2026 IEEE International Conference on Smart Internet of Things (SmartIoT 2026)

Shenyang, China
21-24 August 2026

IEEE Catalog Number: CFP26Q24-POD
ISBN: 979-8-3195-0138-7

IEEE
Advancing Technology for Humanity

Copyright © 2026, IEEE

All Rights Reserved

Copyright and Reprint Permissions:

Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP26Q24-POD
ISBN (Print-On-Demand):	979-8-3195-0138-7
ISBN (Online):	979-8-3195-0137-0
ISSN:	2770-2669

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA

Phone:	(845) 758-0400
Fax:	(845) 758-2633
E-mail:	curran@proceedings.com
Web:	www.proceedings.com

CURRAN ASSOCIATES INC. proceedings .com

TABLE OF CONTENTS

UGAS: Epistemic Uncertainty-Guided Adaptive Sampling for Gas Source Localization in Hybrid Sensor Networks 1
Mingkun Guo, Jiuwu Ma, Zhiqiao Gao, Teng Ma

A Motif-Driven Topology Optimization Strategy for Low-Cost and Robust Computing Power Networks 9
Kun Wang, Shuang Liu, Ruyi Ma, Jinshan Yuan, Tie Qiu

A UIoT Network Deployment Algorithm via Degree-Constrained and Multi-Dimensional Link Utility Assessment 17
Xiaoyun Guang, Jiaqi Shen, Mingyue Li, Zhao Zhao, Ruizhong Du

Knowledge-Guided Relational Reasoning for Robust Network Topology Optimization 25
Weijie Chen, Songwei Zhang, Bingxian Lu, Mehdi Hosseinzadeh, Fa Zhu, Hai Zhao, Tie Qiu

A Communication-Coverage-Aware AUV Data Collection Framework for Internet of Underwater Things 32
Wenwei Li, Zhao Zhao, Jiuxing Zhang, Xiaoyun Guang, Sheng Lin

Risk-Controlled Lightweight IoT Intrusion Detection via SHAP-Guided Feature Pruning and Conformal Prediction 39
Beigeng Zhao, Yufei Zhan

Addressing Cross-Dataset Data-Drift in IoT Intrusion Detection via Replay-Guided Adaptation with Source Retention 47
Bipraneel Roy, Dr Hon Cheung, Dr Chun Ruan

MicroFed-AD: A Microcontroller-Based Federated Edge Intelligence Framework for Low-Latency Environmental Anomaly Detection 55
Izhar Oswaldo Escudero Ornelas, Aland Yarden Escudero Ornelas, Zinuo Liu, Yuxuan Guo Netzahualcoyotl Hernandez-Cruz

A Multi-Scale Time-Series Anomaly Detection Approach for Modeling the Time-Lagged Effects of Exogenous Variables 63
Xin Liu, Yuanzhao Shang, Weisheng Luo, Gang Zhao, Tengyu Gai

Agent-Based Simulation of HotStuff Algorithm Family 71
Yingying Deng, Paul Daniëlse, Zhiming Zhao

Semantic Communication-Enhanced UAV-Assisted Task Offloading Mechanism in Interference Environments 79
Manman Song, Jinpeng Ren, Aiping Li

Risk-Regulated Contextual Resource Scheduling for Mixed-Criticality Smart IoT Edge Platforms 89
Dexin Wang, Dong Ji, Yuxi Li

GPMS: Prediction-Driven GNN-Based Multi-Agent Scheduling for Multi-Cluster Edge Computing 97
Fengbiao Zan, Tengyu Gai, Gang Zhao, Yubo Dong, Xin Liu

Deployment-Constrained Predictive Digital-Twin Instantiation for Smart IoT Edge-Cloud Infrastructures 105
Jianyong Wang, Ziyu Niu, Xiaobo Zhou, Liangyu Han, Jie Liu

A Task-Aware Model Size and Precision Selection Framework for LLM Inference in Edge Computing 111
Yuan Yuan, Bingxian Lu, Songwei Zhang, Siyu Liu

