IEEE Annual Congress on Artificial Intelligence of Things

(IEEE AIoT 2025)

3-5 December 2025 (Japan Standard Time)

Conference Program and Information Booklet

Sponsored by

Advanced Program Summary (Japan Standard Time Zone)

3 December, 2025 (Wednesday)			
	Room: Bluebell	**Room: Lupinus**	**Room: Lavender**
08:30-09:00	**Opening Ceremony (Snow Berry Room)**		
09:00-10:00	**Keynote Speech-1 (Snow Berry Room)**		
10:30-10:30	**Break**		
10:30-11:30	**Keynote Speech-2 (Snow Berry Room)**		
11:40-13:00	**Break**		
13:00-15:00	AIoT-1: Big Data Analytics and IoT Applications (1)	AIoT-2: Edge, Cloud, and Fog Computing in IoT (1)	AIoT-3: Invited Paper
15:00-15:30	**Break**		
15:30-18:00	AIoT-4: AI for IoT Communications and Networking (1)	AIoT-5: Security, Trust, Privacy in AI and IoT (1)	AIoT-6: Invited Paper & Edge Cloud, Fog
18:00-18:30	**Break**		
18:30-20:30	**Reception (Windermere Hall)**		
4 December 2025 (Thursday)			
	Room: Bluebell	**Room: Lupinus**	**Room: Lavender**
10:00-11:00	**Keynote Speech-3 (Snow Berry Room)**		
11:00-13:00	**Break**		
13:00-15:00	AIoT-7: Big Data Analytics and IoT Applications (2)	AIoT-8: Edge, Cloud, and Fog Computing in IoT (2)	AIoT-9: Ubiquitous IoT & AI for IoT Communications and Networking (1)
15:00-15:30	**Break**		
15:30-17:30	AIoT-10: Edge, Cloud, and Fog Computing in IoT (3)	AIoT-11: Security, Trust, Privacy in AI and IoT (2)	AIoT-12: Big Data Analytics and IoT Applications (3)
17:30-18:00	**Break**		
18:00-20:00	**Banquet (Windermere Hall)**		
5 December 2025 (Friday)			
	Room: Bluebell	**Room: Lupinus**	
08:30-10:30	AIoT-13: [Short Paper] Edge, Cloud, and Fog Computing in IoT (4)	AIoT-14: [Short Paper] Big Data Analytics and IoT Applications (4)	
10:30-11:00	**Break**		
11:00-12:00	AIoT-15: ACAIoT Workshop (1)	AIoT-16: ACAIoT Workshop (2)	
12:00-12:50	**Break**		
12:50-14:20	AIoT-17: [Short Paper] Ubiquitous IoT & AI for IoT Communications and Networking (2)	AIoT-18: Poster Session & 3SCity-E2C Workshop	
14:20-14:50	**Break**		
14:30-16:45	AIoT-19: [Short Paper] Security, Trust, Privacy in AI and IoT (3)	AIoT-20: AIoTSec Workshop	
16:45-17:00	**Closing (Room: Lupinus)**		

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Main Conference Day 1 – (Time zone: JST) **5**

Main Conference Day 2 – (Time zone: JST) **9**

Main Conference Day 3 – (Time zone: JST) **12**

Session Chair: Hirozumi Yamaguchi, Osaka University, Japan

Keynote Speech 1

Should We Rely on the Model or the Machine? The Future of Optimization in NextG Networks

Prof. Thomas Hou

Virginia Tech., USA

Abstract

Efficient operation of wireless networks requires optimal decision-making across multiple layers. Traditionally, such problems have been addressed through model-based optimization, where mathematical formulations capture network characteristics and constraints to optimize a performance objective. While this approach is grounded in solid domain knowledge, it often faces limitations due to model inaccuracies and simplifying assumptions that may not hold in practice.

With the rapid rise of machine learning, data-driven methods have emerged as promising alternatives for network optimization. Although such an approach has achieved notable successes, it remains unclear whether they can replace traditional model-based methods. In this talk, I will examine the essence of both approaches by highlighting their respective strengths and limitations in the context of modern wireless networks. I will further discuss how sound models rooted in domain knowledge can complement and enhance learning-based approaches, motivating a unified framework that integrates both model-driven and machine learning approaches in NextG network optimization.

Biography

Thomas Hou received his Ph.D. from New York University Tandon School of Engineering in 1998. He is currently Bradley Distinguished Professor of Electrical and Computer Engineering at Virginia Tech, Blacksburg, VA, USA, which he joined in 2002. He was a Member of Research Staff at Fujitsu Laboratories of America in Sunnyvale, CA from 1997 to 2002. His current research focuses on developing real-time optimal solutions to complex science and engineering problems arising from wireless and mobile networks. He is also interested in wireless security. He authored/co-authored two textbooks and has published over 400 papers in IEEE/ACM journals and conferences. His publications have received 12 Best Paper Awards from IEEE and ACM, including the 2023 IEEE INFOCOM Test of Time Paper Award. He holds six U.S. patents. Prof. Hou was named an IEEE Fellow for contributions to modeling and optimization of wireless networks. He was/is on the editorial boards of a number of IEEE and ACM transactions and journals. He was Steering Committee Chair of IEEE INFOCOM conference and was a member of the IEEE Communications Society Board of Governors. He was also a Distinguished Lecturer of the IEEE Communications Society.

Session Chair: Henry Leung, University of Calgary, Canada

Keynote Speech 2

Challenges towards Beyond 5G Network Systems

Dr. Hiroaki Harai

National Institute of Information and Communications Technology (NICT), Japan

Abstract

The speaker presents R&D challenges in developing the Beyond 5G network systems for the innovative networks. The R&D target is fundamental and system technology for optical and wireless communications and for networking enabling to fulfill essential functions of the broadband, resilient, ultra-reliable, and ultra-low latency communications desired in the Beyond 5G era.

