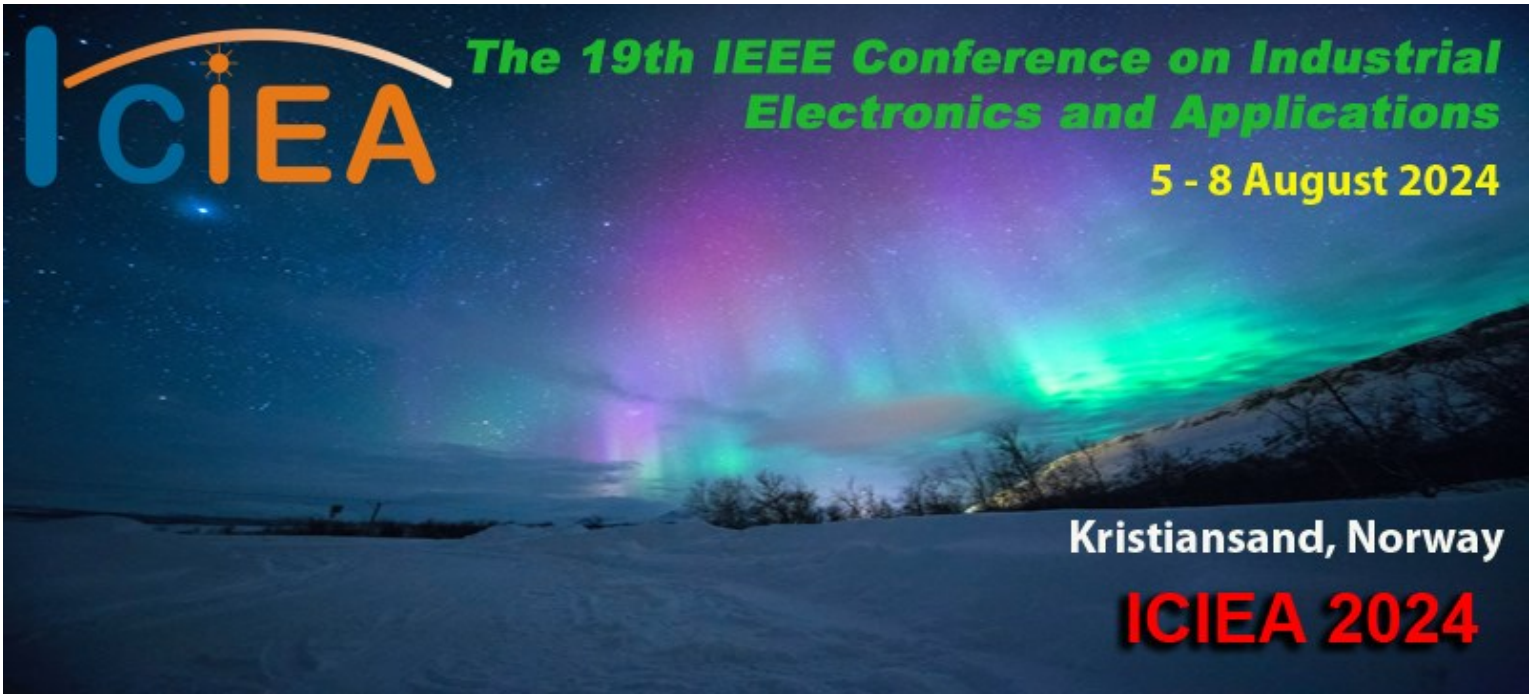

PROGRAM

Organised by

IEEE Industrial Electronics Society

UiA University of Agder

IEEE SINGAPORE SECTION

Keynote

Day 1: 6 August 2024, Tuesday
Time: 08:30 - 10:30

Keynote Room: Caledonien Hall
Chair(s): Zhengguo Li

08:30 - 09:30

AI Enhanced Robotics and Intelligent Manufacturing Automation with Multi-Modal Generative Adversarial Network Image Caption System

Prof. Ren C. Luo

The distinction between industrial robot and service robot become mutually ambiguous because an autonomous mobile service robot can carry/equip with an industrial robot to perform the dedicated services at manufacturing automation factory shop floor, warehouse, hospital and other public areas. In this talk, an AI enhanced intelligent autonomous mobile and industrial robot along with multi-modal Generative Adversarial Network (GAN) based image caption system for intelligent human-robot interactive services will be presented.

The aforementioned issues, challenges and opportunities will be discussed including research results on intelligent robotics and manufacturing automation with video demo of some exemplary best practices from our NTU iCeiRA Lab.

BIOGRAPHY

Prof. Ren C. Luo, an IEEE and IET Fellow, received Dipl.-Ing. and Dr.-Ing in EE from the TU Berlin, Germany. He is an Irving T. Ho Chair Professor at National Taiwan University; He served as Chief Technology Officer of FFG Inc., the world 3rd largest machine tool manufacturer and CTO of ASUS Inc. He has served two-terms as President and Dean of Engineering at National Chung Cheng University., one of the major universities in Taiwan, and Founding President of Robotics Society of Taiwan. He was President of IEEE Industrial Electronics Society.

Prof. Luo was an assistant, tenured associate professor and Full Professor of Dept. of ECE at North Carolina State University, Raleigh, USA. He was Toshiba Chair Professor in the University of Tokyo, Japan. Prof. Luo's professional expertise includes AI enhanced intelligent robotic control systems, multi-sensor fusion, and intelligent manufacturing automation technologies. He has authored over 550 papers, published in refereed international Transactions/ Journals, conferences.

Prof. Luo has served as EiC of IEEE Transactions on Industrial Informatics (JIF 12.30) and was EiC of IEEE/ASME Transactions on Mechatronics. Prof. Luo received the IEEE Eugene Mittelmann Outstanding Research Achievement Award, IEEE IROS Innovative Technologies Award; ALCOA Company Outstanding Engineering Research Award, USA.

Keynote

Day 1: 6 August 2024, Tuesday
Time: 08:30 - 10:30

Keynote Room: Caledonien Hall
Chair(s): Changyun Wen

09:30 - 10:30

Leveraging Networked Microgrids for a Sustainable, Greener, and Resilient Power Systems

Prof. Mo-Yuen Chow

The increasing demand for energy, the limited supply of traditional energy sources, and a growing desire for cleaner energy have led to the exploration of distributed energy resources (DERs). Novel and advanced Energy Management Systems and technologies are urgently needed to handle the challenges such as scalability, interoperability, reliability/resilience, and cyber-security when the amount of DER incorporation is massive, especially when the operation dynamics changes rapidly.

This presentation will overview the research and technologies that integrate distributed energy sources into the grid through Networked Microgrids (NMG) and Virtual Power Plants (VPP) and describe the Smart Collaborative Distributed Energy Mangement Systems work and the Yangtze Delta Energy Management Systems Consortium Plus activities (YD-EMSC+) to provide sustainable, reliable, and greener power with greater flexibility and resilience.

BIOGRAPHY

Mo-Yuen Chow earned his degree in Electrical and Computer Engineering from the University of Wisconsin-Madison (B.S., 1982); and Cornell University (M. Eng., 1983; Ph.D., 1987). Dr. Chow joined as a Professor at UM-Shanghai Jiao Tong University Joint Institute in 2022. He was a Professor in the Department of Electrical and Computer Engineering at North Carolina State University.

Dr. Chow's recent research focuses on distributed control and management, smart micro-grids, batteries management, and mechatronics systems. Dr. Chow has established the Advanced Diagnosis, Automation, and Control Laboratory. He is an IEEE Fellow, the Co-Editor-in-Chief of IEEE Trans. on Industrial Informatics 2014-2018, Editor-in-Chief of IEEE Transactions on Industrial Electronics 2010-2012. He has received the IEEE Region-3 Joseph M. Biedenbach Outstanding Engineering Educator Award, the IEEE ENCS Outstanding Engineering Educator Award, the IEEE ENCS Service Award, the IEEE Industrial Electronics Society Anthony J Hornfeck Service Award, and the IEEE Industrial Electronics Society Dr.-Ing. Eugene Mittelmann Achievement Award. He is a Distinguished Lecturer of IEEE Industrial Electronics Society.

TuB1: Distinguished Lectures

Day 1: 6 August 2024, Tuesday
Time: 10:45 - 12:45

Keynote Room: Caledonien Hall
Chair(s): Lijun Jiang

10:45 - 11:45

Advanced Control of DER Interfacing Converters Enabling Fully Autonomous Microgrid

Dr. Jinjun Liu

Microgrid will be one of the major forms of distribution network for future power systems wherever there are abundant distributed energy resources (DER) in local area, to reduce power losses on the transmission lines and improve the reliability of energy supply. The control and operation of a microgrid has to ensure the system voltage to be within a nominal magnitude/frequency range and adequate output power sharing among all these energy sources, and at the same time to guarantee fast and smooth transfer of the microgrid operation between islanded mode and grid-connected mode. This is very often required to be realized through fully autonomous control where each source converter or the transfer switch is controlled by its own without getting or sensing any information remotely or from others so that a higher reliability and an easy-to-implement plug-and-play feature could be achieved. The requirement for a fully autonomous grid-organizing framework has been well fulfilled and has made a significant benefit for today's power systems, but will be a really critical challenge for future's more electronic power systems with microgrid being a possible form. The state-of-art autonomous control of DER interfacing converters for the coordination of bus voltage and power sharing in steady-state will be presented and summarized in this lecture. A whole-new concept device, Flexible Transfer Converter (FTC), is proposed to enable the fully-autonomous control of a microgrid for the transferring between two different operation modes. Through the FTC, the interfacing power between the micro-grid and the large grid can also be continuously adjusted by dispatching commands from system controller if necessary while the speed and smoothness of the transfer can be dramatically improved.

BIOGRAPHY

Jinjun Liu received the B.S. and Ph.D. degrees in electrical engineering from Xi'an Jiaotong University (XJTU), Xi'an, China, in 1992 and 1997, respectively. He then joined the XJTU Electrical Engineering School as a faculty.

From late 1999 to early 2002, he was with the Center for Power Electronics Systems, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA, as a Visiting Scholar. In late 2002, he was promoted to a Full Professor and then the Head of the Power Electronics and Renewable Energy Center at XJTU. He is currently a XJTU Distinguished Professor of Power Electronics. His research interests include modeling, control, and design methods for power converters and electronified power systems, power quality control and utility applications of power electronics, and micro-grids for sustainable energy and distributed generation.

Dr. Liu received for many times governmental awards at national level or provincial/ministerial level for scientific research/teaching achievements. He also received the 2006 Delta Scholar Award, the 2014 Chang Jiang Scholar Award, the 2014 Outstanding Sci-Tech Worker of the Nation Award, the 2016 State Council Special Subsidy Award, the IEEE Transactions on Power Electronics 2016 and 2021 Prize Paper Awards, the Nomination Award for the Grand Prize of 2020 Bao Steel Outstanding Teacher Award, and the 2022 Fok Ying Tung Education and Teaching Award. He served as an Associate Editor for the IEEE TRANSACTIONS ON POWER ELECTRONICS since 2006, 2015-2019 Executive Vice President and 2020-2021 Vice President of IEEE PELS, and was elevated IEEE Fellow in 2018. He was the Vice President for International Affairs, China Power Supply Society (CPSS) from 2013 to 2021, and since 2016, the inaugural Editor-in-Chief of CPSS Transactions on Power Electronics and Applications. He was elected the President of CPSS in Nov. 2021. Since 2013, he has been serving as the Vice Chair of the Chinese National Steering Committee for College Electric Power Engineering Programs.

TuB1: Distinguished Lectures

Day 1: 6 August 2024, Tuesday
Time: 10:45 - 12:45

Keynote Room: Caledonien Hall
Chair(s): Xing Zhu

11:45 - 12:45

Safety-critical Control of Uncertain Nonlinear Systems with Application to Mobile Robots

Prof. Wei Wang

Safety critical control has gained considerable popularity in recent years due to its widespread applications. Most of currently available safety critical control protocols are developed assuming precise knowledge of system dynamics. This talk is mainly focused on safety critical control of uncertain nonlinear systems with applications to mobile robots.

To address potential conflicts between control objectives and safety constraints, the standard Control Barrier Functions (CBFs) often relax constraints on system states to ensure the forward invariant property for the safe set only, rather than for all of its subsets. Nonetheless, the robustness of the closed-loop systems is often reduced, which typically poses significant challenges to the design of disturbance rejection. Modified CBFs are proposed to address this problem, as they exhibit improved robustness close to the boundary of the safe set. The modified CBFs coupled with disturbance observers are employed to jointly resist the external disturbances, which can be seen as a combination of feedback and feedforward schemes.

Since Control Lyapunov Functions (CLFs) do not inherently possess the positive-definite property, the boundedness of parameter estimates cannot be guaranteed by simply following Lyapunov-based adaptive control. The parameter estimation errors may lead to misunderstanding regarding potential conflicts, further causing conservative control performance. To handle this issue, two distinct data-driven adaptive control schemes, Concurrent Learning and Safety-Triggered Batch Least-Squares Identifier, are employed. The excited component involved in the initial estimation error can thus be rapidly eliminated, thereby effectively reducing the conservativeness of safety-critical systems.

BIOGRAPHY

Wei Wang received her B.Eng degree in Electrical Engineering and Automation from Beihang University (China) in 2005, M.Sc degree in Radio Frequency Communication Systems with Distinction from University of Southampton (UK) in 2006 and Ph.D degree from Nanyang Technological University (Singapore) in 2011. From January 2012 to June 2015, she was a Lecturer with the Department of Automation at Tsinghua University, China. Since July 2015, she has been with the School of Automation Science and Electrical Engineering, Beihang University, China, where she is currently a Full Professor. Her research interests include adaptive control of uncertain systems, distributed cooperative control of multi-agent systems, secure control of cyber-physical systems, fault tolerant control, and robotic control systems. Prof. Wang received Zhang Si-Ying Outstanding Youth Paper Award in the 25th Chinese Control and Decision Conference (2013), the First Prize of Science and Technology Progress Award by Chinese Institute of Command and Control (CICC) in 2018, and the Second Prize of National Teaching Achievement Award (Higher Education). She has been serving as the Principle Investigator for a number of research projects including the National Science Fund for Excellent Young Scholars of China (2021-2023) and Associate Editors for IEEE Transactions on Industrial Electronics, ISA Transactions, IEEE Open Journal of Circuits and Systems, Journal of Control and Decision.

