors. These applications underscore a shift in perception. HVDC is no longer just a point-to-point connection but the foundational architecture for a new, climate-positive energy ecosystem. However, realising this full potential requires navigating a complex web of multi-disciplinary challenges. Beyond the technical hurdles, significant barriers exist in regulatory harmonisation, financing models for multi-national projects, and public acceptance of new infrastructure. The future development of HVDC will therefore depend as much on geopolitical cooperation and innovative business cases as on pure engineering breakthroughs. Success will be measured by the ability to create a supportive policy environment that encourages investment and international collaboration. While the path forward is promising, it is not without its challenges. The tutorial also touches upon the hurdles that must be overcome, such as the need for standardised international frameworks, substantial upfront investment, and the development of a skilled workforce. Ultimately, this analysis concludes that HVDC is not merely an alternative but is fundamental to building a sustainable, secure, and interconnected global energy future. The HVDC technology is here, promising to power our future with unprecedented efficiency and scale.

Tutorial 12: System Identification of Grid-Forming and Grid-Following Converter Control Modes in IBR-Dominated Networks

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ABSTRACT

The global energy landscape is undergoing a profound transformation driven by the large-scale integration of inverter-based resources (IBRs), including solar photovoltaics, wind generation, and battery energy storage systems. Unlike conventional synchronous generators, IBRs interface with the grid through power electronic converters, introducing fundamentally different dynamic characteristics and new stability challenges for transmission system operators (TSOs). A key determinant of system behavior is the control strategy implemented within these converters, which primarily falls into two categories: grid-following (GFL) and grid-forming (GFM) control. These control modes exhibit distinct dynamic responses under disturbances, significantly influencing frequency stability, voltage regulation, inertia emulation, and fault response. As power systems evolve toward lower inertia and higher converter penetration, understanding and distinguishing between these control modes becomes critical for secure and reliable grid operation. In practice, however, converter control implementations provided by vendors are often treated as “black boxes,” limiting the visibility available to TSOs for both planning and real-time operations. This lack of transparency introduces uncertainties in system studies and operational decision-making, particularly under extreme conditions. This tutorial addresses this challenge by introducing measurement-based system identification techniques for distinguishing between GFL and GFM control modes. Participants will learn how to leverage time-domain measurement data to understand control characteristics without requiring detailed knowledge of internal controller designs. The tutorial will cover both classical approaches and emerging methods such as AI for system identification. The session will bridge the gap between academic research and practical TSO applications by discussing implementation considerations, data requirements, and integration into operational workflows. Real-world challenges such as measurement noise, limited observability, and scalability will be addressed, along with future directions including real-time monitoring and adaptive modeling.

Tutorial 13: Edge AI and Advanced Sensor Fusion (Radar, Camera, LiDAR, USS) for Next-Generation Autonomous Vehicles

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ABSTRACT

As the automotive industry accelerates toward higher levels of autonomous driving, the reliance on robust, high-fidelity environmental perception has never been more critical. This tutorial provides a comprehensive deep dive into the architecture, deployment, and integration of advanced automotive sensors specifically Radar, Camera, Ultrasonic Sensors (USS), and LiDAR. While individual sensor modalities have inherent strengths and limitations, the future of autonomous navigation relies on sophisticated sensor fusion and edge-computing AI to process this data in real-time. This tutorial will guide attendees through the complete lifecycle of modern automotive perception systems. We will begin with the fundamental operating principles and hardware architectures of each sensor type, moving into the complexities of data synchronization and calibration. The second half of the tutorial will focus on the software and AI layer, demonstrating how Large Language Models (LLMs) and advanced neural networks are being optimized for edge deployment (e.g., local processing) to handle complex sensor fusion tasks. Finally, we will address the critical regulatory and compliance frameworks (including FCC/ICES norms for sensors) that govern the deployment of these technologies in production vehicles.

Tutorial 14: Multiphase Electric Drives: Sustainable Rewinding, Inverter Topologies, and Control