Biography

Hiroaki Harai is currently a Director General of Network Research Institute at the National Institute of Information and Communications Technology, Tokyo, where he is managing R&D on computing and AI-enabled networking, next-generation wireless, photonic networks, optical and radio convergence, space communications, and resilient ICT as key technologies of innovative networks.Prior to present position. He received the M.E. degree and the Ph.D. degree in information and computer science from Osaka University, Japan, in 1995 and 1998, respectively. After he joined NICT, he has conducted R&D on network architecture, optical networks, and mobile networks. Since April 2018 to March 2021, he managed research and development testbed construction and stable operation of networks and clouds such as JGN and StarBED, and he designed Beyond 5G Mobile and NFV Testbed that is currently in operation. From April 2021, he is in present position.He was a recipient of the Outstanding Young Researcher at the 3rd IEEE ComSoc Asia–Pacific Young Researcher Award in 2007 (optical network topic), the Best Paper Award in ITU Kaleidoscope Academic Conference 2014 (mobile sensor network topic) and Excellent Paper Award in IEICE Communications Society in 2020 (networking topic).

Session Chair: Hung-Yu Wei, National Taiwan University, Taiwan

Keynote Speech 3

AI and Digital Infrastructure for a Sustainable Future: A Tale of Twin Transition

Prof. Yonggang Wen

Nanyang Technological University (NTU), Singapore

Abstract

The advent of generative AI, exemplified by large language models (LLM) such as ChatGPT, has heralded a new era of technological innovation with profound societal implications. However, the fast growth of AI systems has prompted concerns regarding their environmental impact, particularly in terms of energy consumption and carbon emissions. As the demand for AI continues to surge, the construction of large-scale AI data centers (AIDCs) is poised to escalate, exacerbating the strain on global energy resources. In this talk, we present a narrative of twin transition, wherein digitalization and sustainability reinforces each other. We introduce a dual paradigm of sustainability by AI and AI for sustainability, delving into the intricacies of their environmental ramifications and transformative potential. Firstly, we undertake a rigorous analysis and modelling of the electricity consumption and carbon emissions attributable to large language models (e.g., GPT, PaLM and LLaMa), taking into account the evolving landscape of datacentre sustainability. Our investigation extends to forecasting future energy trends for generative AI across both training and inference phases. Cost models to leverage alternative energy sources to power future AIDCs are also presented. Secondly, we advocate for harnessing advanced AI capabilities to catalyse the transition towards sustainable industrial practices. Through the exemplar of training digital twins for AIDCs, we demonstrate how AI-driven optimization strategies can significantly mitigate energy consumption and carbon emissions, thereby fostering eco-friendly operations. Our findings indicate that AI-guided cooling optimization, facilitated by the digital twin framework, can yield substantial reductions in design costs and carbon emissions. Lastly, we introduce "The AI Wears PRADA," a comprehensive framework that integrates Platforms, Researchers, Algorithms, Data, and Applications to orchestrate a unified AI ecosystem. By leveraging this holistic approach, we aspire to foster the efficient utilization of AIDCs and facilitate the seamless integration of AI technologies into sustainable development initiatives, to propel the accelerate growth of digital economy and GDP.

Biography

Yonggang Wen is a Professor and President's Chair in Computer Science and Engineering at Nanyang Technological University (NTU), Singapore. He serves as the Associate Provost (Graduate Education) and Dean of Graduate College at NTU Singapore. Previously he has served as the Associate Vice President (Capability Building) at President's Office (2023),the Associate Dean (Research) at College of Engineering(2018-2023), the acting Director for Nanyang Technopreneurship Center (NTC) (2017-2019) and the Assistant Chair (Innovation) at the School of Computer Science and Engineering (2016-2018), all at NTU Singapore. He received his PhD degree in Electrical Engineering and Computer Science (minor in Western Literature) from Massachusetts Institute of Technology (MIT), Cambridge, USA, in 2008. Dr. Wen has published over 300 papers in top journals and prestigious conferences. His systems research has gained global recognitions. His work in Multi-Screen Cloud Social TV has been featured by global media (more than 1600 news articles from over 29 countries) and received ASEAN ICT Award 2013 (Gold Medal). His work on Cognitive Digital Twin for Data Centre, has won the 2015 Data Centre Dynamics Awards – APAC (the 'Oscar' award of data centre industry), 2016 ASEAN ICT Awards (Gold Medal), 2020 IEEE TCCPS Industrial Technical Excellence Award, 2021 W.Media APAC Cloud and Datacenter Technology Leader Award, and 2022 Singapore Computer Society Digital Achiever Tech Leader Award. He was the winner of 2019 Nanyang Research Award and the sole winner of 2016 Nanyang Awards for Innovation and Entrepreneurship, both of which are the highest recognition at NTU. He is a co-recipient of multiple Best Paper Awards from top journals, including 2019 IEEE TCSVT and 2015 IEEE Multimedia, and at international conferences, including 2023 ASPLOS, 2016 IEEE Globecom, 2016 IEEE Infocom MuSIC Workshop, 2015 EAI Chinacom, 2014 IEEE WCSP, 2013 IEEE Globecom and 2012 IEEE EUC. He is the Editor in Chief of IEEE Transactions on Multimedia (TMM), serves or has served on editorial boards for multiple IEEE and ACM transactions, and was the elected Chair for IEEE ComSoc Multimedia Communication Technical Committee (2014-2016). His research interests include cloud computing, green data center, big data analytics, multimedia network and mobile computing. He is a Fellow of IEEE and Singapore Academy of Engineering, and an ACM Distinguished Member.

Technical Program *(Time zone: Japan Standard Time)*

Main Conference Day 1 *(Tokyo Time, UTC+9)*

Wednesday, 3 December 2025

Wednesday, 3 December 2025 | Snow Berry Room, 08:30 – 09:00 (Tokyo Time)
Tuesday, 2 December 2025 | Snow Berry Room, 23:30 – 00:00 (London Time)
Tuesday, 2 December 2025 | Snow Berry Room, 18:30 – 19:00 (New York Time)
Opening Ceremony

Wednesday, 3 December 2025 | Snow Berry Room, 09:00 – 10:00 (Tokyo Time)
Wednesday, 3 December 2025 | Snow Berry Room, 00:00 – 01:00 (London Time)
Tuesday, 2 December 2025 | Snow Berry Room, 19:00 – 20:00 (New York Time)

Keynote Speech 1: Should We Rely on the Model or the Machine? The Future of Optimization in NextG Networks
- Prof. Thomas Hou (Virginia Tech., USA)
Session Chair: Hirozumi Yamaguchi, Osaka University, Japan