TuB2: Oral Session
Artificial Intelligence (1)

Day 1: 6 August 2024, Tuesday | **Room 1: Major von Knarren**
Time: 10:45 - 12:45 | **Chair(s): Chun Zhao, Mohsin Ali**

10:45 - 11:05

ICIEA24-000364: A Hybrid Transformer-based Spatial-Temporal Network for Traffic Flow Prediction
Guanqun Tian, Dequan Li

11:05 - 11:25

ICIEA24-000187: Facial Feature Priors Guided Blind Face Inpainting
Ruhao Zhao, Wenxin Huang, Wenxuan Liu, Wei Liu, Xian Zhong

11:25 - 11:45

ICIEA24-000304: Implementation of Artificial Intelligence-Based Fault Classification and Anomaly Detection: A Case Study on Hydraulic Centrifugal Pumps
Mehmet Can Türk, Zahra Kazemi, Peter Gorm Larsen, Jakob Lemming, Peter Rindom Andersen

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11:45 - 12:05

ICIEA24-000214: Fortifying Deep Neural Networks for Industrial Applications: Feature Map Fusion for Adversarial Defense
Mohsin Ali, Haider Raza, John Q Gan

12:05 - 12:25

ICIEA24-000109: Modeling and Optimization of Organic Molecule Infrared Spectra Prediction based on Semi-Empirical Structure Calculation
Chun Zhao, Xuefeng Liu

12:25 - 12:45

ICIEA24-000354: TALON: Improving Large Language Model Cognition with Tactility-Vision Fusion
Xinyi Jiang, Guoming Wang, Huanhuan Li, Qinghua Xia, Rongxing Lu, Siliang Tang

IEEE Conference on Industrial Electronics and Applications

The 19th IEEE Conference on
Industrial Electronics and Applications
5 to 8 August 2024

TuB3: Oral Session
Control and Systems (1)

Day 1: 6 August 2024, Tuesday **Room 2: Consulen**
Time: 10:45 - 12:45 **Chair(s): Wenji Cao**

10:45 - 11:05

ICIEA24-000009: Distributed Adaptive Output Containment Control of Unknown Non-minimum Phase Linear Multi-agent Systems
Wenji Cao, Gang Feng

11:05 - 11:25

ICIEA24-000374: Ensemble Probabilistic Model Predictive Safety Certification for Learning-Based Control
Nehir Güzelkaya, Sven Gronauer, Klaus Diepold

11:25 - 11:45

ICIEA24-000350: Economic Tube-based Robust Model Predictive Control for HAVC System
Yuanshuo Zhang, Xinli Wang, Lei Wang, Xiaohong Yin, Sihai Song, Yafeng Li

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11:45 - 12:05

ICIEA24-000307: Blade Pitch Control of Floating Offshore Wind Turbine Systems Using Super-Twisting Algorithm and Recurrent RBF Neural Network
Flavie Didier, Yong-Chao Liu, Salah Laghrouche, Daniel Depernet

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12:05 - 12:25

ICIEA24-000077: Event-Triggered Robust Cooperative Output Regulation with Hybrid Design Framework
Wenxiu Zhuang, Guangyu Wu, Haoyi Niu, Wei Song

12:25 - 12:45

ICIEA24-000015: Second-order Sliding Mode Based Anti-disturbance Cascade Control for PEMFC Air Feeding System
Wu Chengyu, Tao Jili, Tian Guanzhong, Yu Enjun, Ma Hongyu, Ma Longhua

IEEE Conference on Industrial Electronics and Applications

The 19th IEEE Conference on Industrial Electronics and Applications

5 to 8 August 2024

TuB4: Oral Session
Energy and Environment (1)

Day 1: 6 August 2024, Tuesday **Room 3: Veteranen**
Time: 10:45 - 12:45 **Chair(s): Hong Wang, Levon Gevorkov**

10:45 - 11:05

ICIEA24-000461: Hierarchical Distributed Consensus Based Networked Microgrid Energy Management For Disaster Relief
Aditya Joshi, Mo-Yuen Chow

11:05 - 11:25

ICIEA24-000047: Structured Neural Network Modeling for Developing Digital Twins Models of Hydropower Generation Units
Hong Wang, Shiqi Ou

11:25 - 11:45

ICIEA24-000089: Modeling the Power Characteristics for Centrifugal Pump System: A Simulation Approach
Levon Gevorkov, José Luis Domínguez-García

11:45 - 12:05

ICIEA24-000344: PV Power Forecasting for Operation of BESS Integrated with a PV Generation Plant
Nuttapat Jittratorn, Chen-Shuo Liu, Chao-Ming Huang, Hong-Tzer Yang

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12:05 - 12:25

ICIEA24-000070: Horizontal Global Solar Irradiance Prediction Using Genetic Algorithm and LSTM Methods
Inoussa Inoussa, Tony Wong, Louis-A. Dessaint

12:25 - 12:45

ICIEA24-000308: Auxiliary Learning for Hypercomplex Neural Networks
Arturo Buscarino, Luigi Fortuna, Carlo Famoso, Gabriele Puglisi

IEEE Conference on Industrial Electronics and Applications

The 19th IEEE Conference on Industrial Electronics and Applications

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TuB5: Oral Session
Power Electronics (1)

Day 1: 6 August 2024, Tuesday | **Room 4: Blomsterhaven**
Time: 10:45 - 12:45 | **Chair(s): Meshari Alshammari**

10:45 - 11:05

ICIEA24-000121: Research on direct power control of pumped storage doubly-fed Induction machine for power generation operation based on a novel three-vector model prediction
Wei Liu, Ruihua Zhang, Bo Zhang

11:05 - 11:25

ICIEA24-000057: An Optimized Multi-Resonant Switched Tank Converter Based on Partial Power Voltage Regulation
Di Wang, Yundong Ma, Yongji Tong, Yin Lv

11:25 - 11:45

ICIEA24-000145: Research on Power Equalization and Leakage Current Suppression of Non-isolated Cascaded H-Bridge PV Inverter Based on Hybrid Modulation
Pengcheng Zhao, Xiaoqiong He, Chenghao Qiu, Feixiang Shan, Yahui Pang, Qianchao Luo

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11:45 - 12:05

ICIEA24-000445: An Investigation into a Method for Improving the Light Load Efficiency of a DC Distribution Single-Phase Bidirectional Inverter
Meshari Alshammari

12:05 - 12:25

ICIEA24-000487: Prescribed-Time Consensus Algorithm-Based Distributed Secondary Control for DC Microgrids
Jianbiao Li, Hongqin Yin, Yong Cheng, Jianfu Chen, Fei Gao

12:25 - 12:45

ICIEA24-000081: Optimized Operation Strategies for Buildings Cluster Users Bi-Level in the Shared Energy Storage Context
Yang Ning, Lei Xia, Sun Xiaoke

TuC1: Best Paper Session (1)

Day 1: 6 August 2024, Tuesday
Time: 13:45 - 15:45

Keynote Room: Caledonien Hall
Chair(s): Zhengguo Li

13:45 - 14:09

ICIEA24-000051: Learning Stable Robot Grasping with Transformer-based Tactile Control Policies

En Yen Puang, Zechen Li, Chee Meng Chew, Shan Luo, Yan Wu

14:09 - 14:33

ICIEA24-000059: Fast Formation Control of Second-order Multi-agent Systems with Time-varying Reference Velocity

Xiao-Ying Cao, Jing-Wen Yi, Shi-Jie Chen, Fang Yang, Li Chai

14:33 - 14:57

ICIEA24-000141: Pose Estimation for Robot Grasping using Dual Quaternions and a modified PointLoc Architecture

Johannes Pöppelbaum, William Budiatmadjaja, Mochammad Rizky Diprasetya, Andreas Schwung

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14:57 - 15:21

ICIEA24-000149: Adaptive Real-Time Iterative Compensation Control Framework for Ultraprecision Motion Tasks

Ran Zhou, Chuxiong Hu, Ze Wang, Yu Zhu

15:21 - 15:25

ICIEA24-000207: Degradation Prediction of the Hydrogen Fuel Cells Based on the Decoupled Echo State Network with Reservoir Predictive Mechanism

Shiyuan Pan, Zhiguang Hua, Qi Yang, Zhao Dongdong, Wentao Jiang, Yuanlin Wang, Junpeng Ji, Manfeng Dou

TuC2: Oral Session
Artificial Intelligence (2)

Day 1: 6 August 2024, Tuesday **Room 1: Major von Knarren**
Time: 13:45 - 15:45 **Chair(s): Rabé Andersson, Radhika Pai**

13:45 - 14:05

ICIEA24-000004: CASNN: Continuous Adaptive SNN for Human Activity Recognition
Zerui Fang, Jia Li, Weibing Wang

14:05 - 14:25

ICIEA24-000290: Predicting State of Health of Lithium Ion Batteries
Manohara Pai, Radhika Pai, Aiswarya Anand, Prateek Jain

14:25 - 14:45

ICIEA24-000144: Fault Diagnosis of Wind Turbine Bearings Using Siamese Networks
Kyungseok Kim, Hyunmin Lee, Jungchan Kim, Joonki Paik, Injae Lee, Cho Haejun

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14:45 - 15:05

ICIEA24-000155: Transfer Learning for Multi-Agent Pathfinding in Discrete 3D Environments
Tizian Dagner, Maximial Kraehschuetz, Rafael Parzeller

15:05 - 15:25

ICIEA24-000313: The Information Fusion on Person Recognition Using Hip Joint Angles
Rabé Andersson, T. Sunil Kumar, José Chilo

15:25 - 15:45

ICIEA24-000027: Comparative Performance Analysis of Edge-AI Devices in Deep Learning Applications
Muhammad Hafiz Samsuri, Shang Li Yuen, Phooi Yee Lau, Chin Wee Wong, Nur Afiqah Kamarudin, Zarina Hussin, Muhammad Syukri Mohd Talib, Hock Woon Hon

TuC3: Oral Session
Control and Systems (2)

Day 1: 6 August 2024, Tuesday **Room 2: Consulen**
Time: 13:45 - 15:45 **Chair(s): Aviram Yanover**

13:45 - 14:05

ICIEA24-000435: Cyber Attack Estimation for Intelligent Connected Vehicle
Yanzhen Song, Juntao Pan, Weixin Yang, Xiangyuan Bian, Xueyuan Zhang, Xulang Gao

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14:05 - 14:25

ICIEA24-000274: Line-of-Sight Control of a Spherical Parallel Manipulator via Deep Reinforcement Learning
Daniel Choukroun, Aviram Yanover

14:25 - 14:45

ICIEA24-000008: Finite-Time Stabilization via Event-Triggered Impulsive Control Under Denial-of-Service Attacks
Xinyi He, Xiaodi Li

14:45 - 15:05

ICIEA24-000119: Nash equilibrium seeking for noncooperative games of uncertain Euler-Lagrange systems: A closed-loop decision-control approach
Xiao Fang, Guanghui Wen

15:05 - 15:25

ICIEA24-000041: Relative Attitude-orbit Coupling Proximity Control for Underactuated Small Spacecraft
Junjie Lu, Zhongjie Meng

15:25 - 15:45

ICIEA24-000093: I & I Adaptive Dynamic Feedback Fault-Tolerant Tracking Control of a Class of Nonaffine Systems with Nonlinearly Parameterized Faults
Zhang Min, Xiangbin Liu, Jian Wang, Hongye Su

IEEE Conference on Industrial Electronics and Applications

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TuC4: Special Session
Artificial Intelligence for Power Electronics dominated Power Systems

Day 1: 6 August 2024, Tuesday
Time: 13:45 - 15:45

Room 3: Veteranen
Chair(s): Mengfan Zhang, Chao Ren, Di Cao, Qianwen Xu

13:45 - 14:05

ICIEA24-000193: Sequential Post-disaster Recovery Strategy for Cyber Physical Energy Systems Considering Electric-gas Coupling Characteristics
Xiuchuan Sun, Qianwen Xu, Jian Chen

14:05 - 14:25

ICIEA24-000430: MILP-based Energy Management for Educational Buildings Integrated with Solar PV and Battery Energy Storage
Binli Xiao, Tianyang Zhao, Qianwen Xu, Erica Eriksson

14:25 - 14:45

ICIEA24-000232: An LSTM-based Approach to Fuel Consumption Estimation in Digital Twin Ship
Beatriz Sanguino, Guoyuan Li, Peihua Han, Houxiang Zhang

14:45 - 15:05

ICIEA24-000324: Digital Twin for Solar Photovoltaic Power Estimations based on an Ensemble of Recurrent Neural Networks
Michael Walters, Ganesh Venayagamoorthy

15:05 - 15:25

ICIEA24-000086: Ultra-short-term power load forecasting based on TCN feature extraction and multi-source data fusion
Xiao Han, Jun Wang, Tao Wang

15:25 - 15:45

ICIEA24-000340: Methodologies on spatial and temporal correlation analysis between regional neighboring sites
Wu Haiping, Juan Yan, Cao Wenping, Cungang Hu, Zhenyu Wu, Changbao Zheng

TuC5: Oral Session
Power Electronics (2)

Day 1: 6 August 2024, Tuesday **Room 4: Blomsterhaven**
Time: 13:45 - 15:45 **Chair(s): Zhenbin Zhang**

13:45 - 14:05

ICIEA24-000473: Adaptive Threshold-Based Algorithm for Cloud Parameter Retrieval Using Single-Photon Lidar
Wenting Ma, Mingyao Ma, Xilian Zhou, Yihan Chen, Teng Tian

14:05 - 14:25

ICIEA24-000112: Research on Position Sensorless Method of High-Speed Maglev Long Stator Linear Synchronous Motor Based on Active Flux Observer
Weixin Chen, Bo Zhang, Ruihua Zhang, Lu Zhao, Qiongxuan Ge, Hongyun Sang

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14:25 - 14:45

ICIEA24-000395: Design of Cascaded Hybrid Energy Storage System for Airborne Electro-Hydraulic Actuator Loads
Haoliang Yu, Tao Lei, Jiong Yang, Shuzhen Zhu, Xingyu Zhang, Xiaobin Zhang

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14:45 - 15:05

ICIEA24-000164: Composite dynamic regulation for AC microgrids feeding variable constant power loads
Chenggang Cui, Chuanlin Zhang, Xitong Niu

15:05 - 15:25

ICIEA24-000375: DAB converter current stress optimization based on genetic algorithm
Wei Ma, Bin Xu, Hao Zheng, Jingni Ni, Xiaoming Wang, Kaile Tang, Cungang Hu, Quan Chen