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ABSTRACT

Multiphase electric drives are increasingly used in transportation, aerospace, marine propulsion, renewable-energy systems, and other high-reliability applications. Compared with conventional three-phase drives, they offer lower per-phase current, improved torque quality, additional control freedom, and continued operation under phase or converter faults. This tutorial presents a practical journey from multiphase-machine fundamentals to sustainable rewinding, inverter design, and advanced control. It first explains the physical meaning of multiphase windings, phase displacement, rotating magnetomotive force, and vector-space decomposition. Five-phase, symmetrical six-phase, and asymmetrical six-phase machines are then compared in terms of winding structure, harmonic behaviour, and fault-tolerant capability. The first half focuses on converting existing three-phase stators into five- or six-phase machines. It covers slot/pole feasibility, winding factors, spatial harmonics, conductor selection, voltage requirements, thermal limits, and practical rewinding arrangements. Rewound machines are compared with purpose-designed multiphase stators in terms of performance, cost, manufacturability, sustainability, and faulted operation. The second half addresses multiphase inverter topologies and control. Two-level and three-level converters are introduced, followed by detailed discussion of conventional and reduced-switch five-phase inverters, common-mode-voltage reduction, and control of symmetrical and asymmetrical six-phase drives. PWM, SVPWM, harmonic mitigation, loss reduction, and model predictive control are compared using simulation and experimental results. By the end of the tutorial, participants will be able to assess multiphase-drive architectures, evaluate stator-rewinding feasibility, select suitable inverter and control methods, and plan healthy- and fault-condition validation.

Tutorial 15: Next-generation Intelligent and Cybersecure Modular EV Fast Charging Infrastructure with V2G/V2X Capabilities

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ABSTRACT

The rapid global adoption of electric vehicles (EVs) is driving unprecedented demand for ultra-fast, intelligent, efficient, and secure charging infrastructure. Emerging technologies such as solid-state transformers (SSTs), dual active bridge (DAB) converters, modular multilevel SiC-based power converters, autonomous portable DC fast charging systems, AI/ML-enabled cloud battery management systems (BMS), adaptive charging strategies, and vehicle-to-grid (V2G), vehicle-to-anything (V2X) integration are transforming the architecture and operation of next-generation EV charging ecosystems. At the same time, challenges associated with battery degradation, thermal runaway, charging safety, cybersecurity, and grid interoperability require multidisciplinary solutions spanning power electronics, electrochemistry, embedded intelligence, and communication systems. This tutorial presents a comprehensive overview of advanced DC fast charging technologies and intelligent battery management systems for future EV infrastructure. The tutorial begins with modern power conversion architectures, including solid-state transformers, dual active bridge converters, solid-state circuit breakers, portable DC fast chargers, and modular multilevel SiC-based converter applications for high-power charging and V2G operation. It then discusses advanced battery charging methodologies, including health-conscious fast charging, CC-CV-constant temperature charging, adaptive charging strategies, and online electrochemical impedance spectroscopy (EIS)-based diagnostics. Furthermore, the tutorial explores intelligent AI/ML-driven cloud-connected battery management systems with emphasis on state estimation, core temperature estimation, thermal management, predictive diagnostics, degradation-aware charging optimization, cybersecure battery data management, and real-time battery health monitoring. Finally, cybersecurity fundamentals for DC fast charging stations and EV battery management systems are introduced, including attack surfaces, communication vulnerabilities, secure authentication, and resilient charging architectures. The tutorial is intended for researchers, practicing engineers, graduate students, industry professionals, and policymakers working in EV charging systems, power electronics, smart grids, and intelligent energy management. Attendees will gain both theoretical understanding and practical insights into enabling technologies shaping future ultra-fast, reliable, intelligent, and cybersecure EV charging infrastructure.

Workshop 1: PSCAD

Topic: EMT Modelling and Grid Impact Assessment of Inverter Based Resources Using PSCAD

Instructor: Yousef Pipelzadeh

Email: ypipelzadeh@mhi.ca

Room: Salwa 1

Date and Time: Sunday, 18 October 2026 14:00-17:00

Abstract

As inverter-based resources (IBRs) displace conventional generation, converter controls increasingly shape power system behaviour. Assessing weak-grid performance, control interactions and fault recovery requires reliable models and a network representation that captures the relevant dynamics.

Drawing on transmission system operator projects in Great Britain, the Balearic Islands and Denmark, the opening session reviews developments in wide-area electromagnetic transient (EMT) modelling. Topics include model validation, automated testing, network reduction and parallel simulation, alongside cloud-based studies and RMS–EMT co-simulation. Applications cover frequency scanning for oscillation assessment, grid-forming HVDC and the impact of data centre loads on turbine generators. This overview provides the context for the hands-on studies that follow.

The hands-on session begins with model quality and dynamic response testing of IBRs in a controlled test environment. Participants assess initialisation and steady-state operation, apply disturbances and examine performance across different grid strengths. They then integrate the tested models into a pre-developed PSCAD network and conduct grid impact studies. Through fault and contingency simulations, participants investigate fault ride-through, post-fault recovery and the network conditions that constrain stable power transfer. They subsequently evaluate synchronous condenser support and repeat the studies to assess the effectiveness of mitigation.

The tutorial connects converter-level behaviour with system-level engineering decisions. By the end of the session, participants will be able to assess whether an IBR model is suitable for the intended study, establish an integrated network case, interpret disturbance responses and evaluate mitigation against defined performance criteria. The emphasis is on developing defensible engineering conclusions from EMT simulation results.