Wednesday, 3 December 2025 | Snow Berry Room, 10:30 – 11:30 (Tokyo Time)
Wednesday, 3 December 2025 | Snow Berry Room, 01:30 – 02:30 (London Time)
Tuesday, 2 December 2025 | Snow Berry Room, 20:30 – 21:30 (New York Time)

Keynote Speech 2: Challenges towards Beyond 5G Network Systems
- Dr. Hiroaki Harai (National Institute of Information and Communications Technology (NICT), Japan)
Session Chair: Henry Leung, University of Calgary, Canada

Wednesday, 3 December 2025 | Bluebell Room, 13:00 – 15:00 (Tokyo Time)
Wednesday, 3 December 2025 | 04:00 – 06:00 (London Time)
Tuesday, 2 December 2025 | 23:00 – 01:00 (New York Time)

Session AIoT-1: Big Data Analytics and IoT Applications (1)
Session Chair: Steve Drew, University of Calgary, Canada

Hand Gesture Recognition Based on Flex Sensors with Enhanced Focal Loss
Tai-Wei Hsu, Shao-Tong Chang and Wen-Jyi Hwang

Topologically-Aware Network Flow Classification for IoT Device Identification
Ellis Wright and An Wang

Geometry-Consistent 4D Gaussian Splatting for Sparse-Input Dynamic View Synthesis
Yiwei Li, Jiannong Cao, Penghui Ruan, Divya Saxena, Songye Zhu and Yinfeng Cao

Broadcast Video to Force Display: Induce Sensation of Ball Motion Using Haptics for Sport Spectating
Amy Zhang and Xiaoli Zhang

EchoHeart: In-Ear Acoustic Sensing for Motion-Resilient Heart Rate Monitoring

Yaxue Li, Xingyu Feng, Huixian Qiu, Yijing Huang, Gecheng Chen and Chengwen Luo

Dual-stage and Lightweight Patient Chart Summarization for Emergency Physicians
Jiajun Wu, Swaleh Zaidi, Braden Teitge, Henry Leung, Jiayu Zhou, Jessalyn Holodinsky and Steve Drew

Conditional Inverse Design Solvers for Autonomous Manufacturing Systems with System Constraints
Gyoung S. Na

Wednesday, 3 December 2025 | Lupinus Room, 13:00 – 15:00 (Tokyo Time)
Wednesday, 3 December 2025 | 04:00 – 06:00 (London Time)
Tuesday, 2 December 2025 | 23:00 – 01:00 (New York Time)

Session AIoT-2: Edge, Cloud, and Fog Computing in IoT (1)

Session Chair: Sejun Song, Missouri University of Science and Technology, USA

[Short] Black Swan Discovery in Live IoT Data Streams
Eric Sturzinger, Jan Harkes, Gil Goldman and Mahadev Satyanarayanan

StrikeWatch: Wrist-worn Gait Recognition with Compact Time-series Models on Low-power FPGAs
Tianheng Ling, Chao Qian, Peter Zdankin, Torben Weis and Gregor Schiele

TADEL: Task-Aware Dynamic Ensemble of Lightweight LLMs for Improved Inference Accuracy in Edge AI
Han Li, Yuvraj Sahni, Jiannong Cao and Fu Xiao

Opportunistic Model Ensembling for Decentralized Learning over Intermittent Edge Networks
Brynx Junil Alegarbes, Victor Ii Romero, Tomokazu Matsui, Yuki Matsuda, Hirohiko Suwa and Keiichi Yasumoto

Improving System Efficiency using Priority Queue in Zero Trust IIoT Networks
Hao-Cheng Lin, Ping-Chih Liu and Shi-Sheng Sun

Time-Efficient Multipath Transmission for Reliable Internet-of-Things Networks
Hyeontae Joo, Namkyung Yoon, Taehoon Yoo and Hwangnam Kim

Cross-Architecture Compatibility Analysis for Deployable Agricultural IoT Vision Systems
Samuel Akinyede and Sejun Song

Wednesday, 3 December 2025 | Lavender Room, 13:00 – 15:00 (Tokyo Time)
Wednesday, 3 December 2025 | 04:00 – 06:00 (London Time)
Tuesday, 2 December 2025 | 23:00 – 01:00 (New York Time)

Session AIoT-3: Invited Papers

Session Chair: Ning Zhang, University of Windsor, Canada

Extracting Spatial Features from Time-Series Photodiode Recordings for Anomaly Detection in Additive Manufacturing
Qiaojie Zheng, Mike Wakin, Joy Gockel, Craig Brice and Xiaoli Zhang

Compressing Multi-Task Model for Autonomous Driving via Pruning and Knowledge Distillation
Jiayuan Wang, Q. M. Jonathan Wu, Ning Zhang, Katsuya Suto and Lei Zhong

G-REINFORCE: Gaussian-Aided Policy Gradient for Adaptive Wake-up Control in Intelligent Vehicles
Shashank Mishra, Jia-Ming Liang and Ai-Chun Pang

Towards Acies-OS 2.0: A Middleware Architecture for Adaptive Optimization of AIoT Applications

Jinyang Li, Dulanga Weerakoon, Tomoyoshi Kimura, Denizhan Kara, Yizhuo Chen, Tianchen Wang, Yigong Hu, Ashitabh Misra, Herman Wu, Tarek Abdelzaher and Archan Misra

ROISD: RIS and O-RAN Assisted Intelligent Sensing for UAV Detection
Xiaochan Xue, Shucheng Yu, Saurabh Parkar and Yao Zheng

Preserving oneM2M Security Semantics in LLM-IoT Integration with Model Context Protocol
Jaehyung Jeong, Jayeon Pyo and Jaeseung Song

On the Covert Coordination of Quantum Entanglement for Secure Data Delivery in AIoT-Enabled Urban Infrastructures
Andreas Andreou, Constandinos Mavromoustakis, Nauman Aslam, Houbing Herbert Song and Jordi Mongay Batalla

Wednesday, 3 December 2025 | Bluebell Room, 15:30 – 18:00 (Tokyo Time)
Wednesday, 3 December 2025 | 06:30 – 09:00 (London Time)
Wednesday, 3 December 2025 | 01:30 – 04:00 (New York Time)

Session AIoT-4: AI for IoT Communications and Networking (1)