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15:25 - 15:45

ICIEA24-000467: An Enhanced Predictive Encoderless Control for PMSM Drives with A Revised Speed Observer
Jilin Qiu, Zhen Li, Shichang Zhou, Yilin Wang, Guangze Chen, Zhenbin Zhang

TuC6: Poster Session
SS19: Interdisciplinary

Day 1: 6 August 2024, Tuesday
Time: 13:45 - 15:45

Poster: Corridor

ICIEA24-000071: A Data-Mechanism Joint Driven Based Multi-Energy Flow Calculation Method for Electricity-Heat Interconnected System
Jianfei Chen, Haiyang Wang, Yuchen Mu, Chenghui Zhang, Shi Zhang, Ke Li

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ICIEA24-000191: High-precision Programmable Electronic Load for I-V Characteristic Simulation
Wanqi Jin, Yaqiong Fu, Mingyong Li, Lushuai Qian, Jian Sun

ICIEA24-000216: Design and analysis of a rolling joint based on tension amplification
Song Zeng, Shaoping Wang, Giorgio Guglieri, Stefano Primatesta, Yixin Zhang, Kunlun Wang, Yuwei Zhang

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ICIEA24-000228: Virtual Synchronous Generator Control Based On Cascaded H-bridge Inverter
Shusheng Xu, Zhen Xie, Pengzheng Zhou

ICIEA24-000245: Extensible Integrated Circuit Automatic Test System based on Measure Abstract Layer and Cloud-Edge-End Collaboration
Liang Siyuan, Jinsong Yu, Wang Canhui, Wang Wenye, Bo Yang

ICIEA24-000257: ZYNQ-Based Real-time Heart Rate Estimation System Using Remote Photoplethysmography
Yu Chen, Xupeng Gou, Chunling Yang

ICIEA24-000264: Fault-Tolerant Pressure Control for Electro-Hydraulic Braking System
Wenjie Wu, Hongchao Jian, Shaoping Wang, Xingjian Wang, Yuwei Zhang

ICIEA24-000265: A Study of Multi-dimensional Evaluation of MPE Systems for Soil Remediation

Zixu Fan, Liman Yang, Xionghui He, Wenchao Zhang, Yan Shi, Shaofeng Xu

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ICIEA24-000268: Comprehensive Evaluation of Metal Roof Health Based on Extension Theory and Entropy Weight Model

Zhiping Li, Liman Yang, Yunhua Li, Qiang Zheng, Chao Zhang, Junjun Wang

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ICIEA24-000287: Path Tracking Control for Autonomous Vehicles Based on MPC Combined with Adaptive Potential Field Optimization

Jiance Zhao, Yunhua Li, Liman Yang

ICIEA24-000297: Identification method of capacity regulating transformer monitoring data based on ICA

Shuqing Hao, Yu Miao, Youzhuo Zheng, Anjiang Liu, Xuping Liu, Ying Liu, Dongwei Wang, Zhenbang Ma

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ICIEA24-000326: CrossTR-RAFT: Dense optical flow estimation based on cross attention mechanisms

Zimeng Liu, Xingming Wu, Zhong Liu, Jing Zhang, Haosong Yue, Weihai Chen

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ICIEA24-000331: Development of Audible Noise Source Localization Platform for Capacity Regulating Transformers

Shuqing Hao, Youzhuo Zheng, Yue Li, Yu Fu, Zhenbang Ma, Ying Liu, Xuping Liu, Dongwei Wang

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ICIEA24-000332: Development of Automatic Testing Device with Function of Edge and Cloud Collaboration for Capacity Regulating Distribution Transformer

Yu Fu, Anjiang Liu, Miao Yu, Youzhuo Zheng, Dongwei Wang, Ying Liu, Zhenbang Ma, Xuping Liu

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ICIEA24-000351: Dynamic Planning for Sequential Whole-body Mobile Manipulation

Zhitian Li, Yida Niu, Yao Su, Hangxin Liu, Ziyuan Jiao

ICIEA24-000357: Research of the Manipulator Vibration Mode Under Variable Joint Impedance

Heyang Feng, Xingzhe Wang, Xiaoguang Hu, Dong Xu

ICIEA24-000389: A cascade network with adaptive depth hypotheses estimation for multi-view stereo and image three-dimensional reconstruction

Dong Wang, Zhong Liu, Xingming Wu, Weihai Chen

ICIEA24-000396: Optimization of Inertia and Damping Coefficients in Virtual Synchronous Machine Based Grid Forming Inverters: From Selection to Implementation

Chamanie Welmilla, Mahinda Vilathgamuwa, Yateendra Mishra

ICIEA24-000433: Analysis of Oil Film Morphology in Motor Pump Valve Plate Pair

Xufeng Chen, Liang Yan, Xiaoshan Gao

ICIEA24-000463: Research on high-performance three-axis robot control system based on EtherCAT

Jimeng Liu, Yapeng Fei, Xinyi Li, Yue Zhang, Weihai Chen

TuD1: Best Paper Session (2)

Day 1: 6 August 2024, Tuesday
Time: 16:00 - 18:00

Keynote Room: Caledonien Hall
Chair(s): Zhengguo Li

16:00 - 16:24

ICIEA24-000212: Fault-tolerant Formation Control of Unmanned Aerial Vehicles with Bearing Measurement
Shaoshi Li, Shaoping Wang, Xingjian Wang, Yuwei Zhang

16:24 - 16:48

ICIEA24-000248: Gaussian Process Model Predictive Admittance Control for Compliant Tool-Environment Interaction
Zhu Wenxin, Wenyu Liang, Qinyuan Ren, Yan Wu

16:48 - 17:12

ICIEA24-000275: Towards a Digital Twin for a Drinking Water Source in Norway
Russell Primeau, Guoyuan Li, Razak Seidu

17:12 - 17:36

ICIEA24-000361: EEG Feature Engineering for Motor Imagery Classification Using Efficient Machine Learning Approach
Yue Zhang, Weihai Chen, Zhongcai Pei, Zhongyi Li, Majun Song

17:36 - 17:40

ICIEA24-000482: Resilience-Oriented Real-Time Decision-Making for Autonomous Recovery in Multi-UAV Systems
Weike Chen, Xingshuo Hai, Dongming Fan, Ke Ma, Wenliang Zhang, Qiang Feng

TuD2: Special Session
Safety, Reliability and Security Monitoring and Maintenance of Complicated Technical Systems (1)

Day 1: 6 August 2024, Tuesday
Time: 16:00 - 18:00

Room 1: Major von Knarren
Chair(s): Yuchen Jiang, Hao Luo, Shen Yin

16:00 - 16:20

ICIEA24-000371: LiST: An All-Linear-Layer Spatial-Temporal Feature Extractor with Uncertainty Estimation for RUL Prediction
Zhixin Huang, Christian Gruhl, Bernhard Sick

16:20 - 16:40

ICIEA24-000197: A multi-model attack detection scheme for the UAV navigation system
Asmae Bni, Shen Yin

16:40 - 17:00

ICIEA24-000223: Improved health evaluation method of composite space electromechanical actuator based on impact factor and single concave function
Jiashan Gao, Xingjian Wang, Shaoping Wang, Minglei Zhong, Jun Ou, Jianshu Li

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17:00 - 17:20

ICIEA24-000083: Multimodal time-frequency graph fusion based fault diagnosis
Hongyan Yang, Qi Yao

17:20 - 17:40

ICIEA24-000278: Interpretable Intrusion Detection through Approximation of Complex Models
Mengyu Qi, Zun Liu, Yangming Guo, Jiang Long, Yucan Zou

17:40 - 18:00

ICIEA24-000100: A fault isolation approach for switched systems based on ADT method
Faizan Shahid, Muhammad Taskeen Raza, Faisal Shah, Shafqat Ali, Yuchen Jiang, Hao Luo

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TuD3: Oral Session
Robotics (1)

Day 1: 6 August 2024, Tuesday **Room 2: Consulen**
Time: 16:00 - 18:00 **Chair(s): Lijun Jiang**

16:00 - 16:20

ICIEA24-000449: Design Optimization of 3K Planetary Gear Train Based on Loose Constraints on Tooth Number
Jiahe Tu, Qinghao Du, Weijun Wang, Chin-Yin Chen, Junyu Hang, Guilin Yang

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16:20 - 16:40

ICIEA24-000400: Efficient Collision Detection Algorithm for Space Reconfigurable Integrated Leg-Arm Robot
Jinyu Ma, Xinghan Zhuang, Peijin Zi, Tao Zhang, Wuxiang Zhang, Kun Xu, Xilun Ding

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16:40 - 17:00

ICIEA24-000194: Lower Limb Trajectory Prediction for Exoskeleton with AutoEncoder-Deep Gaussian Process
Chi Zhang, Pingping Lv, Feng Yi, Ting Yuan, Li Shupei, Meitong Zhang

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17:00 - 17:20

ICIEA24-000391: Exploring the Influence of a Passive Exoskeleton on Range of Motion and Step Length During Walking
Rabé Andersson, Javier Bermejo García, José Chilo

17:20 - 17:40

ICIEA24-000226: Matching Design and Multi-objective Optimization of Integarated joint for collaborative robots
Chi Zhang, Hui Zhang, Feng Yi, Qinghao Du, Pingping Lv, Li Shupei

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17:40 - 18:00

ICIEA24-000372: A Two-Stage Classification Method for Improved Positioning using Low-Cost Inertial Sensors
Dariusz Maton, John Economou, David Galvão Wall, Irfan Khan, Robert Cooper, David Ward, Simon Trythall

TuD4: Special Session
System Design and Analysis (1)

Day 1: 6 August 2024, Tuesday | **Room 3: Veteranen**
Time: 16:00 - 18:00 | **Chair(s): Haiwen Yuan, Zhongyi Li**

16:00 - 16:20

ICIEA24-000448: Design and Simulation of a Passive Transfemoral Prosthesis with Bi-functional Muscles Characteristics
Majun Song, Zhongyi Li, Hao Zheng, Yue Zhang, Shang Yang, Weihai Chen, Xiantao Sun

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16:20 - 16:40

ICIEA24-000225: Design of a lightweight passive shoulder exoskeleton with variable stiffness mechanisms
Zhongyi Li, Majun Song, Hao Zheng, Yue Zhang, Cheng Shen, Weihai Chen

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16:40 - 17:00

ICIEA24-000327: Robot Base Coordinate System Calibration Approach based on LM Iterative Algorithm
Xiaoshan Gao, Liang Yan, Xufeng Chen

17:00 - 17:20

ICIEA24-000335: Data validity determination of HVDC audible noise using temporal and spatial correlation features
Penghui Zhao, Haiwen Yuan, Jianxun Lv, Yuxin Deng, Zelin Wang, Aojie Liu

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17:20 - 17:40

ICIEA24-000161: Graphical Hybrid Diagnostic Model-Based Software Architecture for System Testability Analysis
Chunling Yang, Zhong Anran, Xuqiang Yang, Yu Chen

17:40 - 18:00

ICIEA24-000474: Task Allocation of Swarm Unmanned Aerial Vehicles: A Survey
Yimin Zhou, Tao Qin

TuD5: Oral Session
Power Electronics (3)

Day 1: 6 August 2024, Tuesday **Room 4: Blomsterhaven**
Time: 16:00 - 18:00 **Chair(s): Xing Zhu**

16:00 - 16:20

ICIEA24-000337: Circulating current suppression of multi-parallel inverters based on adaptive cost-free weight coefficient MPC
Lan Lou, Zilong Bi, Cungang Hu, Changbao Zheng, Yangtian Cai, Wenjie Zhu, Chun Liu, Tao Rui

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16:20 - 16:40

ICIEA24-000096: Grid Fault Recovery Analysis of Grid-Following Inverter Based on Phase Portraits Method
Yantao Zhu, Tianzhi Fang, Lin Zhiheng

16:40 - 17:00

ICIEA24-000386: Multi-objective efficiency optimisation of DAB converters
Jie Huang, Bin Xu, Xiaohu Cheng, Zhen Wang, Wenguang Zhao, Yunqing Liao, Cungang Hu, Guoli Li

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17:00 - 17:20

ICIEA24-000060: Modeling and Control of Sigma DC-DC Converter for High Voltage Bus Converter
Yongji Tong, Yundong Ma, Di Wang, Yin Lv

17:20 - 17:40

ICIEA24-000483: Analysis of Direct-drive Turbine Shaft Torsional Vibration under Inertia Control Strategy
Kun Li, Guorong Zhu, Kai Feng, Jianghua Lu

17:40 - 18:00

ICIEA24-000032: Aging Detection of Three-Phase Two-Level Rectifier Base on PHM
Qiying Zhi, Xiaoqiong He

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TuD6: Poster Session
AI

Day 1: 6 August 2024, Tuesday
Time: 16:00 - 18:00

Poster: Corridor

ICIEA24-000033: Neural Network and Reinforcement Learning based Energy Management Strategy for Battery/Supercapacitor HEV
Jili Tao, Zejiang Xu, Longhua Ma, Guanzhong Tian, Wu Chengyu

ICIEA24-000088: Predicting Carbon Dioxide Levels for Built Environment of Flexible and Hot-desking Offices in Different Scenarios
Deqing Zhai, Subodh Bahadure, Bryan Ong, Yeng Chai Soh

ICIEA24-000107: Research on a Charging Pile Fault Prediction Method Based on Improved C4.5 Algorithm
Hongpeng Liu, Yirui Sun, Liyuan Wang, Hongwei Li

ICIEA24-000108: Photovoltaic Array Fault Diagnosis Method Based on KPCA-ISSA-GPC
Hongpeng Liu, Jiasen Tai, Liyuan Wang, Wei Zhang

ICIEA24-000129: Conserving Energy of Office Lighting by Smart Features in Singapore Buildings
Deqing Zhai, Subodh Bahadure, Bryan Ong, Yeng Chai Soh

ICIEA24-000136: Shangzhu-zheng- A Novel Improved BILSTM Method For Depression Detection On Social Media
Shangzhu Jin, Zheng Tang, Jun Peng, Xiaoqi Han

ICIEA24-000181: STAIN: Spatial-Temporal Adversarial Network for Multivariate Time Series Imputation

Guangyu Liu, Pengfei Shen, Zhanguo Ma, Min Han, Nannan Lu

ICIEA24-000250: Health Assessment of Electro-Hydraulic Proportional Servo Valves Based on Transformer

Runzhi Zhang, Chaofan Tu, Xingjian Wang, Haoran Zhai, Yingjun Hu, Yuwei Zhang, Li Jiatong, Shaoping Wang