Tutorial outline

1. Industry experience and developments in EMT modelling. Wide-area networks, model validation and reduction, simulation technologies, oscillation assessment and emerging applications.

2. IBR model quality testing. Initialisation checks and dynamic response testing under varying grid conditions.

3. Network integration. Connection of tested IBR models and verification of the integrated operating point.

4. Grid impact assessment. Hands-on fault and contingency studies, recovery behaviour and system strength limitations.

5. Mitigation and engineering conclusions. Evaluation of synchronous condenser support and comparison against study criteria.

Audience and participation

For power system engineers, researchers and postgraduate students with basic power system analysis knowledge. Hands-on participation requires a laptop with PSCAD installed and access to the exercise models.

Workshop 2: Power Electronics and Data Centers

Topic: AI Data Centers and the Modern Power Grid: Power Electronics, Control, and Grid Services

Instructor: Mohammad Shadmand

Email: shadmand@uic.edu

Room: Salwa 2

Date and Time: Sunday, 18 October 2026 14:00-17:00

The rapid growth of AI-driven data centers is reshaping the operation and planning of modern power systems. These facilities represent large, highly dynamic, and power-electronics-intensive loads whose behavior can significantly affect grid stability, frequency response, voltage regulation, power quality, and overall system reliability. At the same time, increasing penetration of renewable generation, energy storage, and inverter-based resources is transforming traditional grid characteristics and creating new operational challenges.

This workshop will examine the interaction between AI data centers and modern power systems, with emphasis on their electrical and dynamic characteristics, power-electronic interfaces, and hierarchical control architectures. Simulation-based case studies will be used to demonstrate the impact of large and rapidly varying data-center loads on grid frequency, voltage, stability, and system dynamics under different operating conditions. The session will also discuss converter-level control, grid-forming and grid-following technologies, energy storage integration, flexible computing loads, and coordination between facility-level and grid-level control. Beyond their impact on the grid, the tutorial will explore how data centers can evolve from passive loads into active grid-interactive resources capable of providing frequency support, voltage regulation, demand flexibility, congestion management, and market-driven ancillary services. The combination of fundamental concepts, simulation demonstrations, and emerging control and market frameworks will provide participants with a comprehensive view of the challenges and opportunities associated with integrating AI data centers into future power systems.

Workshop 3: SIEMENS

Topic: Grid Digital Twin via PSS®E V35 New Models for Dynamic Simulation and Gridscale X Platform

Instructor: Tewfik Timeridjine

Email: tewfik.timeridjine@siemens.com

Room: Salwa 3

Date and Time: Wednesday, 21 October 2026 14:00-15:30

Abstract

Accurate representation of load behavior is essential for reliable power system dynamic simulations. This workshop explores advances in dynamic load modeling using PSS®E, with particular emphasis on the data load model. The session will discuss challenges associated with traditional dynamic load representations and demonstrate how newer modeling approaches can better represent load response during system disturbances. Through practical PSS®E simulation results, participants will observe how different load models can influence simulated system behavior and stability assessment results.

Workshop 4: Typhoon HIL

Topic: To be announced

Instructor: Dragan Zuber

Email: zuber@typhoon-hil.com

Room: Salwa 3

Date and Time: Wednesday, 21 October 2026 16:00-17:00

Workshop 5: Digital Twins for Power Systems

Topic: Digital Twin Applications in Power Systems

Instructor: Mustafa Ersan, Ridvan Canbaz

Email: ridvancanbaz@nevsehir.edu.tr, ridvancanbaz@nevsehir.edu.tr

Room: PR3

Date and Time: Wednesday, 21 October 2026 16:00-17:30

Abstract

The rapid digitalization of modern power systems, driven by the increasing integration of renewable energy sources, energy storage systems, electric vehicles, and smart grid technologies, has created a growing demand for advanced monitoring, control, and optimization solutions. Digital Twin (DT) technology has emerged as a promising approach to addressing these challenges by establishing dynamic, data-driven virtual representations of physical power system components and processes. By integrating real-time measurements, physics-based modeling, artificial intelligence, and advanced simulation techniques, digital twins enable predictive maintenance, fault diagnosis, performance optimization, and enhanced operational reliability.

This workshop aims to explore recent advances, practical applications, and future research directions of Digital Twin technologies in modern power systems. Key topics include digital twin architectures, real-time modeling and simulation, AI-driven predictive analytics, renewable energy integration, power electronic converters, smart grids, microgrids, and energy management systems. Particular attention will be given to the integration of digital twins with real-time simulation platforms, hardware-in-the-loop (HIL) testing, and intelligent control strategies. The workshop will bring together researchers, academics, and industry professionals to exchange knowledge, discuss implementation challenges, and identify emerging opportunities for developing more efficient, resilient, and sustainable power systems.