Session Chair: Jehad Ali, Ajou University, South Korea

A Modular AIoT Framework for Low-Latency Real-Time Robotic Teleoperation in Smart Cities
Shih-Chieh Sun and Yun-Cheng Tsai

Lightweight Deep Learning for Secure Driver Behavior Recognition in AIoT-Based Intelligent Transportation Systems
Ahmed Raza Mohsin, Maira Khalid, Jehad Ali, Houbing Herbert Song and Byeong-Hee Roh

Diffusion-Enabled Task Offloading for Smart Transportation in UAV-Assisted Edge Computing Networks
Dongjie Wu, Jianhang Tang, Kebing Jin, Ya Li, Jiangtian Nie and Yang Zhang

AIR-CAV: AI-assisted Reliable Channel Selection for Connected Autonomous Vehicles
Md Tajul Islam, Sejun Song and Baek-Young Choi

Graph Feature Engineering and Embedding for Artificial Intelligence of Things
Hansi Kalpana Yasodara Paththini Hetti Arachchige and Anura Jayasumana

An AIoT Framework for Real-Time HVAC Optimization Using Multimodal Sensing and Vision-Based Clothing-Skin Analysis
Sunghwan Kim, Seoungyun Ku, Jisub Kim, Yeongjin Jang, Junhyeong Park, Hyeoncheol Seo, Hyeonseok Jo, Seungho Ahn, Jiwoong Shin and Okkeun Lee

Noise Reduction of Multi-carrier Symbols Using Generative Adversarial Network
Haesik Kim

Wednesday, 3 December 2025 | Lupinus Room, 15:30 – 18:00 (Tokyo Time)
Wednesday, 3 December 2025 | 06:30 – 09:00 (London Time)
Wednesday, 3 December 2025 | 01:30 – 04:00 (New York Time)

Session AIoT-5: Security, Trust, Privacy in AI and IoT (1)

Session Chair: Dilli Prasad Sharma, University of Toronto, Canada

Dual-Path Multi-Scale Fusion Framework for Enhanced Anonymous Speaker Verification
Oscal Tzyh-Chiang Chen, Yi-Chen Tsai and Manh-Hung Ha

Client Clustering Meets Knowledge Sharing: Enhancing Privacy and Robustness in Personalized Peer-to-Peer Learning
Mohammadmahdi Maheri, Denys Herasymuk and Hamed Haddadi

Self-Supervised Behavioral Anomaly Detection for Internet of Things Environments
Kayode Sakariyah Adewole, Andreas Jacobsson and Paul Davidsson

Edge-Friendly IoT Intrusion Detection Using Efficient Boosted Convolutional Trees
Muzart Tuman, Dongfeng Fang and Mohammad H Hasan

Adaptive IoT Device Fingerprinting with Dynamic Feature Optimization on Fine-Grained Network Packet Characteristics for IoT Security
Ogobuchi Daniel Okey, Sajjad Dadkhah, Renata Rosa Lopes, Demostenes Zegarra Rodríguez and Joao Henrique Kleinschmidt

Privacy-Preserving Explainable AIoT Application via SHAP Entropy Regularization
Dilli Prasad Sharma, Xiaowei Sun, Liang Xue, Xiaodong Lin and Pulei Xiong

Hybrid Sybil Attack Detection in IoV Networks Using Rule-Based and Deep Learning Methods
Nai-An Kuo, Chia-Hao Fan, Ping-Chih Liu and Shi-Sheng Sun

Wednesday, 3 December 2025 | Lavender Room, 15:30 – 18:00 (Tokyo Time)
Wednesday, 3 December 2025 | 06:30 – 09:00 (London Time)
Wednesday, 3 December 2025 | 01:30 – 04:00 (New York Time)

Session AIoT-6: Invited Paper & Edge Cloud, Fog

Session Chair: Chin-Tser Huang, University of South Carolina, USA

WeatherGAN-IoT: Generating Rare Severe Weather Conditions for Resilient IoT
Jian Liu and Chin-Tser Huang

Federated Quantum Kernel Learning for Anomaly Detection in Multivariate IoT Time-Series
Kuan-Cheng Chen, Samuel Yen-Chi Chen, Chen-Yu Liu and Kin Leung

Execution Time Prediction via Lightweight AI for Edge-Fog-Cloud Task Offloading
Marius Kreutzer, Konstantin Dudzik, Jing Wang, Victor Pazmino Betancourt and Juergen Becker

Edge-Aware 3D Trajectory and Bandwidth Co-Optimization in UAV-Assisted IoT Network
Ping Luo, Wenqian Zhang and Guoqing Liu

Memory-Efficient Rehearsal-Based Class Incremental Learning for Robot Hand Signal Recognition
Kanchon Kanti Podder, Jian Zhang and Shiwen Mao

Multi-Layer Blockchain-Based IoT Architectures
Cristian Nicolae Buțincu, Delia-Elena Bărbuță and Adrian Alexandrescu

Main Conference Day 2 *(Time zone: Tokyo Time, UTC+9)*

Thursday, 4 December 2025

Thursday, 4 December 2025 | Snow Berry Room, 10:00 – 11:00 (Tokyo Time)
Thursday, 4 December 2025 | Snow Berry Room, 01:00 – 02:00 (London Time)
Wednesday, 3 December 2025 | Snow Berry Room, 20:00 – 21:00 (New York Time)

Keynote Speech 3: AI and Digital Infrastructure for a Sustainable Future: A Tale of Twin Transition
- Prof. Yonggang Wen (Nanyang Technological University, Singapore)
Session Chair: Hung-Yu Wei, National Taiwan University, Taiwan

Thursday, 4 December 2025 | Bluebell Room, 13:00 – 15:00 (Tokyo Time)
Thursday, 4 December 2025 | 04:00 – 06:00 (London Time)
Wednesday, 3 December 2025 | 23:00 – 01:00 (New York Time)

Session AIoT-7: Big Data Analytics and IoT Applications (2)
Session Chair: Siripond Mullanu, Swinburne University of Technology, Australia

Real-Time Quality Control in Additive Manufacturing: An AI-driven Internet of Things framework for 3D Printing Defect Detection and Prediction
Taylor King, Qingsong Cui and Yuehua Wang