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ICIEA24-000255: Coordinated Transportation of Dual-arm Robot Based on Deep Reinforcement Learning

Gang Chen, Zeyuan Huang, Yu Liu, Zhipeng Yao, Zixuan Hao, Qingxuan Jia

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ICIEA24-000277: Prioritized Experience Replay Method Based on TD Error and Reducible Loss

Han Hongwei, Gong Guanghong, Li Ni

ICIEA24-000294: Plant Control for Fully Automated AI-Driven Product Type Recognition

Finn Handmann, Nermeen Abou Baker, Uwe Handmann

ICIEA24-000316: Hierarchical Learning/Perception and Conceptual Semantic Network System(HLPCS)

Jeongyon Shim

ICIEA24-000353: A Preference Based Multi-Objective Evolutionary Algorithm Based on Arc-length Information

Mingqi Jiang, Zhuo Wang, Xiaoxiong Wang

ICIEA24-000376: The Application of Deep Learning Image Fusion Method in Marine Exploration

Xiaoyi Ma, Yihong Chen, Shuo Xie, Fei Wang, Zhuo Chen

ICIEA24-000377: Pole Pairs Identification for Sensorless Permanent Magnet Single-Rotary Air-Conditioning Compressor

Jiajian Han, Guoqiang Zhang, Zhaoqiang Fu, Dianguo Xu, Zhian Ye, Nannan Zhao, Siqi Wang, Gaolin Wang

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ICIEA24-000379: Research On Water Surface Target Detection And Positioning Based On Electro-Optical Pointing Device And Lidar

Fei Wang, Yihong Chen, Xiaoyi Ma, Xiaochuan Wang, Zhuo Chen, Xiaomin Zhu

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ICIEA24-000413: Deep user profile construction and behavior prediction based on multimodal heterogeneous feature fusion

Zhaoyang Wang, Li Li, Ketai He

ICIEA24-000434: Vision-based Vehicle Re-identification in Bridge Scenario using Flock Similarity

Chunfeng Zhang, Ping Wang

ICIEA24-000443: A Path Planning Method for Unmanned Rescue Collaboration System

Xiaolin Zhang, Ping Wang, Yu Han

ICIEA24-000451: Enhanced Compensation Strategy of Inverter Nonlinearity Effect for Permanent Magnet Synchronous Motor Drives

Qiyao Li, Gaolin Wang, Zhian Ye, Qiwei Wang, Guoqiang Zhang, Dawei Ding, Dianguo Xu

Keynote

Day 2: 7 August 2024, Wednesday **Keynote Room: Caledonien Hall**
Time: 08:30 - 10:30 **Chair(s): Jingbing Zhang**

08:30 - 09:30

Robotics Meets AI & 5G - The Future is Now!

Prof. Bruno Siciliano

Robotics research has advanced in the last two decades through an intensive collaboration with other disciplines and research communities. Multi-disciplinary approaches are more successful in addressing the combined issues of cognition (perception, awareness and mental models), and physical attributes (safety, dependability and dexterity) in the world of robotics. Previously separated from humans behind a fence, the new advanced robots (or cobots) are sharing our workspace and collaborating with us. Increasingly sophisticated built-in sensors enable them to see and feel the presence of humans and avoid accidental contact. The perception of robotics technology is improving, as we experience more ways it can positively affect our lives. In particular, the social and medical benefits of robots are starting to get more attention. In this scenario, the terms artificial intelligence (AI) and robotics are liberally used, and frequently interchanged today. However, the physical nature of a robotic system distinguishes it from the pure abstraction of AI. We are experiencing a transition from Information and Communication Technology (ICT) to InterAction Technology (IAT). The fifth generation of wireless technology (5G) will pave the way for a new generation of robots, some free to roam controlled via wireless rather than wired communication links while exploiting the vast computing and data storage resources of the cloud. Armed with these capabilities, robots can be controlled dynamically in real time and be connected to people and machines locally and globally. In the near future, 5G will fully enable applications with minimal latency such as “factory of the future”, “remote surgical training” and many others that were previously beyond the capabilities of both cellular and robotics technologies.

BIOGRAPHY

Bruno Siciliano is professor of robotics and control at the University of Naples Federico II. He is also Honorary Professor at the University of Óbuda where he holds the Kálmán Chair. His research interests in robotics include manipulation and control, human–robot cooperation, and service robotics. Fellow of the scientific societies IEEE, ASME, IFAC, AAIA, he received numerous international prizes and awards, including the 2022 Engelberger Award for Education. He was President of the IEEE Robotics and Automation Society from 2008 to 2009. He has delivered more than 150 keynotes and has published more than 300 papers and 7 books. His book "Robotics" is among the most adopted academic texts worldwide, while his edited volume "Springer Handbook of Robotics" received the highest recognition for scientific publishing: the 2008 PROSE Award for Excellence in Physical Sciences & Mathematics. His team has received more than 20 million Euro funding in the last 15 years from competitive European research projects, including an Advanced Grant and a Synergy Grant from ERC. More details are available at http://wpage.unina.it/sicilian/

Keynote

Day 2: 7 August 2024, Wednesday
Time: 08:30 - 10:30

Keynote Room: Caledonien Hall
Chair(s): Qianwen Xu

09:30 - 10:30

Fundamental Device Switching Frequency Control of Multilevel Inverters for Medium Voltage Drives

Prof. Akshay Kumar Rathore

Medium voltage AC drives based on voltage source inverters have been in increasing demand for various industrial applications. Multi-level inverters are a preferred choice because they allow operation at multiple of dc link voltage and reduce the THD as compared to the conventional two-level inverters. It is desired to operate medium voltage drives at switching frequencies below 1 kHz to minimize the switching losses. This keynote will explain a method for obtaining very low switching frequency operation (50 Hz to 200 Hz) of medium voltage multilevel inverters that permits a significant reduction of the device switching frequency and minimize the switching losses while not compromising on the total harmonic distortion of the machine currents. It relates to the control of switching instants of the switching devices of multi-level inverters that determines the pulse pattern of a multi-level inverter for a motor drive system. The technique has been extended for the common mode elimination in the dual-inverter fed open-end winding motor drives system.

BIOGRAPHY

Akshay Kumar Rathore is an IEEE Fellow and expert in power electronics and control of electrical motor drives. He is currently a Professor and Program leader of Electrical Power Engineering Degree Program jointly offered with Newcastle University, UK. He received the Gold Medal for securing the highest academic standing in his Master's degree among all electrical engineering specializations at Indian Institute of Technology (BHU) Varanasi, India. He received his PhD degree in Power Electronics from University of Victoria, British Columbia, Canada in 2008. He had two subsequent postdoctoral research appointments with the University of Wuppertal, Germany, and the University of Illinois at Chicago, USA. From 2011-2015, he served as an Assistant Professor in Electrical and Computer Engineering, National University of Singapore. From 2016-2021, he served as an Associate Professor in Electrical and Computer Engineering, Concordia University, Montreal, Canada where he was listed in the Provost Circle of Distinction in 2021. He served as Graduate Program Director and Chair of Graduate Awards during 2020-21.

Dr. Rathore is a recipient of the 2013 IEEE IAS Andrew W. Smith Outstanding Young Member Achievement Award, 2014 Isao Takahashi Power Electronics Award, 2017 IEEE IES David Irwin Early Career Award, 2019 IES Publications Service Recognition Award, 2020 IEEE Bimal Bose Award for Industrial Electronics Applications in Energy Systems, 2021 Nagamori Award, and 2023 Distinguished Alumna Award (Young Achiever Category -IIT BHU Varanasi). He published about 300 research papers in international journals and conferences, including 105 IEEE TRANSACTIONS.

Dr. Rathore is currently serving as the co-Editor-in-Chief of IEEE Transactions on Industrial Electronics and IEEE Fellow Evaluation Committee member of Industrial Electronics Society and member of the IEEE Nikola Tesla Award Committee.

WeB1: Distinguished Lectures

Day 2: 7 August 2024, Wednesday **Keynote Room: Caledonien Hall**
Time: 10:45 - 12:45 **Chair(s): Lijun Jiang**

10:45 - 11:45

AGI Needs Bio Plausible Basic Circuitry

Prof. Weibo Gong

Spatial signal processing algorithms often use pre-given coordinate systems to label pixel positions. These processing algorithms are thus burdened by an external reference grid, making the acquisition of relative, intrinsic features difficult. This contrasts to animal vision and cognition: animals recognize features without an external coordinate system. We show that a coordinate system-independent algorithm for visual signal processing is not only important for animal vision, but also fundamental for concept formation. In this lecture we start with a visual object deformation transfer experiment. We then formulate an algorithm that achieves deformation-invariance with relative coordinates. The lecture concludes with implications for general concept formation.

BIOGRAPHY

Weibo Gong is a University Distinguished Professor of Electrical and Computer Engineering at the University of Massachusetts, Amherst. He received his PhD degree in Engineering Sciences from Harvard University in 1987 and since has been with the University of Massachusetts. He has been working in internet congestion control, wireless network security, and bio-plausible algorithms for artificial general intelligence. The recognition of his work includes the IEEE Transactions on Automatics Control's George Axelby outstanding paper award, a Semi-plenary lecture at the Conference on Decision and Control, and a best paper runner-up at the IEEE Infocom.

WeB1: Distinguished Lectures

Day 2: 7 August 2024, Wednesday **Keynote Room: Caledonien Hall**
Time: 10:45 - 12:45 **Chair(s): Qianwen Xu**

11:45 - 12:45

Cloud/Fog Automation: Can the Level-1 Control be Hosted in Clouding Computing?

Dr. Zhibo Pang

Inspired by the fast evolution of 5G, cloud computing, and artificial intelligence, the manufacturing industry are looking for new generation automation systems that can be deployed on open, flexible, and IT-style communication and computing infrastructures. However, major technical challenges must be solved in terms of determinism before the expected benefits are achievable, especially for field level regulatory control. In this presentation, I will share what we have done towards the vision of doing field level regulatory control over cloud and fog computing and wireless networks. I will show the significant improvements in the latency and reliability of the latest wireless technologies such as 5G and WiFi6, as well as the insufficiencies to support the real-time control tasks. More importantly, our preliminary progress suggests, it will be easier to solve the overall challenge if we can tune the control model according to the latency pattern of the networks. Despite its effectiveness in our specific use case, the generalizability of the proposed “latency-aware control” or “control-computing-communication co-design” is still a open research question. I hope to trigger more discussions on this topic by this talk.

Biography

Dr. Zhibo Pang, MBA & PhD, is currently a Senior Principal Scientist at ABB Corporate Research Sweden, and Adjunct Professor at KTH. He is a Member of IEEE IES Industry Activities Committee, Vice-Chair of the TC on Cloud and Wireless Systems for Industrial Applications, and Co-Chair of the TC on Industrial Informatics. He is Associate Editor of IEEE TII, IEEE JBHI, and IEEE JESTIE. He was General Chair of IEEE ES2017, General Co-Chair of IEEE WFCS2021. He was awarded the “Inventor of the Year Award” by ABB Corporate Research Sweden, three times in 2016, 2018, and 2021 respectively. He works on enabling technologies in electronics, communication, computing, control, artificial intelligence, and robotics for Industry4.0 and Healthcare4.0.

Homepage: https://www.kth.se/profile/zhibo
LinkedIn: https://www.linkedin.com/in/zhibopang/

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WeB2: Oral Session
Robotics (2)

Day 2: 7 August 2024, Wednesday **Room 1: Major von Knarren**
Time: 10:45 - 12:45 **Chair(s): Yoshio Yamamoto**

10:45 - 11:05

ICIEA24-000421: LiDAR-Inertial Odometry System with Active Gaze Stabilization and Control for Omni-directional Wheeled Robot
Mengshen Yang, Fuhua Jia, Adam Rushworth, Xu Sun, Zaojun Fang, Guilin Yang

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11:05 - 11:25

ICIEA24-000416: Visual Servoing Based on 3D Features: Design and Implementation for Robotic Insertion Tasks
Antonio Rosales, Tapio Heikkilä, Markku Suomalainen

11:25 - 11:45

ICIEA24-000090: Modelling and Control of a Hybrid Robotic Arm with Mixed Rigid-Elastic Joints
Minh Tuan Hua, Jong Hyeon Park, Filippo Sanfilippo

11:45 - 12:05

ICIEA24-000289: On the Applicability of Wireless Technologies for Industrial Robotic Control Systems: A Case Study
Florian Gosselin, Pierre Roux, Mounir Kellil, Adrien Piednoel, Adrien Chambellan, Pascal Chambaud

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12:05 - 12:25

ICIEA24-000432: Analyzing the Estimation of Energy Consumption During Trajectory Planning of an Industrial Robot
Sara Hosseini, Ingo Hahn

12:25 - 12:45

ICIEA24-000053: Drone with Multiple Sensors for Night-time Search Missions of Disaster Victims
Yoshio Yamamoto

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WeB3: Oral Session
Control and Systems (3)

Day 2: 7 August 2024, Wednesday **Room 2: Consulen**
Time: 10:45 - 12:45 **Chair(s): Jiajun Shen**

10:45 - 11:05

ICIEA24-000157: Control Barrier Function Based Cooperative Pursuit with Multi-Pursuer and One Free-Moving Evader
Jiajun Shen, Kunrui Ze, Wei Wang

11:05 - 11:25

ICIEA24-000029: Protection Scheme Based on Current Limiting Control of Flexible Traction Power Supply System
Dong Wang, Xiaoqiong He, Shibin Gao

11:25 - 11:45

ICIEA24-000153: Improved Adaptive Recurrent Neural Network for Data-Driven Modeling of High Speed Trains
Wenju Zheng, Jianye Xue, Chao Shang, Hao Ye, Dexian Huang

11:45 - 12:05

ICIEA24-000126: Analysis and Fault-Tolerant Operation of IGBT Multi Transistor Open Circuit Faults in DBSRC Converters
Yuhang Chi, Lu Zhao, Zhenggang Yin, Cheng Shi, Xue Liu, Qiongxuan Ge

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12:05 - 12:25

ICIEA24-000173: Optimization of ATO control for urban rail trains considering variation of motor parameters
Shi Cheng, Chi Yuhang, Zhao Lu, Yin Zhengang, Xue Liu, Ge Qiongxuan

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12:25 - 12:45

ICIEA24-000369: Decentralized individual pitch control with inverted decoupling for wind turbines in the full load region
Manuel Lara Ortiz, Francisco Vázquez, Juan Garrido

WeB4: Oral Session
Energy and Environment (2)