Workshop 6: Edge Intelligence for Energy Management

Topic: Edge Intelligence for Energy Management

Instructor: Ashraf Alsharawi, Ahmad Hammoud, Bayan Shaer, Hiba Hijazi

Email: sharawi@se.com

Room: PR4

Date and Time: Wednesday, 21 October 2026 16:00-17:30

Abstract

The deployment of distributed energy resources, storage systems, and controllable loads at the grid edge is changing how microgrids are operated, secured, and valued. This workshop examines edge intelligence as a means of coordinating these assets while addressing the operational and cybersecurity requirements of modern energy systems. In the first session, Ashraf Sharawi of Schneider Electric reviews the architecture of supervisory control and data acquisition (SCADA) systems and the vulnerabilities that arise as these systems connect to field devices, enterprise networks, and cloud services. He discusses common attack vectors and mitigation practices for industrial and utility environments. In the second session, Hiba, Bayan, and Ahmad explain how grid edge technologies and assets enable prosumers to participate in energy trading. They then show how intelligent energy management, including forecasting, scheduling, and real-time control at the edge, can increase the return on investment and value of assets such as photovoltaic systems and batteries while supporting a more sustainable microgrid. The workshop is intended for researchers, graduate students, and industry engineers working in power systems, industrial automation, and energy markets. Participants will gain an integrated view of how secure supervisory control and intelligent edge management together support reliable, economically viable, and sustainable microgrids.

Women in IES Luncheon

The Women-in-IES Luncheon at IECON 2026 is hosted by the Women-in-IES Committee. The program will feature presentations by distinguished women researchers, who will share their experience as women researchers in engineering.

The presentations will be followed by a moderated discussion designed to encourage interaction between the speakers and the audience. The event provides a vibrant platform to celebrate and empower women in IEEE IES and offers attendees opportunities to network and to discover how IEEE IES can support their careers.

Lunch will be served during the event, creating an informal and welcoming atmosphere for dialogue and connection. There is no charge for this event.

The event fosters an inclusive environment where all are encouraged to participate.

Dr. Jing Zhou, Chair, Women-in-IES Committee, Professor, University of Agder, Norway

Dipl.-Ing. Regina Roos, Co-Chair, Women-in-IES Committee, Typhoon HIL GmbH, Switzerland

Program

12:30–12:50 Opening Session, Chaired by Regina Roos

- Welcome addresses:
- Dipl.-Ing. Regina Roos, Co-Chair, Women-in-IES
- Dr. Juan José Rodríguez Andina, IES President
- Dr. Antonio Luque, IEEE Vice President for Member and Geographic Activities
- Dr. Huijun Gao, IES President-Elect
- Dr. Sertac Bayhan, General Chair of IECON 2026

12:50 Warm-up Session: “Get to Know Each Other”

Ice breaker with a joint craft activity, led by Dr. Muneera Al Qahtani and Regina Roos

13:10 Keynotes

- Dr. Maryam Saeedifard, “Women in Engineering and AI”
- Eng. Abeer Buhelaiqa, “Qatar Women Engineers Association: The Initiative and Achievement”

13:40–14:30 Networking, Lunch and Table Conversation

14:30–14:55 Only Winning and Learning: Open Stage

Hosted by Dipl.-Ing. Regina Roos

Share your vision, your dreams, and the experiences that shaped you. Two minutes, spontaneous, from the heart. Let's build a collection of stories that inspires us all.

14:55–15:00 Final Group Photo and Closing

Organizing Committee at IECON 2026

- Jing Zhou, University of Agder, Norway
- Regina Roos, Typhoon HIL GmbH, Switzerland
- Lucia Lo Bello, University of Catania, Italy
- Morgan Kiani, Texas Christian University, USA
- Ya-Jun Pan, Dalhousie University, Canada
- Leila Parsa, University of California, Santa Cruz, USA
- Mihoko Niitsuma, Chuo University, Japan
- Muneera Al Qahtani, HBKU, Qatar
- Selma K. Awadallah, HBKU, Qatar
- Yushan Liu, Beihang University, China

Contact us at: wie@ieee-ies.org

Women in IES Website: https://www.ieee-ies.org/membership/wie/about-wie

Newbies: First-Time Attendees Session

Date: October 19, 2026

Time: 16:00 – 20:00

Room: Salwa 3

The Newbies session is a Collaboration and Engagement Committee event designed exclusively for first-time IECON attendees. It offers a welcoming, informal introduction to the IEEE Industrial Electronics Society community before the technical program gets underway. During the session, first-time delegates can learn how IEEE IES supports their careers, meet researchers and IES members from around the world, and take part in interactive engagement activities intended to build early connections. The session also includes a welcome reception with food and refreshments, along with planned surprises for newcomers. The session is scheduled for Monday, 19 October 2026, from 16:00 to 20:00; at Salwa 3 room. It is hosted by Lucia Lo Bello, Chair of the IES Collaboration and Engagement Subcommittee, on behalf of the Society.

