

IEEE

# INTERNET OF THINGS JOURNAL

A JOINT PUBLICATION OF THE IEEE SENSORS COUNCIL 

THE IEEE COMMUNICATIONS SOCIETY 

THE IEEE COMPUTER SOCIETY 

THE IEEE SIGNAL PROCESSING SOCIETY 

MAY 15, 2021

VOLUME 8

NUMBER 10

IITJAU

(ISSN 2327-4662)

REVIEW PAPERS

Wireless Avionics Intracommunications: A Survey of Benefits, Challenges, and Solutions .....	7745
..... <i>P. Park, P. Di Marco, J. Nah, and C. Fischione</i>	
Trust Management in Social Internet of Things: Architectures, Recent Advancements, and Future Challenges .....	7768
..... <i>W. Z. Khan, Q. Arshad, S. Hakak, M. K. Khan, and Saeed-Ur-Rehman</i>	
Empowering Things With Intelligence: A Survey of the Progress, Challenges, and Opportunities in Artificial Intelligence of Things .....	7789
..... <i>J. Zhang and D. Tao</i>	
MTD, Where Art Thou? A Systematic Review of Moving Target Defense Techniques for IoT .....	7818
..... <i>R. E. Navas, F. Cuppens, N. Boulahia Cuppens, L. Toutain, and G. Z. Papadopoulos</i>	

REGULAR PAPERS

Joint 3-D Trajectory and Resource Optimization in Multi-UAV-Enabled IoT Networks With Wireless Power Transfer .....	7833
..... <i>W. Luo, Y. Shen, B. Yang, S. Wang, and X. Guan</i>	
When Mobile-Edge Computing (MEC) Meets Nonorthogonal Multiple Access (NOMA) for the Internet of Things (IoT): System Design and Optimization .....	7849
..... <i>J. Du, W. Liu, G. Lu, J. Jiang, D. Zhai, F. R. Yu, and Z. Ding</i>	
PADP: Efficient Privacy-Preserving Data Aggregation and Dynamic Pricing for Vehicle-to-Grid Networks .....	7863
..... <i>L. Chen, J. Zhou, Y. Chen, Z. Cao, X. Dong, and K.-K. R. Choo</i>	
Application-Oriented Block Generation for Consortium Blockchain-Based IoT Systems With Dynamic Device Management .....	7874
..... <i>A. Zhang, P. Zhang, H. Wang, and X. Lin</i>	
AoI-Aware Co-Design of Cooperative Transmission and State Estimation for Marine IoT Systems .....	7889
..... <i>L. Lyu, Y. Dai, N. Cheng, S. Zhu, X. Guan, B. Lin, and X. Shen</i>	
In.IoT—A New Middleware for Internet of Things .....	7902
..... <i>M. A. A. da Cruz, J. J. P. C. Rodrigues, P. Lorenz, V. V. Korotaev, and V. H. C. de Albuquerque</i>	
Synchronous LoRa Communication by Exploiting Large-Area Out-of-Band Synchronization .....	7912
..... <i>L. Beltramelli, A. Mahmood, P. Ferrari, P. Österberg, M. Gidlund, and E. Sisinni</i>	

(Contents Continued on Page ii)