Mechanistically Interpretable Wearable-Based Sleep Staging
Mason Kadem and Rong Zheng

Development of an AI Model Adaptation Strategy based on Multi-Resolution Concept Drift Detection: A Case Study in Virtual Metrology for Smart Manufacturing
Dong-Hyuk Yang, Hyeongjun Lee and Yong-Shin Kang

Does Inter-Annotator Agreement Guarantee Better Models? A Paradoxical Finding in Dairy Goat Keypoint Detection
Asanga Udugama, Nick Westendorff, Océane Schmitt, Jens Dede, Christian Manteuffel, David Wewetzer and Anna Förster

Understanding the Representation of Older Adults in Motion Capture Locomotion Datasets
Yunkai Yu, Yingying Wang and Rong Zheng

AI-Assisted Composite ISAC for mmWave Respiration Pattern Recognition
Xiaochan Xue, Saurabh Parkar, Shucheng Yu and Yao Zheng

Sustainable Urban Transportation via Hydrogen-Enabled Integrated Energy System
Siripond Mullanu, Caslon Chua, Andreea Molnar and Ali Yavari

Thursday, 4 December 2025 | Lupinus Room, 13:00 – 15:00 (Tokyo Time)
Thursday, 4 December 2025 | 04:00 – 06:00 (London Time)
Wednesday, 3 December 2025 | 23:00 – 01:00 (New York Time)

Session AIoT-8: Edge, Cloud, and Fog Computing in IoT (2)
Session Chair: Cristian-Nicolae Buțincu, Gheorghe Asachi Technical University of Iasi, Romania

Enabling Vibration-Based Gesture Recognition on Everyday Furniture via Energy-Efficient FPGA Implementation of 1D Convolutional Networks
Koki Shibata, Tianheng Ling, Chao Qian, Tomokazu Matsui, Hirohiko Suwa, Keiichi Yasumoto and Gregor Schiele

Edge-Based Predictive Data Reduction for Smart Agriculture: A Lightweight Approach to Efficient IoT Communication
Dora Kreković, Mario Kušek, Ivana Podnar Žarko and Danh Le-Phuoc

Small Language Model for Real-World HAR: Zero-Shot Performance and Energy Feasibility of On-Device Privacy-Preserving Contextual Inference
Minhyoung An, Wataru Sasaki, Hirohiko Suwa and Keiichi Yasumoto

An Optimized Merkle Hash Tree Approach for Efficient Edge Data Integrity Verification
Md Touhid Islam, Yong Xiang, Yao Zhao, Md Palash Uddin, Trina Myers and Ayon Chakraborty

SoftPreempt: A Software-Level GPU Preemption Mechanism for Multi-DNN Inference with Mixed Priorities in AIoT Systems
Namcheol Lee, Taehyun Kim, Geonha Park and Seongsoo Hong

Towards Standardized Evaluation of 6G Enabled Smart Cities: The MES6 Framework
Suman Kumar, Mihir Patel, Vyoma Yogeshkumar Shah and Sudeep Tanwar

Thursday, 4 December 2025 | Lavender Room, 13:00 – 15:00 (Tokyo Time)
Thursday, 4 December 2025 | 04:00 – 06:00 (London Time)
Wednesday, 3 December 2025 | 23:00 – 01:00 (New York Time)

Session AIoT-9: Ubiquitous IoT & AI for IoT Communications and Networking (1)

Session Chair: Chengkai Tang, Northwestern Polytechnical University, China

Trust and Risk-Aware Human–AI Collaboration Framework in AI-Enabled OT Systems
Aida Akbarzadeh and Georgios Spathoulas

Explainable Weather and Time of Day Classification for Autonomous Driving
Xiangbin Jiang, Hamada Rizk, Hirozumi Yamaguchi, Yuki Kariyazono and Kenji Iwahashi

AlertBLE: Alert Workzone Hazards Using AI Enabled BLE
Samuel Akinyede and Sejun Song

Accurate and Scalable Coverage Simulation for Large Formation-Flying Satellite Arrays
Tengis Buyantogtokh, Akira Uchiyama, Akihito Hiromori, Hirozumi Yamaguchi, Genma Hattori, Sou Ema, Sumio Morioka and Takahiro Inagawa

Knee Point Driven Evolutionary Algorithm with MIMO Satellite Uplink Multi-Objective Optimization
Chenyu Wang, Lingling Zhang and Chengkai Tang

Dynamic DRL Guided RIS Control for Enhancing Multi-User Communication under Unit Malfunctions
You-Cheng Chen, You-Ting Chen, Yu-Jun Lai, Shih-Cheng Lin, Sheng-Fuh Chang and Alan Liu

AI Tool Usage and Prompt Engineering in STEAM Education: A Survey
Anuparp Boonsongsrikul, Norrarat Wattanamongkhol, Wisaruda Suppharangsan, Somjet Suppharangsan, Tharathorn Boonsri and Surachat Lekngam

Thursday, 4 December 2025 | Bluebell Room, 15:30 – 17:30 (Tokyo Time)
Thursday, 4 December 2025 | 06:30 – 08:30 (London Time)
Thursday, 4 December 2025 | 01:30 – 03:30 (New York Time)

Session AIoT-10: Edge, Cloud, and Fog Computing in IoT (3)

Session Chair: Roberto Pereira, Federal University of Paraná, Brazil

A Game-Theoretic Framework for Secure and Efficient Task Offloading in IoT Networks

Bo-Cheng Xie, Ping-Chih Liu and Shi-Sheng Sun

MALLM: Multi-Agent Decision-Making with LLMs for Multi-User Edge-Sensor Environments
Heming Fu, Weici Pan, Zhenhua Liu and Shan Lin

Contrastive Self-Supervised Learning at the Edge: An Energy Perspective
Fernanda Famá, Roberto Pereira, Charalampos Kalalas, Paolo Dini, Lorena Qendro, Fahim Kawsar and Mohammad Malekzadeh

FedCCA: Client-Centric Adaptation against Data Heterogeneity in Federated Learning on IoT Devices
Kaile Wang, Jiannong Cao, Yu Yang, Xiaoyin Li and Yinfeng Cao

Building Resilient IoT Systems through Resource-Efficient Sensor Fault Correction
Shadi Attarha and Anna Förster