IES Students and Young Professionals Paper Assistance Program (IES-SYPA)

Date: October 20, 2026

Time: 09:15 – 17:00

Room: Salwa 2

The IEEE IES Students and Young Professionals Paper Assistance Program (IES-SYPA) is a competitive travel-grant scheme run by the IES Student and Young Professionals Activity Committee. For IECON 2026, around 52 grants are available to IEEE IES student and young-professional members with an accepted, registered paper that they will present in person. Applicants submit a 3-minute video about their work, reviewed in two rounds on impact, creativity, and presentation quality.

📋 Program Agenda

Note: *Forum participation is mandatory for SYPA winners.*

Time	Session	Details
09:15 – 09:30	**Opening Remarks**	Welcome speech — Dr. Chathurika Brahmana and Prof. Antonio Luque
09:30 – 10:40	**SYP Joint Keynote**	**Part 1: "Engineering Resilient Smart Grids and Smart Careers: AI, Cybersecurity, and the IES Journey"** **Prof. Mohammad B. Shadmand** Chair, IES Technical Committee on Smart Grid Director, Intelligent Power Electronics at Grid Edge (IPEG) Research Laboratory Associate Professor, Department of Electrical & Computer Engineering University of Illinois Chicago, USA **Part 2: "On the Transition from Conventional Power Systems to Intelligent Power Systems: Stability Challenges, Innovation Prospects, and Career Opportunities"** **Dr. Muhammad Farooq Umar** Vice Chair, IES Technical Committee on Smart Grid Postdoctoral Research Associate College of Science and Engineering Hamad bin Khalifa University, Qatar
10:40 – 11:00	**Conference Morning Coffee Break**	
11:00 – 11:50	**SYP Forum Panel**	**"Beyond Graduation: Navigating Careers in Academia and Industry"** • Prof. Antonio Luque, Associate Professor, University of Seville, Spain • Dr. Saeed Arafat, Technical Team Lead – Parking Sensors, Robert Bosch GmbH, Germany • Ms. Regina Roos, Typhoon HIL GmbH, Switzerland • Mr. Aziz Ben Kbaier, TrendLabs, Tunisia

Time	Session	Details
11:50 – 12:00	**Photos and Networking with the Panel**	Group photo and networking
12:00 – 13:30	**Conference Lunch Break**	
13:30 – 15:00	**SYPA Video Session**	Screening of the top winners' videos — Mr. Uzair Asif, Dr. Chathurika Brahmana, Dr. João Carvalho Neto, and Dr. Edivan Carvalho (IES YP SYPA Committee)
15:00 – 15:30	**Conference Afternoon Coffee Break**	
15:30 – 16:00	**IES SYP Opportunities**	• IES YPC Activities — Dr. Chathurika Brahmana, IES YP Chair • IES SAC Activities — Mr. Aziz Ben Kbaier, IES SAC Co-Chair • IES Hubs and Nodes — Prof. Milos Manic, IES Past President • IES GenAI Hackathon — Prof. Daswin De Silva, TC Chair – Responsible AI • IES SYP Congress — Prof. Leandro Becker and Mr. Aziz Ben Kbaier
16:00 – 16:40	**Honorary Keynote Speakers**	**"Peer-Review Process for IEEE IES Transactions Journals"** **Prof. Juan Rodriguez-Andina**, IES President **"IES Overview, MAs, and Opportunities for the IES Community"** **Prof. Ya-Jun Pan**, IES VP-MA
16:40 – 17:00	**Certificate Ceremony, Networking, and Closing Activities**	• Group photos • Certificate ceremony • Mandatory survey • Networking: meet IES leaders and committee members

SYP Joint Keynote

PART 1

Engineering Resilient Smart Grids and Smart Careers: AI, Cybersecurity, and the IES Journey



Mohammad B. Shadmand, Ph.D.
Chair, IES Technical Committee on Smart Grid
Director, Intelligent Power Electronics at Grid Edge (IPEG) Research Laboratory
Associate Professor, Department of Electrical & Computer Engineering
University of Illinois Chicago, USA

Abstract

The rapid evolution of active distribution grids, distributed energy resources, power electronics, and AI-driven infrastructure is creating new technical challenges and career opportunities for young professionals. This keynote will combine a technical perspective with personal reflections on professional growth, research leadership, and engagement with the IEEE Industrial Electronics Society (IES).