An Adaptive Routing Network Based on Multimodal Fusion for Timestamp-Supervised Temporal Action Segmentation 119
Shuyi He, Yipeng Guo, Jinnan Kou, Jingyi Kang, Shuhan Tao, Lin Feng

TPA-Seq2Seq: Tri-Prior Aligned Sequence-to-Sequence Learning for Continuous Sign Language Recognition 127
Yahan Yang, Rui Wang, Xiaofan Li, Xiaoqiang Zhu, Yang Luo

A Bimodal Predictive Framework for Early Stroke Detection in Synthetic EHRs 135
Jingyao Sun, Ming Li

Mutual Cross-Attention–Guided ECG-Report Alignment for ECG Representation Learning 141
Shuai Wang, Wei Wang

VQRC: Variational Quantum Residual Compensation for Deep Neural Network Compression 148
Zhenghao Jiang, Ning Chen, Xiaohan Yuan, Chuan Sun

A Vector-Based Semantic Mapping and Dynamic Risk Evolution Framework for Heterogeneous IoT Security Labels 156
Runpeng Lu, Yang Liu, Bin Xie

Robust Adversarial Malware Detection through Two-Phase Zone Perturbation in Windows-based Smart IoT 163
Jun-Won Ho, Sungjin Ho, Hannah Ho

A Smart IoT/CPS-Based Autonomous Inspection and Visual Warning System for Building Fire Safety Hazards 171
Derong Ning, Hong-Jin Hu, Xin Wang, Hong Qiu

FedMCP: Privacy-Preserving Federated Tool Indexing for Cross-Organizational MCP Deployments 179
Sai Chaitanya Kumar Paidi, Tiru Chillapalli

Post-disaster network resource scheduling based on B5G and LEO satellite: applications, technologies, and open research problems 184
Yi-Wei Ma, Pin-Hong Lin, Chenglong Shao, Kazuya Tsukamoto

RO-VLMap: Real-Time Occupancy-Aware Visual Language Mapping for Robust Robot Navigation 190
Yuan Liu, Chuangye Hu, Nan Ding

Deep Learning-Based Lightweight In-Cabin Multi-Person Heart Rate Monitoring Using 60 GHz FMCW Radar 198
Ziye Liu, Shuqiang Wang, Xiaoguang Guo, Yanan Liang, Yingsheng Huang, Chen Chen

DeepSC-Empowered Multi-UAV Cooperative Exploration: A Tokenized Approach 205
Yihang Huang, Zhujun Lan, Li Zhou, Xiaojie Wang, Zhaolong Ning

Task-Adaptive Morphology Design for Modular Robotic Systems in Dynamic Environments 213
Ximing Liu, Lei Wu, Bin Guo, Yasan Ding, Zhiwen Yu

Multiplicative Takeover Feasibility for SAE Level-3 Automation 220
Xiaohan Zhang, Xuanning Zhang, Haoxiang Yang, Xianliang Zhou, Xi Fan, Chen Chen

Using Carbon Trading Mechanisms Enhanced by Smart IoT to Promote Industry Transformation and Urban Sustainable Development 226
Ying Wang, Siu-Kei Lam, Heng Li, Lulu Gong

An FPGA-Based Real-Time Edge Vision Node for Industrial IoT 234
Chengge Xia, Hao Wu, Yi Guo, Yaoming Zhuang, Chengdong Wu

A Joint Learning Framework for UIoT-Enabled Image Stitching Under Artificial Illumination 242
Yating Zhuo, Ning Lv, Han Cai, Zihao Huang, Xin Yuan

Animal Re-Identification on Microcontrollers 249
Yubo Chen, Di Zhao, Yun Sing Koh, Talia Xu

Scaffold-Initialized Crossing-Aware Multilevel Force-Directed Layout for Topology-Oriented Small and Medium Power-Grid Graphs 258
Yue Huang, Chuhui Wu, Wei William Wang