A Survey of Quantization Techniques in Embedded AI Toolchains
Mohammad Amin Hasanpour, Xenofon Fafoutis and Manuel Roveri

Thursday, 4 December 2025 | Lupinus Room, 15:30 – 17:30 (Tokyo Time)
Thursday, 4 December 2025 | 06:30 – 08:30 (London Time)
Thursday, 4 December 2025 | 01:30 – 03:30 (New York Time)

Session AIoT-11: Security, Trust, Privacy in AI and IoT (2)

Session Chair: Andrii Shalaginov, Kristiania University of Applied Sciences, Norway

ENIDSGAN: An Efficient GAN-Based Framework for Adversarial Robustness Evaluation in ML-Based Network Intrusion Detection Systems
Darren Hartono, Dongfeng Fang and Shengjie Xu

Noise-Resistant Event Sequence Embedding of IoT Malware
Shun-Wen Hsiao and Cheng-Yu Chen

Architecting Deterministic Agentic Workflows for Reliable Data Understanding Using LLMs
Saurabh Sarkar, Parag Paul, Haygriv Sridharan and Eugene Cheng

Identifying VR User Activity: A Network Traffic Analysis Approach
Sheikh Samit Muhaimin and Spyridon Mastorakis

An Evaluation of a Tree-based Federated Learning Approach for Internet of Things Anomaly Detection
Jordan Wylie, Nikolaos Pitropakis, Pavlos Papadopoulos, Zhiyuan Tan and Kehinde Babaagba

Offline Multi-Agent Reinforcement Learning based on Q-Value Regularized Transformer for Social IoT Trust Management
Boran Yang, Haonan Lou, Wei Zou, Yong Wang and Aohui Ren

Analysis of Requirements for Cybersecurity Telemetry and Awareness Protocol in General-Purpose UAVs
Andrii Shalaginov, Guru Bhandari and Nikola Gavric

Thursday, 4 December 2025 | Lavender Room, 15:30 – 17:30 (Tokyo Time)
Thursday, 4 December 2025 | 06:30 – 08:30 (London Time)
Thursday, 4 December 2025 | 01:30 – 03:30 (New York Time)

Session AIoT-12: Big Data Analytics and IoT Applications (3)

Session Chair: Shuvra Bhattacharyya, University of Maryland, USA

Time Frequency-Fusion Transformers for IoT Urban Sound Classification

King Ma and Henry Leung

AIoT-Based Early Autism Screening Using Agentic AI and Workflow Automation
Nejad Alagha, Aya A. Elkhodiry, Abigail Copiaco, Yassine Himeur, Wathiq Mansoor, Christian Ritz, Valsamma Eapen and Ammar Albanna

A Lesion-Based Attention Mechanism for Real-Time, Lightweight, and Performance-Enhanced Endoscopic Image Analysis
Namkyung Yoon, Hyeontae Joo and Hwangnam Kim

Speech Emotion Recognition with Continuous Representation using Valence and Arousal
Yan Zhang, Benjamin Riggan, Kiminori Nakamura and Shuvra Bhattacharyya

Bitcoin Cross-Chain Bridge: A Taxonomy and Its Promise in Artificial Intelligence of Things
Guojun Tang, Carylyne Chan, Ning Nan, Spencer Yang, Jiayu Zhou, Henry Leung, Mohammad Mamun and Steve Drew

AI-Powered Mental Health Risk Assessment: A Comparative Study of KNN and Random Forest Approaches with IoT Integration Potential
Asif-Ul Islam, Omar Elmady and Huihui Wang

Main Conference Day 3 *(Time zone: Tokyo Time, UTC+9)*

Friday, 5 December 2025

Friday, 5 December 2025 | Bluebell Room, 08:30 – 10:30 (Tokyo Time)
Thursday, 4 December 2025 | 23:30 – 01:30 (London Time)
Thursday, 4 December 2025 | 18:30 – 20:30 (New York Time)

Session AIoT-13: [Short Paper] Edge, Cloud, and Fog Computing in IoT (4)

Session Chair: Romina Spalazzese, Malmö University, Sweden

Efficient Vision Knowledge Pipeline Systems on Resource-Constrained Edge Devices
Joshua Scarpinato, Bobin Deng, Md Romyull Islam, Xinyue Zhang and Kun Suo

Autoscaling in Knative for Serverless Computing Using Deep Reinforcement Learning
Sean Nian and Genya Ishigaki

Towards Artificial Intelligence of Bio-Nano Things: Biologically Inspired Deployment Algorithm for Cooperative Nanonetworks
Dongliang Jing, Linjuan Li, Lin Lin and Andrew Eckford

Smart Annotation with Nudging and Gamified Agents for Activity Recognition in a Home Environment
Takamasa Kikuchi, Shigetomo Sakuma, Tomokazu Matsui, Hirohiko Suwa and Keiichi Yasumoto

A Conflict-Aware Resource Management Framework for the Computing Continuum
Vlad Popescu-Vifor, Ilir Murturi, Praveen Kumar Donta and Schahram Dustdar

RIoTstore: Resilient Data Storage for Spatial IoT Applications
Vinayak Gajjewar, Chandra Krintz and Rich Wolski

Self-Supervised Learning for JPEG Domain: More Efficient Image Classification with DCT Coefficients
Mirakram Aghalarov, Aydan Gadirzada, Abbas Alili and Manafaddin Namazov

Deep Learning-Based In-Patient Personalized Health Prediction Hospital Systems
Chuxuan Chen and K. L. Eddie Law

A Real-Time Intelligent Traffic Alert System Based on Multimodal Sensing and Edge Computing
Yu-Ping Liao, Chien-Yu Chen, Priscilla Yang and Yiqi Cai

LFE: A Learn-from-Error Framework for Adaptive Robotic Intelligence in AIoT Environments
Yongshuai Wu, Jian Zhang, Shaoen Wu and Shiwen Mao

Friday, 5 December 2025 | Lupinus Room, 08:30 – 10:30 (Tokyo Time)
Thursday, 4 December 2025 | 23:30 – 01:30 (London Time)
Thursday, 4 December 2025 | 18:30 – 20:30 (New York Time)

Session AIoT-14: [Short Paper] Big Data Analytics and IoT Applications (4)