The talk will first highlight how artificial intelligence can support resilience, situational awareness, and cybersecurity in active distribution grids, with an emphasis on power electronics-dominated systems,

microgrids, and grid-edge intelligence. Beyond the technical discussion, the keynote will share lessons learned from the transition from graduate student to faculty member, researcher, IEEE volunteer, IES journal editor, technical committee chair, and conference organizer. Particular attention will be given to how IES activities, such as technical committees, conferences, special sessions, workshops, publications, and industry engagement, can help students and young professionals build visibility, leadership skills, collaborations, and long-term career impact.

The presentation aims to encourage SYP participants to view technical excellence, professional service, networking, and leadership as interconnected pillars of a successful engineering career.

Biography

Mohammad B. Shadmand (S'09–M'15–SM'20) received the Ph.D. degree in electrical engineering from Texas A&M University, College Station, USA, in 2015. He is currently an Associate Professor in the Department of Electrical and Computer Engineering at the University of Illinois Chicago, USA, where he directs the Intelligent Power Electronics at Grid Edge (IPEG) Research Laboratory.

His research interests include resilient control of power electronics-dominated grids, grid-forming and grid-following inverter coordination, self-driving grids, machine learning applications in inverter-dominated power systems, situational awareness, intrusion detection, and cybersecurity of smart grids. He has published more than 220 journal and conference papers, one book, and three book chapters, and has delivered more than 20 invited seminars, lectures, and keynote-style talks.

Dr. Shadmand is a Senior Member of the IEEE and the recipient of the 2024 IEEE Industrial Electronics Society J. David Irwin Early Career Award for outstanding contributions to the resiliency and cybersecurity of power electronics-dominated grids. He currently serves as Chair of the IEEE IES Technical Committee on Smart Grid and as an Associate Editor of the IEEE Transactions on Industrial Electronics and the IEEE Journal of Emerging and Selected Topics in Industrial Electronics. He has also held leadership roles at several IEEE conferences, including as general chair and technical program co-chair, and in special sessions, workshops, and publication activities.

PART 2

On the Transition from Conventional Power Systems to Intelligent Power Systems: Stability Challenges, Innovation Prospects, and Career Opportunities



Muhammad Farooq Umar, Ph.D.
Vice Chair, IES Technical Committee on Smart Grid
Postdoctoral Research Associate
College of Science and Engineering
Hamad bin Khalifa University, Qatar

Abstract

The transition from conventional power grids to smart, inverter-dominated power systems is transforming both grid dynamics and the role of future engineers. This keynote will highlight how renewable integration, power electronics, converter control, and emerging technologies are reshaping power-system dynamics and creating new stability challenges, including oscillatory instability phenomena. Alongside the technical discussion, the talk will explore innovation pathways and career opportunities for students and young professionals in smart grids, power electronics, AI, cybersecurity, and advanced control of power electronics. The session will combine technical insight with practical career guidance and interactive discussion to show how the next generation of engineers can contribute to building more reliable, stable, and intelligent power systems. Moreover, the keynote will blend technical insights with reflections on career development, research leadership, and the value of active engagement in the IEEE Industrial Electronics Society.

Biography

Muhammad F. Umar (Member, IEEE) received the B.S. and M.S. degrees in electrical engineering from the Lahore University of Management Sciences, Pakistan, and the National University of Sciences and Technology, Pakistan, in 2014 and 2018, respectively. He received the Ph.D. degree from the Department of Electrical and Computer Engineering at the University of Illinois Chicago, USA, in 2023. He was a 2019 Fulbright Fellowship awardee.

His research focuses on the stability, control, and security of power electronics-dominated power systems, with particular emphasis on the coordination of grid-forming and grid-following inverters, autonomous and self-healing microgrids, and machine learning applications in power systems and power electronics. He has published more than 40 journal articles and high-impact conference papers.

He was previously a postdoctoral researcher at Texas A&M University, Qatar, and is currently a Postdoctoral Research Associate at Hamad bin Khalifa University, Qatar.