Day 2: 7 August 2024, Wednesday **Room 3: Veteranen**
Time: 10:45 - 12:45 **Chair(s): Robert Annuth**

10:45 - 11:05

ICIEA24-000405: Efficiency Analysis of DC and AC Collector Grids for Offshore Application
Robert Annuth, Tim-Ole Görner, Christian Becker

11:05 - 11:25

ICIEA24-000139: Collaborative Optimization Method of Power Distribution Network and Urban Transportation Network: A Review
Shijie Yang, Yuhua Du, Lei Wang, Zelong Zhang, Yigeng Huangfu, Zhipeng Li

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11:25 - 11:45

ICIEA24-000231: A Review of Machine Learning Approaches for Prediction of Icing on Wind Turbines
Jiazhi Dai, Yujie Zhang, Mario Rotea, Nasser Kehtarnavaz

11:45 - 12:05

ICIEA24-000373: AI-Assisted Decision Support for District Heating Demand Response
Joonas Tuutijärvi, Satu Tamminen, Minna Kuittinen, Mikko Ojala, Jaakko Suutala

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12:05 - 12:25

ICIEA24-000393: Conceptual Model for Evaluating Human Behaviour in Household Waste Management
Anita Sugianto, Amalia Suzianti

12:25 - 12:45

ICIEA24-000309: Nonlinear resonance in a Magnetic-Spring-Based Solenoid-Driven Electromechanical Actuator
Shahzeb Zafeer, Carlo Famoso, Luigi Fortuna, Arturo Buscarino

WeB5: Oral Session
Power Electronics (4)

Day 2: 7 August 2024, Wednesday **Room 4: Blomsterhaven**
Time: 10:45 - 12:45 **Chair(s): Jiawei Chen**

10:45 - 11:05

ICIEA24-000468: A Harmonic-Optimized Adaptive Predictive Control for High-Power Three-Level Power Converters
Guangze Chen, Zhenbin Zhang

11:05 - 11:25

ICIEA24-000205: Model Predictive Control for a Quad Active Bridge Converter With the Single-Phase Shift
Ahmed Hamed Ahmed Adam, Jiawei Chen, Xinke Zhu

11:25 - 11:45

ICIEA24-000206: A Triple Active Bridge Converter Based on Model Predictive Control for More Electric Aircraft Applications
Ahmed Hamed Ahmed Adam, Jiawei Chen, Xinke Zhu

11:45 - 12:05

ICIEA24-000236: Effect mechanism analysis of low-temperature on short-circuit robustness of SiC MOSFETs
Pengkai Wang, Yuan Chen, Xinyu Zhu, Hu He, Junhui Li

12:05 - 12:25

ICIEA24-000165: The Research of the Efficiency Characteristics of the Wireless Power Transfer System for Medium-speed Maglev Train
Zhenggang Yin, Zhao Lu, Shi Liming, Fan Manyi, Yang Jixin

12:25 - 12:45

ICIEA24-000383: Analysis and design of high-frequency sound wave generator for algae removal
Thanaset Thosdeekoraphat, Supawat Kotchapradit, Kittisak Tanthai

WeC1: Special Session
Sensors and Digital Technologies for Industrialized Aquaculture & Low-Carbon Fisheries

Day 2: 7 August 2024, Wednesday **Keynote Room: Caledonien Hall**
Time: 13:45 - 15:45 **Chair(s): Weiming Cai**

13:45 - 14:05

ICIEA24-000224: Graphene and Aptamer-Based Biosensor For HPS70 Detection
Xinli Ma, Wang Linlin

14:05 - 14:25

ICIEA24-000184: MRI Birdcage Coil for Non-invasive Marine Products Sensing at 1.5 T
Huanqing Zou, Lihao Yu, Xiaonan Hui, Ping Liang

14:25 - 14:45

ICIEA24-000440: Fish Identification and Tracking Based on Pose Estimation
Lei Wang, Huanqing Zou, Shihui Chen

14:45 - 15:05

ICIEA24-000211: Research on underwater fish image denoising method based on deep learning
Yufeng Xie, Shuangle Wu, Lang Wang, Qiu Hu

15:05 - 15:25

ICIEA24-000251: Measurement of fish motion parameters based on Deeplabcut
Xin Wu, Yang Shiao, Zonghai Cai, Ruiyin Song, Shengli Fan

15:25 - 15:45

ICIEA24-000176: Research on CFBG Hydrophone for Vocalization Sensing of Oreochromis Mossambicus During Feeding
Mariano Mahissi, Weiming Cai, Xianmin Zhang, Michel Dossou, Xinli Ma, Bicong Zheng

WeC2: Oral Session
Artificial Intelligence (3)

Day 2: 7 August 2024, Wednesday **Room 1: Major von Knarren**
Time: 13:45 - 15:45 **Chair(s): Andronicus Akinyelu**

13:45 - 14:05

ICIEA24-000039: Parkinson's Disease Classification through Gait Analysis: Comparative study of deep learning and machine learning algorithms
Mustafa Alhammadi, Masoumeh Fazlali, Hasan Fleyeh

14:05 - 14:25

ICIEA24-000170: Towards video prediction
Weibo Gong, Bradley Zylstra

14:25 - 14:45

ICIEA24-000037: Research on the Risks of Railroad Receiving And Dispatching Train Operators: Natural Language Processing Risk Text Mining
Yangze Lan, Ruihua Xv, Yijia Shan, Longhao Zhang, Qinghui Xv, Xuguang Wen

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14:45 - 15:05

ICIEA24-000012: Sorting through ML algorithms: A call for community contributions
Lokman Saleh, Mounir Boukadoum, Hafedh Mili

15:05 - 15:25

ICIEA24-000050: A Deep-Learning Approach for Detecting Anomalies in Commercial Building Load Profiles
Marthen Beily, Ihab Darwish, Ahmed Mohamed, Fnu Sawon, Md Shafikuzzaman

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15:25 - 15:45

ICIEA24-000162: Deep Learning for Sustainable Food Systems: Mitigating Climate Change through Food Waste Reduction
Andronicus Akinyelu, Esther Oreofeoluwa Esho

WeC3: Oral Session
Signal and Information Processing (1)

Day 2: 7 August 2024, Wednesday **Room 2: Consulen**
Time: 13:45 - 15:45 **Chair(s): Dehong Liu**

13:45 - 14:05

ICIEA24-000067: Magnetic flux map acquisition using a compressed sensing method
Abhishek Patkar, Dehong Liu, Yebin Wang, Kamal Youcef Toumi

14:05 - 14:25

ICIEA24-000115: Catoptric Surface Characteristics and Visual Feedback Control

Samatha Kodali, Jeremy Manin, Lissette Torres-Escobedo, Run Zhang, Chandler Ahrens, Chris Gill, Roger Chamberlain

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14:25 - 14:45

ICIEA24-000199: Research on Positioning Deception of Multi-rotor UAV Based on Adaptive Neural Network Kalman Filtering Algorithm
Guanglong Wu, Yonghong Chen, Kuangang Fan, Xin He, Qing He, Zhiyun Wu

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14:45 - 15:05

ICIEA24-000315: Fast Autocorrelation Feature-Based Infant Cry Detector for Resource-Efficient Affordable Edge Cry Sound Analysis Systems
Sivaranjini P N, M Sabarimalai Manikandan, Linga Reddy Cenkeramaddi

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15:05 - 15:25

ICIEA24-000459: Underwater Debris Detection using Visual Images and YOLOv8n for Marine Pollution Monitoring
Sidharth Saji, M Sabarimalai Manikandan, Jing Zhou, Linga Reddy Cenkeramaddi

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15:25 - 15:45

ICIEA24-000455: Lightweight Time-Domain Statistical Parameter Based Muscle Artifacts Detection for Trustworthy Wearable ECG Analysis Devices
Jomole Varghese Vadakkan, M Sabarimalai Manikandan, Linga Reddy Cenkeramaddi

WeC4: Special Session
Computer Vision and Image Processing for Engineering and Biomedical Applications (1)

Day 2: 7 August 2024, Wednesday **Room 3: Veteranen**
Time: 13:45 - 15:45 **Chair(s): Lijun Jiang, Huiqi Li**

13:45 - 14:05

ICIEA24-000234: Enhancing Brain Tumor Diagnosis through Adaptive Feature Aggregation based Transfer Learning
Lily Dey, Marina Gavrilova, Fariha Iffath

14:05 - 14:25

ICIEA24-000447: LF-UNet: An Attention-Based U-Net for Retinal Vessel Segmentation
Xiaolong Zhu, Weihang Zhang, Huiqi Li

14:25 - 14:45

ICIEA24-000166: Combining old school autoencoder with Cotracker for improved skin feature tracking
Wei-Pei Shi, Torbjörn Nordling

14:45 - 15:05

ICIEA24-000298: 3D Cloud of Points AI-Based Analysis to Wheels Detection in the Free-Flow Tolling Context
Marcelo Rudek, Erick Lemmy Dos Santos Oliveira, Luiz Gustavo Schitz Da Rocha

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15:05 - 15:25

ICIEA24-000097: Design and Test of a Robustness Evaluation System for Micro-vision Motion Tracking Algorithms
Ruizhou Wang, Chicong Liang, Hua Wang

15:25 - 15:45

ICIEA24-000235: Automated Camera Selection using SCSPs for Real Life Presentations
Michael Janzen

WeC5: Oral Session
Power Electronics (5)

Day 2: 7 August 2024, Wednesday **Room 4: Blomsterhaven**
Time: 13:45 - 15:45 **Chair(s): Shuhao Deng**

13:45 - 14:05

ICIEA24-000367: Research on Energy Management of Electric Aircraft Flight Control-Power Coupling Model
Shuhao Deng, Haoliang Yu, Tao Lei, Yongqi Liu, Xingyu Zhang, Xiaobin Zhang

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14:05 - 14:25

ICIEA24-000201: A Modeling Method for Extended Phase-Shift Control of CLLC Resonant Converter Based on Simplified Time-domain Analysis
Zhen Liu, Lei Li, Longteng Jiao, Shanlu Zhang, Yuqi Gong, Yunzhen Wang, Chunqing Zhang, Qingwen Zeng

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14:25 - 14:45

ICIEA24-000131: Cooperative Interharmonics Control for Parallel Photovoltaic Inverters with Grouping Optimal Scheme
Wenbo Wu, Guangqian Ding, Bin Qiao

14:45 - 15:05

ICIEA24-000465: Current Sharing Control and Influencing Factors for Parallel GaN FETs
Xuming Gao, Aimin Zhang, Jingjing Huang, Zhe Li, Yue Wang, Shuhai Lv

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15:05 - 15:25

ICIEA24-000422: Indirect Finite Control Set Model Predictive Control of AC-AC Modular Multilevel Converter for Railway Traction System
Yang Zhang, Yihao Wan, Qianwen Xu

15:25 - 15:45

ICIEA24-000478: Research on Medium Voltage DC Self-powered Topology and Control Strategy Adapted to DC Distribution Network
Qi Zhou, Jinghao Zhang, Liang Zhang, Chenyu Zhang, Ruihuang Liu, Jianyu Yu, Zhengtao Zhang

WeC6: Poster Session
Robotics

Day 2: 7 August 2024, Wednesday
Time: 13:45 - 15:45

Poster: Corridor

ICIEA24-000021: The Intelligent Electromagnetic Switch Bounce Suppression and Holding Process Collaborative Optimization Control Strategy
Jinru Huang, Zhihong Xu, Qitao Chen

ICIEA24-000030: Flying Welding Path Planning Based on Improved Two-chromosome Genetic Algorithm
Kunpeng Yan, Hongling Tian, Hongyuan Lian, Qiping Zhang, Wenlong Zhang, Tianjiang Zheng Zheng

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ICIEA24-000045: Self-Calibrated Neural Implicit 3D Reconstruction
Bo Xu, Yuchao Wang, Yu Zheng, Xinyi Le

ICIEA24-000058: Permanent Magnet Synchronous Motor Sensorless Control Strategy Based on Super Twisting Sliding Mode Observer
Zhongqiang Ren, Xiaoli Meng, Qiwei Wu

ICIEA24-000111: A Framework for Smart Manufacturing of Antarctic Krill Protein
Peihua Han, Houxiang Zhang, Inge Bruheim

ICIEA24-000152: Optimal control of hybrid pressure retarded osmosis and photovoltaic thermal system
Yingxue Chen, Guanxiang Feng, Shengzhao Pang, Linfeng Gou

ICIEA24-000154: Traffic Sign Detection Algorithm Based on Improved YOLOv8n
Jun Peng, Biao Mou, Shangzhu Jin, Yiyi Luo, Chenxi Li, Wei Chen, Aiping Jiang

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ICIEA24-000156: Remote Sensing Image Encryption Algorithm Based on Chaotic System and DNA Sequence
Jun Peng, Yiyi Luo, Shangzhu Jin, Biao Mou, Chenxi Li, Wei Chen

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ICIEA24-000158: Road Object Detection Algorithm Based on Improved YOLOv8
Jun Peng, Chenxi Li, Shangzhu Jin, Aiping Jiang, Biao Mou, Yiyi Luo, Wei Chen

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ICIEA24-000246: Rethinking the Late Fusion of LiDAR-Camera Based 3D Object Detection

Lehang Yu, Jing Zhang, Zhong Liu, Haosong Yue, Weihai Chen

ICIEA24-000276: Learning from Human Driver Demonstration for Speed Control of Ground Autonomous Vehicles

Michael Azage, Jose Matute, Ali Karimoddini

ICIEA24-000293: Elevator Operation Status Detection for Service Robot Based on Machine Vision

Xianhao Sun, Molei Peng, Yunhua Li, Liman Yang

ICIEA24-000318: Haptic Teleoperation Framework for Learning Task Space Fine Manipulation Skills

Jayant Singh, Jing Zhou, Baltasar Beferull-Lozano, Shijun Yan, Shalman Khan

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ICIEA24-000328: Surrogate Adaptive Controller Tuning Based on DE in a 3R Serial Robot: A Comparative Analysis

Alam Gabriel Rojas-López, Miguel Gabriel Villarreal-Cervantes, Alejandro Rodríguez-Molina, Jesús Aldo Paredes-Ballesteros

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ICIEA24-000358: Torque-Robust Model Predictive Control for Robotic Joints with Harmonic Reducers

Hongjie Fan, Hongxing Wei, Dong Xu

ICIEA24-000360: Sensorless Impedance Control of Robot Joints with 3K Gear Drives Considering Transmission Efficiencies