Session Chair: Hamada Rizk, Osaka University, Japan

Quality-Aware Modular Deep Learning Approach for Weed Segmentation
Brian Gopalan, Nathalia Nascimento and Vishal Monga

Intelligent Vibration Monitoring and Pressure Correlation Analysis of Fluid-Driven Spindles via Vibe-Agent Architecture
Wen-Yi Yang, Yu-Ting Tsai, Tai-Lin Chen and Zi-Wei Zheng

Fast Correlation With Rolling Windows Via Clustering for Predictive Maintenance
Bahar Karamzadeh, Peter Knights and Mehmet Kizil

Clustering-Aided Classification and Anomaly Detection of Smart Office Patterns Using Environmental Sensor Data
Noushin Najafiragheb, Mohamed Ali Jaziri, Andrea Pandurino and Alberto Bucciero

Voltage Anomaly Detection and Forecasting of Electrical Energy Consumption for Machine Tools using an AI-based Agent Framework
Chen Tai-Lin, Tsai Yu-Ting, Yang Wen-Yi and Zheng Zi-Wei

From Swing to Insight: An IoT-Based System for Kinematic Analysis and Player Assessment in Table Tennis
Po-Cheng Cheng, Hung-Hsuan Chen, Chiao-You Lai, Ding-Yan Chen, Min-Te Sun, Yung-Hoh Sheu, Tai-Fen Song and Sheng K. Wu

AIoT-Enabled Predictive Digital Twins for Athlete Performance Assessment
Nazia Akter, Andreea Molnar and Dimitrios Georgakopoulos

Wearable-Based Body Core Temperature Estimation Using a Precise Whole-Body Voxel Human Model
Kaori Hirano, Hiroki Kudo, Satoshi Kuwano, Yasushi Senda, Yoshihiro Marutani, Tetsuji Adachi, Ryosuke Hasegawa, Teruki Yokoyama, Ken Nakata and Akira Uchiyama

A Deep Sequential Neural Network-Based Approach for Abnormal Vibration Detection in Robotic Arms
Zi-Wei Zheng and Yu-Ting Tsai

Integrating AIoT in the Development of Sustainable Concrete: Recycling Oyster Shell and PET Bottle Waste for Enhanced Efficiency and Environmental Impact
W.F Tang, S.L Mak, Ka Man Ma, Chan Tze Him and Lam Siu Kei

Friday, 5 December 2025 | Bluebell Room, 11:00 – 12:00 (Tokyo Time)
Friday, 5 December 2025 | 02:00 – 03:00 (London Time)
Thursday, 4 December 2025 | 21:00 – 22:00 (New York Time)

Session AIoT-15: ACAIoT Workshop (1)

Session Chair: Hanane Lamaazi, UAE University, UAE

Hybrid Offloading based on Deep Reinforcement Learning for Social Internet of Things
Boran Yang, Wei Zou, Haonan Lou and Dapeng Wu

An Aggregation Algorithm to Handle Data Temporal Dependence in Federated Learning
Sidney Outeiro, Leopoldo Lusquino Filho and Claudio Miceli

ForestGuard-AI: A Theoretical Framework for AIoT-Based Forest Fire Monitoring, Prediction,and Sustainable Management
Elif Kucukpetek

AIoT-Based System for Distracted Driving Behavior Detection
Khalid K. Barahim, Hanane Lamaazi, Ruhul Amin Khalil and Ezedin Barka

Friday, 5 December 2025 | 11:00 – 12:00 (Tokyo Time)
Friday, 5 December 2025 | 02:00 – 03:00 (London Time)
Thursday, 4 December 2025 | 21:00 – 22:00 (New York Time)

Session AIoT-16: ACAIoT Workshop (2)

Session Chair: Tatiana Aubonnet, CNAM, France

Rethinking AI Deployment in IoT Architectures: Granular AI
Thierry N'Kouka, Tatiana Aubonnet, Frédéric Lemoine and Noëmie Simoni

Comparison of Euclidean and Riemannian Metrics for Unsupervised Detection of Anomalies in Authentication Logs
Yacine Ahmed Yahia, Sam Lelouey, Jiahui Xiang, Osman Salem and Ahmed Mehaoua

Research on Face Detection Algorithm Based on Single Shot multibox Detector
Linan Ye, Dongbo Zhang and Lu Xiong

Using Sentinels and Digital Twins to Secure Agentic AI in IoT Systems
Sandra Kumi, Richard Lomotey, and Ralph Deters

Friday, 5 December 2025 | Bluebell Room, 12:50 – 14:20 (Tokyo Time)
Friday, 5 December 2025 | 03:50 – 05:20 (London Time)
Thursday, 4 December 2025 | 22:50 – 00:20 (New York Time)

Session AIoT-17: [Short Paper] Ubiquitous IoT & AI for IoT Communications and Networking (2)

Session Chair: Akira Uchiyama, Osaka University, Japan

Smart Water Management: IoT-Driven Solutions for Ensuring Drinking Water Quality in Hong Kong
Siu Kei Lam, Curie Lee, Chi Chung Lee, Wai Fan Tang, Ying Wang, Kin Wai Tsang and Shun Man Wong

Optimal Pricing Strategies for LLM Platforms with Externality Effects
Sisui Ngoh and Lingjie Duan

Towards a Framework for Evaluating the Intelligence Level of IoT Systems
Umair Khadam, Paul Davidsson and Romina Spalazzese

Hybrid Attention-Based Approach to CSI Compression and Reconstruction
You-Cheng Chen, You-Ting Chen, Po-Ting Chen, Shih-Cheng Lin, Sheng-Fuh Chang and Alan Liu

CL2F: Close-Loop Communication and Localization Framework for High-Mobility UAV Swarm Networks in Partial GNSS-Denied Environments
Jingpeng Li, Yi Zhang, Yinchao Chen and Hanni Yu

Drone Localisation in GPS-Denied Environments Using TinyML on Resource-Constrained Hardware
Victor Barbu, Ana Maria Dragulinescu and Alexandru Tapu

A Comparative Study of DRL Algorithms for Path Planning of E-Scooters in AIoT Urban Environments
Artemis Stefanidou, Elena Politi, Christos Meintanis and George Dimitrakopoulos