SYPA Winners

No.	Winner	Affiliation	Paper Title
1	**Wai Yan Win Aung**	Dartmouth College	Physics-Constrained Human-in-the-Loop LLM Framework for Voltage-Violation Mitigation in Distribution Feeders
2	**Hamza Al-Hallaj**	University of Illinois Chicago	Designing Batteries for the AI Era: A Specific-Resistance Design Framework for AI Datacenter DC-Bus Surge-Buffer
3	**Edivan Laercio Carvalho**	NOVA University Lisbon	DC–DC Converter Based on Differential Connection with Partial Power Processing, Wide Conversion Range, and Reduced Switch Voltage Stress
4	**Farshid Naseri**	Aalborg University	Electric Vehicle Battery Impedance Identification Using Pseudo Random Binary Sequence Signals Applied by Altered Electric Motor Drive Reference
5	**Prathap Reddy Bhimireddy**	Indian Institute of Technology Indore	Analytical Modeling of Common-Mode Voltages for PWM Inverter-Fed 3-Phase and Multiphase Machines
6	**Richard Júnio de Assis**	Federal University of Rio Grande	Experimental Evaluation of Stereo Vision Reconstruction Error in Crane Digital Twins
7	**Mohammadreza Azizi**	Chernihiv Polytechnic National University, Chernihiv, Ukraine	Hybrid Flatness–API Control for Improved Grid Current Quality in a Multiport Energy Router
8	**Leya Sharrouf**	American University of Beirut	Terrain-Aware and Weight-Adaptive Path Optimization for Seedball-Dispensing UAVs
9	**Hani Beirami**	Independent Researcher	Predictive Safety Monitoring for Camera-Guided Micro Aerial Vehicle Obstacle Avoidance
10	**Yousef Alkayyali**	Khalifa University	Fault-Tolerant Operation of a Six-Phase Symmetrical Open-End Winding Induction Motor Drive
11	**Zicong Zhang**	Beijing Institute of Technology	An Integrated Active Sensing System for On-Board Bolt Preload Monitoring
12	**Salvador Yabar**	Pontificia Universidad Católica del Perú	Feature Selection for Data-Driven Solar Photovoltaic Maximum Power Point Tracking
13	**Muhammad Saqib Ali**	ISMO	Impedance Based Precise Characterization of a High-Voltage High-Frequency Transformer
14	**Mohammad Amir**	University of Liverpool	A Generative AI-Enabled Digital Twin for Predictive Maintenance of Battery Energy Storage Systems: An Experimental Study

No.	Winner	Affiliation	Paper Title
15	**Md Tahmid Hussain**	National Taiwan University of Science and Technology	Experimental and Grid-Connected Validation of a Cascaded High Step Up DC–DC Converter for Photovoltaic Applications
16	**Sai Prashanth Mallellu**	Symbiosis Institute of Technology, Hyderabad Campus, Symbiosis International (Deemed University), Pune, India	GenTwin: A Generative Industrial Immunosystem for Autonomous Resilience in Smart Manufacturing
17	**Ashish Panda**	Indian Institute of Technology Delhi	Model-Independent Position-Sensorless Vector Control of Parallel VSI Fed High-Power Induction Motor Drives Operated at Low Switching Frequency
18	**Chhavi Singh**	National Institute of Technology, Jalandhar	Robust Control Architectures for Trajectory Tracking of Autonomous Skid-Steer UGVs
19	**Joni Sk**	Indian Institute of Technology Roorkee	A Novel Triple-Inductor Cascaded Hybrid Switch Capacitor Flexible High Step-Up DC-DC Converter for Sustainable Energy Integration
20	**Oumaima Joraiche**	ESE Laboratory, ENSEM, Hassan II University of Casablanca, Casablanca, Morocco	Control of an Integrated Three-Level NPC Rectifier-Based On-Board Battery Charger for EVs
21	**Kotb Tawfiq**	Khalifa University	A Reliability-Enhanced PWM Strategy for Symmetrical Six-Phase Drives With Zero Common-Mode Voltage and Reduced Zero-Sequence Current
22	**Tareq Foqha**	School of Electrical and Electronic Engineering, Technological University Dublin, Dublin, Ireland	Impact of VSC Harmonic Modeling Representation on Harmonic Distortion and Resonance Prediction in Power Distribution Networks
23	**Tanishq Singh Sisodiya**	Symbiosis Institute of Technology, Hyderabad Campus, Symbiosis International (Deemed University), Pune, India	An Air-Gapped Neuro-Symbolic Framework for Autonomous Root Cause Analysis in Commercial Chillers
24	**Pansheng Ding**	Harbin Institute of Technology	A Multi-Task Deep Conditional Adversarial Domain Adaptation Network for Bearing Fault Diagnosis
25	**Anju James**	Indian Institute of Technology Palakkad	Experimental Assessment of Modulation Schemes and Reactive Power Support Capability of Grid-connected HERIC Inverter
26	**Vida Ranjbarizad**	University of Tabriz	A New High Step-Up DC-DC Converter Based on Voltage-Boost Cells and a Z-Network Cell
27	**Harsha Vardhan Reddy Modugu**	University of Illinois Chicago	AI-Assisted Future-Horizon Dynamic Response Prediction in Power-Electronic Systems
28	**Dhawal Dwivedi**	National University of Singapore	Compact Low Cost Single-Switch Multi-functional SiC Flyback EV Charger for G2V, S2V, and V2V
29	**Takudzwa Haparimwe**	Bindura University of Science Education	Design and Implementation of a TinyML-Based Predictive Maintenance System for Ball Mill Condition Monitoring
30	**Heinrihs Skrodelis**	Riga Technical University	Hardware-Resident IEC-104 Intrusion Detection: FPGA Feasibility Under Realistic Prevalence and Domain Shift
31	**Ahmad Al-Khateeb**	Texas A&M University	GSETS: Gaussian Smoothed Efficient Transition Sampling for Data-Driven Digital Twin Models
32	**Taha Al-Saadi**	Sultan Qaboos University	Adaptive PID Control for Melt-Pool Area Regulation in Laser Powder Bed Fusion: Stability Analysis and Simulation Study