Tuopu Zhang, Qinghao Du, Guilin Yang, Weijun Wang, Chin-Yin Chen, Silu Chen

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ICIEA24-000370: Forecasting Stock Price Volatility Based on Lstm-Transfomer - A Case of Pharmaceutical and Biological Industry

Zhuo Jiang, Xiulian Fu, Jie Su, Ling Zhou

ICIEA24-000424: Odometry with Real-Time Depth Completion for UAV Location in Denied Environment

Jin Xiao, Zhangchenyu Liu, Xiaoguang Hu, Zichong Jia, Weipeng Wang

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ICIEA24-000452: Unsupervised Deep learning-based Point Cloud Detection for Railway Foreign Object Intrusion

Xiying Song, Haifeng Song, Min Zhou, Ling Liu, Hairong Dong

WeD2: Oral Session
Robotics (3)

Day 2: 7 August 2024, Wednesday **Room 1: Major von Knarren**
Time: 16:00 - 18:00 **Chair(s): Jingbing Zhang**

16:00 - 16:20

ICIEA24-000444: Optimal Cable Arrangement Design for A Cable-driven Continuum Robot with the Flexible Backbone
Shen Wenjun, Guilin Yang, Zhang Hao, Zaojun Fang, Jianwei Zhou, Haotian Bai

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16:20 - 16:40

ICIEA24-000040: Design study of 800W-class hollow-type magnetic geared permanent magnet synchronous motor for industrial robot arm application
Chan-Bae Park, Hyoung-Woo Lee, Jae-Bum Lee, Seong-Hwi Kim, Jae-Hyeon Lim, Ik-Hyun Jo

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16:40 - 17:00

ICIEA24-000222: Design and Analysis of a Bionic Attachment Module for Complex Surfaces
Yi Luo, Hong-Min Wu, Zhao-Yang Liao, Qi-Lin Bi, Zhi-Hao Xu, Xue-Feng Zhou, Yi-Sheng Guan, Shichao Gu

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17:00 - 17:20

ICIEA24-000031: Design and control of a 3-RPUR underwater parallel robot
Wenlong Zhang, Wei Li, Dexin Jiang, Kunpeng Yan, Tianjiang Zheng Zheng, Huamin Li

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17:20 - 17:40

ICIEA24-000392: Use of UAS for Overhead Powerline Inspection in Norway - Status and Challenges
Mariann Merz, Tom Ivar Pedersen, Sture Holmstrøm

17:40 - 18:00

ICIEA24-000267: Towards Personalized Gait Rehabilitation: A User-Centric Framework for Musculoskeletal-Driven Gait Pattern Optimization
Shamanth Shanmuga Prasad, Youngwoo Kim, Suwoong Lee, Kweon Hyeok Dong, Changwon Kim

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WeD3: Oral Session
Industrial Informatics and Computational Intelligence

Day 2: 7 August 2024, Wednesday **Room 2: Consulen**
Time: 16:00 - 18:00 **Chair(s): Yi Zhai**

16:00 - 16:20

ICIEA24-000001: Analysis of Update Capabilities of Modern Automotive Electric/Electronic Architectures
Yi Zhai, Moritz Zink, Houssem Guisssouma, Michael Hahn, Mario Caggiano, Eric Sax

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16:20 - 16:40

ICIEA24-000056: Data-driven Fault Diagnosis Method for PEMFC Based on NCA-KNN
Zhenhua Nie, Wang Lei, Zhiyang Liu, Zhitao Liu, Hongye Su

16:40 - 17:00

ICIEA24-000169: Exploratory research on resource utilization optimization and management for IoT applications
Manohara Pai, Pushkar Bhat, Karthik Shenoy, Radhika Pai

17:00 - 17:20

ICIEA24-000314: Real-World Evaluation of Performance and Stability of a Smart-Home System with Mesh Network Devices
Sašo Domadenik, Iztok Humar

17:20 - 17:40

ICIEA24-000368: Building Metadata Normalization Using Generative AI
Reuben Borrison, Marcel Dix, Markus Aleksy

17:40 - 18:00

ICIEA24-000130: GANs the UAV Path Planner: UAV-based RIS-assisted Wireless Communication for Internet of Autonomous Vehicles
Mohsen Eskandari, Andrey Savkin

WeD4: Special Session
System Control and Modeling (1)

Day 2: 7 August 2024, Wednesday **Room 3: Veteranen**
Time: 16:00 - 18:00 **Chair(s): Changyun Wen**

16:00 - 16:20

ICIEA24-000407: Data-Driven Modelling of Electrode Resistance in Submerged Arc Furnaces
Sinchan Biswas, Vetle Kjær Risinggård, Manuel Sparta, Damiano Varagnolo

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16:20 - 16:40

ICIEA24-000253: Event-triggered Tracking Control for Wheeled Mobile Robot
Yuanhao Wang, Gang Wang, Qi Zhang, Wenjun Li, Jingbo Zhang

16:40 - 17:00

ICIEA24-000281: Development of An Impedance-based Human-robot Hybrid Interaction System with RNN Force Estimator on Visual Tasks
Chi Sun, Zhiqiang Ma, Long Teng, Ming Zhang, Chak-Yin Tang, Haotian Zhang, Zijie Sun

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17:00 - 17:20

ICIEA24-000261: Model Predictive Control with Virtual Delayed Resonator for Constant Force Interaction of Robotic Manipulator with Environmental Surface
Nanzhi Xie, Gang Wang, Qi Zhang, Chongji Lu, Yuanhao Wang

17:20 - 17:40

ICIEA24-000288: A Lyapunov-based Model Predictive Control for Trajectory Tracking in Harsh Environment
Zichun Wei, Long Teng, Suet To

17:40 - 18:00

ICIEA24-000263: Slipping trajectory tracking control of wheeled mobile robot based on dynamics model
Chongji Lu, Gang Wang, Honglei Che, Nanzhi Xie, Likui Cai

WeD5: Oral Session
Power Electronics (6)

Day 2: 7 August 2024, Wednesday **Room 4: Blomsterhaven**
Time: 16:00 - 18:00 **Chair(s): Shengzhao Pang**

16:00 - 16:20

ICIEA24-000188: Design Methodology Based on Model Equivalence and Small Signal Modeling of CLLC Resonant Converter
Qingwen Zeng, Lei Li, Longteng Jiao, Shanlu Zhang, Yunzhen Wang, Zhen Liu, Yuqi Gong, Chunqing Zhang

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16:20 - 16:40

ICIEA24-000010: The Effect of Parasitic Elements on EMI Common Mode Filter Insertion Loss
Pin-Tzu Chiu, M.H. Pong, Chun-Jen Yao, Huang-Jen Chiu

16:40 - 17:00

ICIEA24-000137: Hybrid Electric Vehicle Energy Management Strategy Based on Heterogeneous Multi-agent Reinforcement Learning
Shengzhao Pang, Siyu Zhao, Bo Cheng, Yingxue Chen, Yigeng Huangfu, Zhaoyong Mao

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17:00 - 17:20

ICIEA24-000189: Backflow Power Optimization for LLC Resonant Converter with Phase Volume Analysis Method
Yunzhen Wang, Lei Li, Shanlu Zhang, Longteng Jiao, Qingwen Zeng, Chunqing Zhang, Yuqi Gong, Zhen Liu

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17:20 - 17:40

ICIEA24-000348: Analysis of light load fast response LCC resonant converter based on simplified state trajectory
Hanwen Long, Deshang Sha, Guangshan Tang

17:40 - 18:00

ICIEA24-000472: Consensus Based Damping Cooperative Control for Multi-Converter System
Lei Feng, Maolan Peng, Hang Liu, Yicong Li, Xiaoguang Diao, Fei Liu

WeD6: Poster Session
Control and Applications

Day 2: 7 August 2024, Wednesday
Time: 16:00 - 18:00

Poster: Corridor

ICIEA24-000052: A Fixed time based self-healing attitude control
Zongjie Liu, Zhongjie Meng, Xianlong Ma

ICIEA24-000074: Exponential Adaptive Event-Triggered Formation Tracking of Heterogeneous Multi-Agent Systems Based on Output Feedback
Binghe An, Huijin Fan, Bo Wang, Lei Liu

ICIEA24-000082: A Method of 3D Printing Path Planning for Freeform Architectural Surfaces
Shiping Liu

ICIEA24-000092: A Novel Wind Turbine Control Method for Mitigating Power Fluctuations and Cooperative Capacity Configuration for the Stand-alone Wind Hydrogen Generation System
Xinke Zhu, Jiawei Chen, Pengfei Wang, Zhiquan Wu, Lin Zhu, Zhong Fang

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ICIEA24-000103: Another sufficient condition for twisting sliding mode controller construction
Weisheng Liu, Gang Liu

ICIEA24-000177: A Multiview-Clustering-based Fault Diagnosis Architecture for Complex Systems Using Probabilistic Multi-Signal-Flow Graph Model
Jinhan Zhou, Jinsong Yu, Yue Song, Zhaoqin Peng, Hao Liu

ICIEA24-000178: A Rule-based Fault Detection Approach for Aircraft Control System Using Data Correlation
Baoding Liu, Jinsong Yu, Yigong Zhang

ICIEA24-000192: The Architecture Design of Medical College Data Integration Platform System Based on MBSE

Zhiqiang Zhao, Dawen Ding, Wei Zhang, Siyuan Ouyang

ICIEA24-000202: Subspace-Aided SIR Approach with Application to Indicator Diagram Estimation of BPUs

Xinyu Qiao, Jilun Tian, Xiaoyi Xu, Jiusi Zhang, Hao Luo

ICIEA24-000233: Distributed Adaptive Finite-time Consensus Control of Uncertain Nonlinear Systems with Event-triggered Control Input

Zhen Han, Zitong Bai, Yutong Jiang, Wei Wang, Ke Bao, Yue Zhou, Wenbin Yue

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ICIEA24-000239: Synergistic Monitoring System via LiDAR and Visual Sensors for Detecting Wildlife Intrusion

Chenlong Ma, Shuo Gou, Ping Li, Yuxiang Yang

ICIEA24-000247: Displacement Control of a Magnetostrictive Actuator with Hysteresis and Temperature Compensation

Xinyuan Zhang, Shaoping Wang, Xingjian Wang, Yu Niu, Xiao Wu

ICIEA24-000266: Modeling and Simulation of a cable-driven three-degree-of-freedom joint

Kunlun Wang, Shaoping Wang, Song Zeng

ICIEA24-000292: Robust consensus-based formation control of multi-robot systems with guaranteed safety

Xu Liu, Xiangbin Liu, Lang Zou, Jian Wang

ICIEA24-000299: Nonlinear dynamic surface control for a class of uncertain multi-agent systems in strict-feedback form

Baoyu Wen, Jiangshuai Huang

ICIEA24-000305: Reliability estimation based on inverse Gaussian process supported by an ANN using two types of accelerated testing data

Zeling Pang, Shaoping Wang, Xiaochuan Duan, Di Liu, Yaoxing Shang, Yixin Zhang

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ICIEA24-000334: A Soft Measurement Model of SF6 Gas Leakage State Based on Neural Network

Zelin Wang, Jianxun Lv, Cong Chen, Haiyong Jin, Xiaobeng Huang, Haiwen Yuan

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ICIEA24-000436: Human Center of Mass Trajectory Estimation Based on the IMU System

Xinyu Tian, Xingjian Wang, Shaoping Wang, Yi Wei, Yuwei Zhang

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ICIEA24-000439: A Scalable, Fault Resilient and Balanced Storage Architecture for Cyber-Physical Systems

Tiejian Luo, Zhu Wang, Chenxi Luo

ICIEA24-000458: Research on the dynamics analysis and sliding mode control strategy of large load swinging platform based on redundant drive

Meng Li, Zhongcai Pei, Hongbing Shi, Yanan Fan, Zhiyong Tang

ThA2: Oral Session
Artificial Intelligence (4)

Day 3: 8 August 2024, Thursday **Room 1: Major von Knarren**
Time: 08:30 - 10:30 **Chair(s): Yan Xu**

08:30 - 08:50

ICIEA24-000035: Probabilistic PV Power Forecasting by a Multi-Modal Method using GPT-Agent to Interpret Weather Conditions
Ziming Yan, Zhenyuan Du, Yan Xu, Ziyan Zhou

08:50 - 09:10

ICIEA24-000042: Removing Bias of Video Question Answering by Causal Theory
Xiaodong Gu, Huang Yue

09:10 - 09:30

ICIEA24-000044: Optimizing Demand Response in Multi-HVAC Systems by RL Control With Comfort Consideration
Han-Tsang Tsai, Jiantang Liao, Hong-Tzer Yang

09:30 - 09:50

ICIEA24-000341: A Multi-Scale Sequence Fusion YOLO Model for Surface Defect Detection of Shock Absorber Connecting Rods
Zhou Yueqi, Zhang Ziliang, Wan Zhiyi, Cui Jialin, Lian Bin, Zhao Xianghong

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09:50 - 10:10

ICIEA24-000342: Sequential Deep Learning Model Development for Battery Remaining Useful Life Forecasting and Anomaly Detection
Manohara Pai, Radhika Pai, Ruthvik Avadhanam, Pragya Gupta

10:10 - 10:30

ICIEA24-000321: A Comparative Approach for Weapon Detection from Images using Deep Learning Algorithms
Vishnu Srinivasa Murthy Yarlagadda, Smiti Agrawal, Reya Malu, Linga Reddy Cenkeramaddi, Madhusudhan K. S.