Evolutionary Game Analysis of Multiple Stakeholders' Behavioral Strategies in Low Attitude Economy Deployment in Hong Kong
Ying Wang, Siu-Kei Lam and Wai-Fan Tang

Friday, 5 December 2025 | Lupinus Room, 12:50 – 14:20 (Tokyo Time)
Friday, 5 December 2025 | 03:50 – 05:20 (London Time)
Thursday, 4 December 2025 | 22:50 – 00:20 (New York Time)

Session AIoT-18: Poster Session & 3SCity-E2C Workshop

Session Chair: Jehad Ali, Ajou University, South Korea

Posters:
FPGA Implementations of System-on-Chip for Machine Learning Models for Indoor People Counting Applications
Wen-Jyi Hwang, Yu-Quan Shi and Ta-Yu Liao

Toward Reliable LoRa-based IoT Connectivity at Ultra-Low SNR: A Cross-Layer Design
Chenglong Shao

Deploying AI-Based Scientific Applications at the Edge: Lessons Learned from Our Experiences
Marco Lapegna and Diego Romano

Efficient Handling of Inter-Core Interrupt in Modern Manycore CPU
Jieun Kim and Youjip Won

3SCity-E2C Workshop:
Comparative Study of YOLO Variants with and without CBAM in Highway Object Detection Tasks
Syeda Sadia Hassan and Daisuke Kasamatsu

Intelligent IoT Service Using Standardized Interworking Between IoT and Edge Computing Platforms
Kyeonghwan Nam, Bowon Kwon and Jaeseung Song

Friday, 5 December 2025 | Bluebell Room, 14:30 – 17:00 (Tokyo Time)
Friday, 5 December 2025 | 05:30 – 07:00 (London Time)
Thursday, 5 December 2025 | 00:30 – 03:00 (New York Time)

Session AIoT-19: [Short Paper] Security, Trust, Privacy in AI and IoT (3)

Session Chair: Cristian-Nicolae Buțincu, Gheorghe Asachi Technical University of Iasi, Romania

GeoCrypt: A Location-Derived Multi-Stage Encryption Model for Adaptive and Resilient Secure Communication
Perry Longwani and Pious Kaira

A Comparative Evaluation of Teacher-Guided Reinforcement Learning Techniques for Autonomous Cyber Operations
Konur Tholl, Mariam El-Mezouar and Ranwa Al Mallah

Traceable Detection of AI Generated Content: A Secure Model Combining Frequency and Spatial Information
Hui-Chen Yang, Hsien-Cheng Chou, Li-Chuan Huang and Yen-Wen Chung

Advances in Artificial Intelligence of Things, Highlighting Semantic Interoperability and Cyber-Security with AI-Powered Embedded Finance Example
Martin Serrano, Waheed Ashraf, Subhasis Thakur, John Breslin, Bardia Khorsand, Richard Walsh, Ihsan Ullah and Umair Ul Hassan

Trusted Execution, Updating of AI/ML Models and Sensor Data through Isolation on IoT Devices
Georgios Kornaros, Stavros Martini, Nicolas Spyridakis and Alexandra Polychronidou

Building Intelligence: Smart Anomaly Detection in HVAC Systems for Fault Prevention
Shahid Gulzar Padder and Sudhakar Modem

Benchmarking AI Models for Map-Free Indoor Localization in 6G AI-RAN Systems
Chenghan Yu, Encheng Liou and Bin Zhang

Reinforcement Learning-Based Power Optimization in Wireless Networks with Sector-Level Control and Realistic Amplifier Models
Raazia Tariq, Franz Alwin Dürrwald, Omer Hanif Khan, Juan A. Cabrera, Frank Ellinger and Frank H.P. Fitzek

Quality-Driven Edge-to-Cloud Architecture for Crowd Monitoring with Wi-Fi Sensing
Fernando Brito E Abreu, Rui Neto Marinheiro, João Oliveira and Tomás Mestre Santos

Friday, 5 December 2025 | Lupinus Room, 14:30 – 16:45 (Tokyo Time)
Friday, 5 December 2025 | 05:30 – 06:45 (London Time)
Thursday, 5 December 2025 | 00:30 – 02:45 (New York Time)

Session AIoT-20: AIoTSec Workshop

Session Chair: Babu Baniya, Bradley University, USA

Vulnerabilities Assessment of WPA3-Enterprise in Evil Twin Attacks
Saken Tleuberdin, Dina Satybaldina, Tolegen Aidynov, Assel Nurusheva, Zhandos Boranbay and Gulsipat Abisheva

lmbalanced Hate Speech Detection via Latent-Space Diffusion and Multi-ChannelFeature Extraction
Siyu Chen, Yansong Shi, Yuqing Zhang, Hongyu Sun, Jice Wang, Zhiyuan Fu, Xiang Hai and Fanny He

Research on Point Cloud Object Tampering Attacks for Cooperative Perception Systems
Yansong Shi, Siyu Chen, Xiang Hai, Jice Wang, Fanny He, Hongyu Sun, Yuqing Zhang and Zhiyuan Fu

A Privacy-Preserving On-Device Framework for Telecom Fraud Detection
Xiangming Zhou, Shangru Zhao, Sun Jiawen, Wang He and Yuqing Zhang

A Business-Driven Perspective on the Causes of Cross-Border Data Risks
Jingfeng Rong, Yuqing Zhang, Jun Niu and Yulin Zhang

A Large Language Model-based Multi-Agent Framework for Automated Privacy Policy Analysis
Rui Tian, Shangru Zhao, Qing Yang, Yulin Zhang, He Wang and Yuqing Zhang

An Efficient Intrusion Detection Framework for IoMT Using Hybrid LSTM-XGBoost Model
Babu Baniya

Research on energy storage policies in China, the United States, and the European Union
Meiqi Liu, Jiale Peng, Chaoyang Zhu, Ting Yang and Yuqing Zhang

Smart-Home Privacy in the Era of Large Models: Challenges and Opportunities
Shangru Zhao, Ting Yang, He Wang and Yuqing Zhang

Friday, 5 December 2025 | 16:45 – 17:00 (Tokyo Time)
Friday, 5 December 2025 | 06:45 – 07:00 (London Time)
Friday, 5 December 2025 | 02:45 – 03:00 (New York Time)

Closing