No.	Winner	Affiliation	Paper Title
33	**Zhenxiao Yin**	The Hong Kong University of Science and Technology (Guangzhou)	Efficient Learning of Neural Network Assisted Controller for PMSMs using Lyapunov Function
34	**Alaa Selim**	Dartmouth College	Adversarial Margin Capability of Soft Open Points in Flexible Distribution Networks
35	**Xin Sui**	Institute of Energy, Hefei Comprehensive National Science Center	Multi-Sampled PWM Enabled Passivity Enhancement and Voltage-Feedforward Simplification for Grid-Following Doubly-Fed Induction Generator Systems
36	**Bheemaiah Chikondra**	Rajiv Gandhi Institute of Petroleum Technology	SiC-Based Multi-Phase Traction Inverter for Transportation Applications
37	**Sarina Zirak Sima**	School of Engineering, University of Leicester, Leicester, UK	Efficient Half-Step Delay Compensation for Deadbeat Predictive Current Control of 2-Level Inverters Using Low-Cost ARM Cortex-M Microcontrollers
38	**Eithar Alammari**	Effat University	Machine Learning-Enabled Channel Classification for RGB Underwater Visible Light Communication
39	**Tong Xu**	School of Automation, Nanjing University of Science and Technology	Enhanced Overload Capability Design of an Integrated AFPM Drive for Compact Robotic Joint Applications
40	**Zhenxiao Yin**	The Hong Kong University of Science and Technology (Guangzhou)	Minimal-Loss-Informed Neural Network for Permanent Magnet Synchronous Motors
41	**Amin Farjah**	Simon Fraser University	Parametric Performance Analysis of a Software-Adjustable Inerter–Spring–Damper System
42	**Hafiz Rumman Adnan**	North China Electric Power University	Priority Fitted Network-Based Optimization of Ferrite Structure in DD Coil WPT System
43	**Shahal Ibn Islam Joy**	Gdansk University of Technology	Different Approaches to Optimal Flux Selection for Wide-Speed-Range SynRM Drives
44	**Sesadri Bhusan Sahoo**	Indian Institute of Technology Patna	A Continuous Robust Observer for Rotor Flux and Speed Reconstruction in Five Phase Induction Motor Drive
45	**Chen-Wei Kuo**	National Tsing Hua University	Cost-Aware Shielded Reinforcement Learning for Battery Energy Storage Dispatch under Suppressed-Spread Market Shifts
46	**Hamza Noureddine**	Lebanese American University	A Transfer Learning Approach to Dictionary Learning-Based Attack Detection and Classification in Power Systems
47	**Xuewei Bi**	School of Automation, Nanjing University of Science and Technology	Stiffness Enhancement-Based Suppression of Backlash-Induced Limit Cycle Oscillations in Two-Mass Systems
48	**Nada Saidani**	ISSAT Mateur	AI-Driven Platform for Integrated Cyber-Physical Supervision of Datacenter Infrastructure
49	**Nader El Zarif**	Polytechnique Montreal	Fully Automated Hardware-in-the-Loop Validation of a Buck Converter Controller
50	**Jaiminkumar Patel**	Sardar Vallabhbhai National Institute of Technology, Surat	Prismatic Li-Ion Battery Parameter Identification using Mean-Variance Optimization and SoC Estimation via Extended Kalman Filter
51	**Zihan Tian**	North China Electric Power University	A Clamp Circuit Based Wireless Battery Charging System With Inherent CC-CV Output for Shared E-Micromobility
52	**Hema Janga**	University of Hertfordshire	Rule-Based Energy Management of a Wind-Battery Hybrid AC/DC Microgrid for Grid-Connected Applications

No.	Winner	Affiliation	Paper Title
53	**Jyothi Krishna K V**	Indian Institute of Space Science and Technology, Valiyamala	Comparative Analysis of Stator Flux Ripple in Five Phase Induction Motor Drives Using Conventional Space Vector PWM and Bus Clamping PWM

IECON 2026

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The 52nd Annual Conference of the IEEE Industrial Electronics Society



CONFERENCE PROGRAM

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