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ThA3: Oral Session
Control and Systems (4)

Day 3: 8 August 2024, Thursday **Room 2: Consulen**
Time: 08:30 - 10:30 **Chair(s): Weimin Wu**

08:30 - 08:50

ICIEA24-000273: Simple Fault-Tolerant Control of a Permanent Magnet Synchronous Motor with Faulty Position Sensor
Sebastian Taege, Hendrik Schiefhauer, Abid Ali, Bernhard Müller, Gunther Janek

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08:50 - 09:10

ICIEA24-000104: Distributed Secondary Control of DC Microgrids Via the Averaging of Virtual Voltage Drop
Zhiyong Liu, Lantao Xing, Jing Wu, Wang Lei

09:10 - 09:30

ICIEA24-000417: Fuzzy Fault-Tolerant Control Design for Intelligent Vehicles
Weixin Yang, Juntao Pan, Yanzhen Song, Xulang Gao, Xueyuan Zhang, Xiangyuan Bian

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09:30 - 09:50

ICIEA24-000418: Finite-time Output Regulation of Flow Fields Using Barrier Function-based Sliding Mode Control
Krishna Bhavithavya Kidambi, William Mackunis

09:50 - 10:10

ICIEA24-000336: Smooth Switching Between Two Different Control Methods Based on Kalman Filter for Grid-Connected Inverter
Weimin Wu, Yanqi Cheng, Mohamed Orabi, Eftichios Koutroulis, Henry Chung, Frede Blaabjerg

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10:10 - 10:30

ICIEA24-000362: SEIQRS Epidemic Model and its State Estimation using Interval Reduced-Order Positive Observer
Naohisa Otsuka, Hinata Sato

ThA4: Special Session
Signal and Information Processing

Day 3: 8 August 2024, Thursday **Room 3:Veteranen**
Time: 08:30 - 10:30 **Chair(s): Yisheng Guan, Yue Zhang**

08:30 - 08:50

ICIEA24-000180: P^2-LOAM: LiDAR Odometry and Mapping with Pole-Plane Landmark
Jianhong Xu, Weinan Chen, Shixin Mao, Yisheng Guan, Haifei Zhu

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08:50 - 09:10

ICIEA24-000159: Badger Identification using Handcrafted Image Matching with Learned Convolutional Filter
Sina Ghaffari, David Capson, Kin Fun Li, Leonard Sielecki

09:10 - 09:30

ICIEA24-000244: Truss Assembly Sequence Planning under Multiple Constraints based on Ant Colony Algorithm
Yu Liu, Gang Chen, Zeyuan Huang, Zixuan Hao, Qingxuan Jia, Yifan Wang

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09:30 - 09:50

ICIEA24-000208: Indoor Human Activity Perception Based on Infrared Thermopile Array Sensor
Bo Yang

09:50 - 10:10

ICIEA24-000262: An Elbow Bilateral Rehabilitation System Based on Surface Electromyogram: Design and Validation
Cheng Shen, Zhongcai Pei, Jing Zhang, Zhongyi Li, Yue Zhang, Jianhua Wang, Weihai Chen

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10:10 - 10:30

ICIEA24-000415: Improved management of battery to battery energy transfer system between two electric vehicles
Abhik Mukherjee, Sumana Chowdhuri, Parthasarathi Mitra

ThA5: Oral Session
Power Electronics (7)

Day 3: 8 August 2024, Thursday **Room 4: Blomsterhaven**
Time: 08:30 - 10:30 **Chair(s): Shuting Li**

08:30 - 08:50

ICIEA24-000106: Transient and Quasi-steady State Fault Current Limiting Control for Grid-forming Inverters
Shuting Li, Jingxuan Wu, Bingchen Jiang, Sanjay Chaudhary, Juan Vasquez, Josep Guerrero

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08:50 - 09:10

ICIEA24-000028: Loss analysis and junction temperature prediction model of three-phase to single-phase converter
Jiaqi Xu, Xiaoqiong He, Jingying Lin

09:10 - 09:30

ICIEA24-000135: Two-Switch Buck-Boost PFC Converter With Three-Mode Variable On-Time Control Strategy
Li Jiao, Yan Tie Sheng, Wu Lin Tao, Wei Jin Cheng, Chen Wenyuan

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09:30 - 09:50

ICIEA24-000146: A stability analysis approach of DC distribution power system
Yao Jingyu, Xuming Gao, Jingjing Huang, Lijing Zheng, Aimin Zhang

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09:50 - 10:10

ICIEA24-000402: Modeling Approach and Degradation Parameters Identification for Half-Bridge Module Based on Digital Twin Theory
Jiapeng Shen, Li Zhang, Yisheng Huang

10:10 - 10:30

ICIEA24-000185: A Simply Design Method for CLLC Resonant Converter With Parasitic Capacitance
Yuqi Gong, Lei Li, Shanlu Zhang, Longteng Jiao, Zhen Liu, Yunzhen Wang, Chunqing Zhang, Zeng Qingwen

ThB2: Oral Session
Robotics (4)

Day 3: 8 August 2024, Thursday **Room 1: Major von Knarren**
Time: 10:45 - 12:45 **Chair(s): Tapio Heikkila**

10:45 - 11:05

ICIEA24-000271: An optimal path planning method with assigned endpoints in grid maps
Xiaoxiong Wang, Zhuo Wang, Zhikang Ge, Zhihong Man

11:05 - 11:25

ICIEA24-000419: Programming of Skill-based Robots
Taneli Lohi, Samuli Soutukorva, Tapio Heikkilä

11:25 - 11:45

ICIEA24-000147: A Gradient-Free Source Seeking Strategy
Zhenghong Jin, Hua Li, Jinming Xu, Jiming Chen

11:45 - 12:05

ICIEA24-000140: De-centralized Control for Distributed Electric Propulsion Systems in Electric UAVs
Yigeng Huangfu, Tianying Yu, Ruiheng Zhang, Yuhua Du, Aili Fan

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12:05 - 12:25

ICIEA24-000196: Time-Optimal UAV Trajectory Planning for LoS Communication or Video Surveillance over an Uneven Terrain
Satish Chandra Verma, Andrey V. Savkin

12:25 - 12:45

ICIEA24-000023: Augmented Perception: Empowering Flexible Manufacturing Systems through the Digital Twin - A Novel Approach.
Yassine Feddoul, Nicolas Ragot, Fabrice Duval, Vincent Havard, David Baudry

ThB3: Oral Session
Signal and Information Processing (2)

Day 3: 8 August 2024, Thursday **Room 2: Consulen**
Time: 10:45 - 12:45 **Chair(s): Bernhard Zagar**

10:45 - 11:05

ICIEA24-000117: Electronic Circuit Design for Radiation Signal Processing with Applications in Mössbauer Spectroscopy for Space Exploration
Mohammad Beyki, Justus Pawlak, Robert Patzke, Franz Renz

11:05 - 11:25

ICIEA24-000024: Research on the application of special-shaped winding current transformer in arc fault detection
Hanlong Huang, Xiao-Fang Hu, Xin Zheng, Jie-Rong Zhuang, Long-Fei Tang

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11:25 - 11:45

ICIEA24-000113: A Method for Evaluating the Wildfire Risk Level of Distribution Lines Based on AHP and EWM
Xin Wang, Jun Wang

11:45 - 12:05

ICIEA24-000038: A Magnetic Anomaly Detector
Bernhard Zagar, Lukas Heindler, Harald Hüttmayr, Bernhard Zagar

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12:05 - 12:25

ICIEA24-000320: DEVELOPMENT OF A PERSON RE-IDENTIFICATION METHOD BETWEEN MULTIPLE CAMERAS
Makoto Tsukai, Koichi Koizumi, Masaya Hirano, Takeshi Miyaji

12:25 - 12:45

ICIEA24-000049: Optimal Strain Gauge Placement on Testing Samples for Assessing the Effect of Residual Stress in Weld Fatigue
Even Englund, Chandima Ratnayake Mudiyanselage

ThB4: Special Session
Future Robotics Technologies and Applications (FRTA)

Day 3: 8 August 2024, Thursday **Room 3: Veteranen**
Time: 10:45 - 12:45 **Chair(s): Jingbing Zhang, Zhengguo Li**

11:05 - 11:25

ICIEA24-000120: Robot Anomaly Detection Using a Boosted Time Series Prediction Model
Miaolong Yuan, Shijun Yan, Ning Liu, Jie Zhang, Kuo Wei Lee

11:25 - 11:45

ICIEA24-000220: Intelligent Autonomous Fuzzy Comprehensive Evaluation of Combat UAV Based on Combination Weighting Method
Yucan Zou, Yangming Guo, Jiang Long

11:45 - 12:05

ICIEA24-000167: Evaluation and Future Perspectives on ”Anthro-Hand”
Michael Rose, Aghil Jafari, Appolinaire Etoundi

12:05 - 12:25

ICIEA24-000242: A steel-type recognition method based on PointNet++
Peizhen Wang, Yang Zhihao, Zhang Ke, Ma Guoliang, Gu Yunsu, Wang Zhengcai

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12:25 - 12:45

ICIEA24-000306: CMS-Robot: A cloud medical service robot merging SLAM and IoT for enhanced healthcare delivery
Yubin Huang, Yihao Wang, Xiaofeng Li, Hongjie Chen, Yangpei Si, Yuchen Zhang, Hang Zhou, Yaorong Yang, Mingzhe Li, Yunhui Xie, Huiqi Wang

ThB5: Oral Session
Power Electronics (8)

Day 3: 8 August 2024, Thursday **Room 4: Blomsterhaven**
Time: 10:45 - 12:45 **Chair(s): Sebastian Taege**

10:45 - 11:05

ICIEA24-000186: Research on the Core Loss of LLC Converter Transformer Based on Similarity Principle
Chunqing Zhang, Lei Li, Shanlu Zhang, Longteng Jiao, Yunzhen Wang, Yuqi Gong, Zhen Liu, Zeng Qingwen

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11:05 - 11:25

ICIEA24-000123: 20 MW-Level Offshore Wind Power Converter based on Single-Stage Hybrid Modular Multilevel Converter
Yunfei Wang, Qiang Song, Ming Chen, Wenhua Liu

11:25 - 11:45

ICIEA24-000471: Comprehensive Performance-Oriented Control for Grid-forming Converters
Xiaoguang Diao, Yicong Li, Fei Liu, Hang Liu, Maolan Peng, Lei Feng

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11:45 - 12:05

ICIEA24-000291: Bivariate Polynomial Approximation of Flux Linkages Based on Measured Differential Inductances for Permanent Magnet Synchronous Motors
Hendrik Schiefhauer, Bernhard Müller, Sebastian Taege, Abid Ali

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12:05 - 12:25

ICIEA24-000343: Notch Filter-Based Active Damping Design Method of Three-phase Grid-Tied Voltage Source Inverter with Asymmetric-LCL Filter
Hailong Zhao, Weimin Wu, Mohamed Orabi, Eftichios Koutroulis, Henry Shu-Hung Chung, Mingsan Ouyang, Frede Blaabjerg

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12:25 - 12:45

ICIEA24-000124: Multi-period Optimal Power Flow of a Power Distribution Network with Traffic-aware Vehicle-to-Grid Service
Hz Sheng, Yan Xu

ThC2: Special Session
Safety, Reliability and Security Monitoring and Maintenance of Complicated Technical Systems (2)

Day 3: 8 August 2024, Thursday
Time: 13:45 - 15:45

Room 1: Major von Knarren
Chair(s): Yuchen Jiang, Hao Luo, Shen Yin

13:45 - 14:05

ICIEA24-000394: Reliability Evaluation from the Perspective of Fault Dissipated Energy and Application on Piston Pump
Yajing Qiao, Shaoping Wang, Jian Shi, Rentong Chen, Mo Tao

14:05 - 14:25

ICIEA24-000075: ISC fault diagnosis and security monitoring for lithium battery based on voltage variance
Liyao Yang, Xin Wang, Jiale Xie, Jianfang Jiao, Guang Wang

14:25 - 14:45

ICIEA24-000411: Expert Knowledge and Risk-Based Safety-Critical Equipment Assessment: Use of AI for Life Extension Analysis in Ageing Offshore Facilities
Eleojo Samuel Ocheni, R.M. Chandima Ratnayake

14:45 - 15:05

ICIEA24-000183: Advanced Battery Health Management in Electric UAVs Through Digital Twins
Jie Liu, Jørn Vatn, Okyay Kaynak, Shen Yin

15:05 - 15:25

ICIEA24-000453: Research on Fault Diagnosis Technology of helicopter Fuel System based on Neural Networks
Keming Chen, Bing Han, Geng Liu

15:25 - 15:45

ICIEA24-000101: Anti-unwinding Robust Adaptive Sliding Mode Attitude Control for Rigid Spacecraft
Faizan Shahid, Hao Luo, Shafqat Ali, Muhammad Zubair Ashraf, Jahan Zaib Bhatti

ThC3: Special Session
System Design and Analysis (2)

Day 3: 8 August 2024, Thursday **Room 2: Consulen**
Time: 13:45 - 15:45 **Chair(s): Haiwen Yuan, Zhongyi Li**

13:45 - 14:05

ICIEA24-000390: Research on high-frequency acquisition and processing system for pipeline under extreme electromagnetic environment
Wei Lan, Wuxi Bi, Chengwei Xu, Feng Zhang, Xiang Zhang, Ziyang Zhu, Fuxiang Wang

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14:05 - 14:25

ICIEA24-000333: Structural Performance Improvement of Synthetic Electric Field Sensors
Yuxin Deng, Aojie Liu, Haiwen Yuan, Zelin Wang, Penghui Zhao, Jianxun Lv

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14:25 - 14:45

ICIEA24-000272: Development of a Low-Cost AOA/AOS Sensor and Data Processing System for Small-Sized UAVs
Yunxiao Liu, Yiming Wang, Liangxiu Wang, Han Li, Jianliang Ai

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14:45 - 15:05

ICIEA24-000179: Design and Modeling of a Cable-Driven Rigid-Flexible Humanoid Hand
Yuzhi Wu, Shangcan Lin, Jiashu Feng, Yisheng Guan

15:05 - 15:25

ICIEA24-000254: Visual Inertial Wheel Odometry on SE(3) for Mobile Robots with Extrinsic Calibration
Wenjun Li, Gang Wang, Qi Zhang, Yuanhao Wang, Chao Zhang

15:25 - 15:45

ICIEA24-000345: Design of Certificate Information Recognition System Based on PaddleOCR+Flask+C#
Dan Ran, Ning Chen, Luo Haixia, Jun Peng, Xinkai Ma, Zheng Tang

ThC4: Special Session
Computer Vision and Image Processing for Engineering and Biomedical Applications (2)

Day 3: 8 August 2024, Thursday **Room 3: Veteranen**
Time: 13:45 - 15:45 **Chair(s): Lijun Jiang, Huiqi Li**

13:45 - 14:05

ICIEA24-000125: Self-supervised Monocular Depth Estimation Method Based on Piecewise Plane Model
Weiwei Zhang, Guanwen Zhang, Wei Zhou

14:05 - 14:25

ICIEA24-000450: A Classification Model for Glaucoma Grading Using Multi-Modal Image Fusion Strategies
Yiran Kong, Weihang Zhang, Shuai Lu, Huiqi Li

14:25 - 14:45

ICIEA24-000420: A Deep CNN-based Hand Gestures Recognition using High-Resolution Thermal Imaging
Sai Sree Nathala, Rakesh Reddy Yakkati, Daniel Skomedal Breland, Sreenivasa Reddy Yeduri, M Sabarimalai Manikandan, Ajit Jha, Jing Zhou, Linga Reddy Cenkeramaddi