PPO-Based Resource Allocation for DT-Empowered FedRep in 6G IIoT 266
Yiming Luo

SAC-DSGH: Differentiated Satellite-Ground Link Handover in LEO Networks via Soft Actor-Critic 272
Kaitian Zheng, Chen Chen, Shuqiang Wang, Xiaoguang Guo, Ning Xu

Spatio-Temporal Network Traffic Prediction Based on an Adaptive Topology Gating Mechanism 280
Zhipeng Wang, Wei Wei, Yang Yu, Nan Li, Li Zhou

Codebook-assisted Deep Multi-view Information Bottleneck for Semantic Transmission 288
Meng Liu, Xingheng Wan, Zhikui Chen, Shuhao Zhang, Jingshu Wang, Zhangyang Tang

Empirical Range Modeling and Short-Range Radar Sensing Using IEEE802.15.4-Compliant IR-UWB Radar via Gaussian Mixture Models 296
Ana Moragrega, Rodrigo Olivares

WiLMT: LLM-Native Symbolic Representation Learning for WiFi-based Human Sensing 304
Yanan Su, Jiancheng Chi, Zhiyi Zhou, Xinxin Lu, Qihang He, Lei Wang, Tutomu Murase

AMSP-Affirm: Adaptive Multi-Scale Patching for Resource Load Forecasting in Data Centers 312
Gang Zhao, Tengyu Gai, Yubo Dong, Xiaodan Zhang, Xin Liu

Scheduling for Green Computility via LLM-Guided Deep Reinforcement Learning 319
Tao Yin, Cong Wang, Ziyu Niu, Tianyi Xu, Xiaodan Zhang, Ruyi Ma

Light-TAIDS: A Lightweight Temporal Attention-Based Intrusion Detection System with Explainable Time-Aware Learning 327
Shifa Shoukat, Tianhan Gao, Danish Javeed, Muhammad Adil

Reproducible and Scalable Parameter Optimization for Energy-Efficient IoT-NDN Networks using Deep Reinforcement Learning 335
Mohamed Ahmed M. Hail, Yannick Kreth, Bennet Gerlach

Multi-Pointer Co-Attention Network for Explainable Fake News Detection 343
Ansong Liu, Jiangfeng Zeng

Diffusion-Enhanced Anomaly Perception for IoT-Enabled Fault Prediction in Multi-Center Power Dispatch Platforms 351
Zhen Huang, Fei Peng, Kaiyuan Hou, Deming Xia, Duoqin Wang

ToolDriftBench: Detecting and Recovering from MCP Tool Index Staleness in Agentic Systems 357
Sunil Kumar Paidi, Venkata Ratna Kumar Bonagiri

CAL-IoT: A Causal Attention Framework for Robust and Explainable Intrusion Detection in IoT Networks 363
Liming Sun, Jie Li, Mengting Li, JinLi Ma, Runze Sun, Haiyang Sun, Xingwei Wang

SegCal-AD: Segment-Aware Risk Calibration for Stable Alerting in Industrial IoT 371
Lihua Yang, Weixu Wang, Xiaobo Zhou

Joint Traffic Prediction and Large Flow Detection Using a Lightweight LSTM-Attention Hybrid Model 377
Xiangyuan Meng, Fengbiao Zan, Haidong Zhang, Qi Wang, Rong Zan

A Lightweight Green-Power-Aware Online Scheduling Heuristic for Dynamic IoT-Cloud Systems 385
Xin Liu, Yubo Dong, Xiaodan Zhang, Ruyi Ma

From Deployment to Operation: A Reproducible IoT Testbed for Smart-Building HVAC with OTA and Observability 393
Lucas De Souza Marques, Pedro Porto Teixeira, Renan Correia Monteiro Soares, Felipe Tavoni Vitor Alexandre, Julio Cezar Estrella

Time-Varying Propagation Graph Construction for Semantic Model Dissemination 400
Xiujuan Xu, Yifan Lyu, Guanghui Li, Zhehuan Zhao

Nonlinear Propagation Mechanisms of Semantic Models in Complex Topologies 402
Xiujuan Xu, Guanghui Li, Yifan Lyu, Zhehuan Zhao