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15:05 - 15:25

ICIEA24-000079: Nonlinear Reaction-diffusion based Video Restoration Technique for Noise Mixtures
Tudor Barbu, Costica Morosanu

15:25 - 15:45

ICIEA24-000301: In the Search for the Balance Between Real and Synthetic Images in Multi-class Detection Systems
Marcelo Rudek, Vitoria Biz Cecchetti, Roberto Freire

ThC5: Special Session
Intelligent Computing and Pattern Recognition

Day 3: 8 August 2024, Thursday **Room 4: Blomsterhaven**
Time: 13:45 - 15:45 **Chair(s): Ping Wang, Duanling Li**

13:45 - 14:05

ICIEA24-000295: Robot screwing state detection based on tactile sequences
Jing An, Qingxuan Jia, Tong Li, Xiaojun Zhu, Yuhang Yan, Gang Chen

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14:05 - 14:25

ICIEA24-000282: UP-MHSA: A Two-Stage Multi-Head Self-Attention Framework for Enhanced 3D Pose Estimation in Aerobics Training
Haotian Zhang, Long Teng, Hang Qu, Qiqi Ban, Dongyang Gao, Chi Sun, Zijie Sun, Linan Huang

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14:25 - 14:45

ICIEA24-000384: Deep Learning for Enhancing Diabetes Prediction
Ashraf Khalil, Uzma Naz, Muahmmad Ali Raza, Junaid Asghar, Muahmmad Zubair Asghar, Asad Masood Khattak

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14:45 - 15:05

ICIEA24-000349: A Hybrid Sequence-to-Sequence Using Attention Mechanism and Convolutional Neural Network for Multistep Electricity Load Forecasting
Shuo Sun, Xinli Wang, Lei Wang, Xiaohong Yin, Yanfei Li, Xuexiao Cheng

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15:05 - 15:25

ICIEA24-000322: Real Time Hand Tracking Utilizing Neural Networks and Graphical Processing Units
Jie Sheng, Logan Miller

15:25 - 15:45

ICIEA24-000323: Research on Pedestrian Object Detection and Trajectory Tracking Methods
Lisha Luo

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ThC6: Poster Session
Power and Energy

Day 3: 8 August 2024, Thursday
Time: 13:45 - 15:45

Poster: Corridor

ICIEA24-000003: Soft-start Control Strategy for the Energy Storage Charger
Zhilei Yao, Yichi Zhang

ICIEA24-000017: Integrated Four-LCC-Parallel Circuit for Wireless Power Transfer of Electric Vehicles with Vector Synthesis Strategy
Zhongjin Huang, Ronghuan Xie, Wenxuan Pan, Zhiwei Shen, Yizhan Zhang, Yiming Zhang

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ICIEA24-000022: Power battery design for fuel cell trucks considering power sources degradation
Bo Chen, Ruiqing Ma, Yang Zhou, Yapeng Ya, Fan Yang, Yansiqi Guo

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ICIEA24-000062: A Titanium Pump Power Supply Based on Royer Converter Using ON-OFF Control Strategy
Chengyi Liu, Tianzhi Fang, Yaohan Xia

ICIEA24-000132: An Intelligent Strategy for Multi-Functional Use of Grid-Forming Inverters
Saeed Heidari, Mohsen Eskandari, Andrey Savkin, Alireza Hatami

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ICIEA24-000229: Analysis and Research on Virtual Impedance Control Strategy of Grid-Forming Full-Power Wind Turbines in Weak Grid
Pengzheng Zhou, Zhen Xie, Shusheng Xu

ICIEA24-000303: Fuel Utilization effects on SOFC-mGT combined heat and power systems

Hanbin Dang, Yigeng Huangfu

ICIEA24-000310: Improved SECE with Revised Harvesting Cycle to Achieve Power Enhancement for Strongly-coupled Piezoelectric Energy Harvester

Wangrui Peng, Jiaqi Tang, Xinyu Cao, Xu Han, Yiqing Wang, Ling Bu

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ICIEA24-000311: Mutual Inductance Detection Method for High Efficiency Constant Power Control of LCC-S WPT System Under Coil Offset

Kai Nie, Zixuan Guo, Kaiwen Xue, Xu Han, Gang Du, Ling Bu

ICIEA24-000329: Strategy for Suppressing Shaft System Oscillations in Grid-forming Doubly-fed Wind Turbine Under Weak Grid Conditions

Haobin Wang, Zhen Xie, Feng Qian

ICIEA24-000330: Analysis of Active Power Dynamic Response Characteristics and an Improved Strategies for Grid-Forming DFIG

Feng Qian, Zhen Xie, Haobin Wang

ICIEA24-000363: A Multiplexed Bridge Arm Combined ZCS Full-Bridge Converter Without High Voltage Filter Inductor for MVDC Grid

Xiaokun He, Wu Chen

ICIEA24-000401: Safety Assessment for Intelligent Distribution Networks in Multiple Scenarios

Rui Li, Ming Wang, Yang Zhao, Pengli Li, Yuqin Xu, Cungang Hu, Qian Zhang, Xunting Wang

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ICIEA24-000428: A Lossless Passive Snubber for Soft-Switching of Flyback Converters

Waseem Haider, Quang Ha

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ICIEA24-000475: Analysis of Harmonic Characteristics in Distribution Network with Distributed PV

Senlin Liao, Ye Tian, Taiyu Gu, Zhe Wang, Lei Shang, Fei Liu

ICIEA24-000476: Enhancing Short-Term Photovoltaic Power Forecast Accuracy via Mountainous Solar Station Regional Segmentation Based on Module Installation Angles

Xilian Zhou, Mingyao Ma, Wenting Ma, Boya Xue

ICIEA24-000477: Analysis of DC-DC converter with high step-down ratio for self-extraction system of DC distribution network

Qi Zhou, Zhengtao Zhang, Liang Zhang, Chenyu Zhang, Ruihuang Liu, Jianyu Yu, Jinghao Zhang

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ICIEA24-000481: An Transformerless Zero-Switching-loss H6-type Inverter with Non-unity Power Factor

Juan Li, Lei Bao, Yunlong Jiang, Xian Zheng, Weiping Zhu

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ThD2: Special Session
Robotics Platforms for Research and Education

Day 3: 8 August 2024, Thursday | **Room 1: Major von Knarren**
Time: 16:00 - 18:00 | **Chair(s): Daniel Hagen, Jing Zhou**

16:00 - 16:20

ICIEA24-000200: UiAbot: A Versatile Autonomous Mobile Robot Platform for Research and Education
Daniel Hagen, Martin Mæland, Tarjei Skotterud, Martin Dahlseng Hermansen, Husam Haij, Martin Sauar Wad

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16:20 - 16:40

ICIEA24-000429: Vehicle Type Classification using Lightweight CNN from Aerial Images for Traffic Management Applications
Anders Tellefsen, Rakesh Reddy Yakkati, Linga Reddy Cenkeramaddi

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16:40 - 17:00

ICIEA24-000426: Classification of Anomalies in Industrial Machines utilizing Machine Sounds and Deep Learning
Nandam Sreevidya, Nathala Sai Sree, Aveen Dayal, M Sabarimalai Manikandan, Jing Zhou, Linga Reddy Cenkeramaddi

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17:00 - 17:20

ICIEA24-000365: Node-Variant Graph Filter Based Multi-Agent Deep Reinforcement Learning for Aligned Game and Wireless Environments
Ajay Nagendra Nama, Baltasar Beferull-Lozano, Leila Ben Saad, Jing Zhou

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17:20 - 17:40

ICIEA24-000427: Vessel Type Classification utilizing Underwater Acoustic Data and Deep Learning
Nathala Sai Sree, Rakesh Reddy Yakkati, Aveen Dayal, M Sabarimalai Manikandan, Jing Zhou, Linga Reddy Cenkeramaddi

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17:40 - 18:00

ICIEA24-000356: Smart Docking System for Surveillance Cameras
Chan Kah Whye, Leonard Gan, Angela Chng, Hamid Saeedipour

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ThD3: Special Session
Advanced Control of Uncertain Systems with Industrial Applications

Day 3: 8 August 2024, Thursday
Time: 16:00 - 18:00

Room 2: Consulen
Chair(s): Huijin Fan, Wang Wei, Jiangshuai Huang

16:00 - 16:20

ICIEA24-000302: Learning Based Adaptive Dynamic Programming of a Four-bar Mechanism with Linear Approximation
Emil Mühlbradt Sveen, Jing Zhou

16:20 - 16:40

ICIEA24-000227: Reinforcement Learning-based Distributed Event-triggered Leaderless Consensus for Unknown Linear Multi-agent Systems
Xiangkai Wu, Jiang Long, Wei Wang, Zhen Han

16:40 - 17:00

ICIEA24-000270: Distributed Secure State Estimation based on Multi-information Selection Detective Mechanism
Hongyuan Xu, Wei Wang, Qing Gao, Lei Wang

17:00 - 17:20

ICIEA24-000203: ESO and RBFNN-based Adaptive Prescribed Performance Control for Morphing Aircraft
Kunrui Ze, Jiajun Shen, Long Xingjian, Wei Wang

17:20 - 17:40

ICIEA24-000388: Finite-time Quadcopter Tracking Using a Barrier Function-based Nonlinear Control Approach
Emmanuel Ijoga, Krishna Bhavithavya Kidambi, William Mackunis

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17:40 - 18:00

ICIEA24-000347: Network Decomposition based Online Localization and State Recovery for False Data Injection Attacks in Smart Grid
Hao Yang, Xinwei Yi, Fanghong Guo, Yihan Zhang, Yiming Chen, Guoqi Li

ThD4: Special Session
System Control and Modeling (2)

Day 3: 8 August 2024, Thursday **Room 3: Veteranen**
Time: 16:00 - 18:00 **Chair(s): Jingbing Zhang**

16:00 - 16:20

ICIEA24-000182: Adaptive Dynamic Programming-based Tracking Control for Free-floating Space Manipulator
Qian Sun, Yingmin Jia

16:20 - 16:40

ICIEA24-000249: Dynamics modeling and placement optimization of multi-robot system for the transportation of flexible structures
Yinbo Zhang, Shiyuan Jia, Gang Chen, Yifan Wang

16:40 - 17:00

ICIEA24-000399: Design and Control of Microturbine Generator Rectifier for Hybrid Electric Propulsion UAV
Xiaocheng Wei, Liang Yan, Yuchen Zhou, Zijian Jin, Xiao Quan

17:00 - 17:20

ICIEA24-000190: Control System Design of a Multi-rod Drilling Robot for Planetary Exploration
Minhui Ye, Jiabin Liu, Jinchan Xu, Kun Xu, Haifei Zhu, Yisheng Guan, Tao Zhang

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17:20 - 17:40

ICIEA24-000414: Modeling and Simulation of Manned and Unmanned Cooperative Reconnaissance and Surveillance Scenario Based on DoDAF
Fengnan Chen, Jin Xiao, Xiaoguang Hu, Xinwei Cao, Wenming Ren, Siyuan Cao

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17:40 - 18:00

ICIEA24-000381: Research on anti-rollover intelligent suspension control based on dynamic Bayesian network
Qingshuo He, Yang Li, Sha Yi, Zhuo Pei Liu, Xing Zhang, Chenyu Zhou

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ThD6: Poster Session
Signal Processing

Day 3: 8 August 2024, Thursday
Time: 16:00 - 18:00

Poster: Corridor

ICIEA24-000036: Interference suppression of BLDC motors in OFDM communication systems
Xu Zhang, Xiufeng Li, Conglin Ye, Jinyuan Hu, Wei Chen

ICIEA24-000046: A Low-Delay Circuit Structure Construction Method for AES Key Expansion Units
Xiaoqiang Zhang, Zhiwei Peng, Han Yan, Xinxing Zheng, Mingyu Xu

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ICIEA24-000095: Design, Analysis and Test of a Target Recognition Approach for the LDI Machine
Yulong Zhang, Ruizhou Wang, Hua Wang

ICIEA24-000114: TOFD Image Features Recognition Based on Improved YOLOv8
Xukai Ren, Xiyong Du, Huanwei Yu, Zhiyu Chang, Guobiao Wang

ICIEA24-000122: A dynamic model-based charge measurement for spatial inertial sensors
Liangyu Chu, Wei Hong, Li Honggang, Bingxue Chen, Yanzheng Bai, Zebing Zhou

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ICIEA24-000128: The discharge uncertainty caused by the position of test mass
Bingxue Chen, Wei Hong, Qingqing Li, Li Honggang, Liangyu Chu, Yanzheng Bai, Zebing Zhou

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ICIEA24-000269: Link Prediction Based on Path Force for Weighted Network
Fei Zhao, Fang Dai, Wenyan Guo, Junfeng Wang

ICIEA24-000366: Design of Industrial Network Time Synchronization Method Defined by Low Energy Software
Jianmou Li, Yongxin Miao, Yunxu Zhang, Shibo Wang, Yongbao Guan, Shuai Shao

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ICIEA24-000387: RE-Net: Road Extraction from Remote Sensing Images with Deep Learning and Geometric Priors

Shihao Ji, Kun Jiang, Peng Wang, Mingyi He

ICIEA24-000410: How can sensor data accessibility be enhanced in IoT-based health monitoring systems?

Ting Wang, Adrian Amatriain Pileno, Eric Monacelli

ICIEA24-000438: Tracking and monitoring of underwater object with SLAM

Jiang Lijun, Syed Hesham Syed Ariff, Dongliang Wei, Junhang Lan

ICIEA24-000441: Automatic measurement system of Arch Dam deformation based on photoelectric displacement measurement

Xiangqian Li, Mengdi Yao, Ende Lin, Yicheng Shi, Dongliang Wei, Kaiduan Yue, Jiang Lijun

ICIEA24-000457: A Dense Multi-scale Temporal Feature Fusion and Spatial Information Embedding Model for Electroencephalogram-based Motor Imagery Classification

Hongbing Shi, Zhongcai Pei, Zhiyong Tang, Meng Li, Yanan Fan, Jinhui Zhang

ICIEA24-000464: Zero-calibrated Brain-computer Interface Based on Fourier Phase Information

Zilin Liang, Zheng Zheng, Weihai Chen, Zhongcai Pei, Xinzhi Ma, Jianer Chen

ICIEA24-000466: Improving motor imagery performance through an attention-based method for a lower-limb exoskeleton rehabilitation system

Xinzhi Ma, Jing Zhang, Zilin Liang, Weihai Chen