---

Toward Achieving Fine-Grained Access Control of Data in Connected and Autonomous Vehicles .....	7925
..... <i>J. Cui, X. Chen, J. Zhang, Q. Zhang, and H. Zhong</i>	
Dynamic Energy Dispatch Based on Deep Reinforcement Learning in IoT-Driven Smart Isolated Microgrids .....	7938
..... <i>L. Lei, Y. Tan, G. Dahlenburg, W. Xiang, and K. Zheng</i>	
Operating Latency Sensitive Applications on Public Serverless Edge Cloud Platforms .....	7954
..... <i>I. Pelle, J. Czentye, J. Dóka, A. Kern, B. P. Gerő, and B. Sonkoly</i>	
Generalized Differential Index Modulation for Pilot-Free Communications .....	7973
..... <i>J. Choi and N. Lee</i>	
Cooperative Location Privacy in Vehicular Networks: Why Simple Mix Zones Are Not Enough .....	7985
..... <i>M. Khodaei and P. Papadimitratos</i>	
Resource Management for Computation Offloading in D2D-Aided Wireless Powered Mobile-Edge Computing Networks .....	8005
..... <i>M. Sun, X. Xu, Y. Huang, Q. Wu, X. Tao, and P. Zhang</i>	
Demystifying Thermal Comfort in Smart Buildings: An Interpretable Machine Learning Approach .....	8021
..... <i>W. Zhang, Y. Wen, K. J. Tseng, and G. Jin</i>	
Optimal Mobile Crowdsensing Incentive Under Sensing Inaccuracy .....	8032
..... <i>X. Dong, Z. You, T. H. Luan, Q. Yao, Y. Shen, and J. Ma</i>	
Simultaneous Wireless Information and Power Transfer for Multiuser UAV-Enabled IoT Networks .....	8044
..... <i>C. Jeong and S. H. Chae</i>	
Secure and Efficient Data Aggregation for IoT Monitoring Systems .....	8056
..... <i>F. Rezaeibagha, Y. Mu, K. Huang, and L. Chen</i>	
A Hybrid-Equivalent Surface-Edge Current Model for Simulation of V2X Communication Antennas With Arbitrarily Shaped Contour .....	8064
..... <i>H. Zhao, X. Zhang, J. Hu, Z. Chen, and Y.-C. Liang</i>	
Chaotic Deep Network for Mobile D2D Communication .....	8078
..... <i>L. Li, Y. Chen, H. Peng, and Y. Yang</i>	
Computation Offloading via Sinkhorn's Matrix Scaling for Edge Services .....	8097
..... <i>L. Wang, Y. Zhang, and S. Chen</i>	
NOSCM: A Novel Offloading Strategy for NOMA-Enabled Hierarchical Small Cell Mobile-Edge Computing .....	8107
..... <i>L. Yang, S. Guo, L. Yi, Q. Wang, and Y. Yang</i>	
Secure and Optimized Load Balancing for Multitier IoT and Edge-Cloud Computing Systems .....	8119
..... <i>W.-Z. Zhang, I. A. Elgendy, M. Hammad, A. M. Ilyyasu, X. Du, M. Guizani, and A. A. Abd El-Latif</i>	
Docker-Based Intelligent Fall Detection Using Edge-Fog Cloud Infrastructure .....	8133
..... <i>V. Divya and R. L. Sri</i>	
Design and Evaluation of Buffer-Aided Cooperative NOMA With Direct Transmission in IoT .....	8145
..... <i>P. Xu, Y. Wang, G. Chen, G. Pan, and Z. Ding</i>	
Outage-Constrained Robust Multigroup Multicast Beamforming for Satellite-Based Internet of Things Coexisting With Terrestrial Networks .....	8159
..... <i>Y. Yan, K. An, B. Zhang, W.-P. Zhu, G. Ding, and D. Guo</i>	
Anypath Routing Protocol Design via $Q$ -Learning for Underwater Sensor Networks ...	8173
..... <i>Y. Zhou, T. Cao, and W. Xiang</i>	
CL-ADMM: A Cooperative-Learning-Based Optimization Framework for Resource Management in MEC .....	8191
..... <i>X. Zhong, X. Wang, L. Li, Y. Yang, Y. Qin, T. Yang, B. Zhang, and W. Zhang</i>	
Toward Computing Resource Reservation Scheduling in Industrial Internet of Things .....	8210
..... <i>F. Liang, W. Yu, X. Liu, D. Griffith, and N. Golmie</i>	
Optimal Sensing Task Distribution Algorithm for Mobile Sensor Networks With Agent Cooperation Relationship ...	8223
..... <i>Y. Zhang, Y. Tao, S. Zhang, L. Zhang, and H. Long</i>	
Key-Leakage Resilient Encrypted Data Aggregation With Lightweight Verification in Fog-Assisted Smart Grids ...	8234
..... <i>X. Zhang, C. Huang, C. Xu, Y. Zhang, J. Zhang, and H. Wang</i>	
Real-Time Imprecise Computation Tasks Mapping for DVFS-Enabled Networked Systems .....	8246
..... <i>L. Mo, A. Kritikakou, O. Sentiyeys, and X. Cao</i>	
Incentive-Based Coded Distributed Computing Management for Latency Reduction in IoT Services—A Game Theoretic Approach .....	8259
..... <i>N. Kim, D. Kim, J. Lee, D. Niyato, and J. K. Choi</i>	
Comparative Performance Analysis of Lightweight Cryptography Algorithms for IoT Sensor Nodes .....	8279
..... <i>A. Fotovvat, G. M. E. Rahman, S. S. Vedaiei, and K. A. Wahid</i>	
Energy-Efficient and Delay-Minimizing Charging Method With a Multiple Directional Mobile Charger .....	8291
..... <i>C. Lee, W. Na, G. Jang, C. Lee, and S. Cho</i>	
MusicID: A Brainwave-Based User Authentication System for Internet of Things .....	8304
..... <i>J. Sooriyaarachchi, S. Seneviratne, K. Thilakarathna, and A. Y. Zomaya</i>	
Incentivizing Platform–User Interactions for Crowdsensing .....	8314
..... <i>C. Xiang, S. He, K. G. Shin, Y. Qu, and P. Yang</i>	
Position Invariance for Wearables: Interchangeability and Single-Unit Usage via Machine Learning .....	8328
..... <i>A. Yurtman, B. Barshan, and S. Redif</i>	
Can Appliances Understand the Behavior of Elderly Via Machine Learning? A Feasibility Study .....	8343
..... <i>K. Qian, T. Koike, K. Yoshiuchi, B. W. Schuller, and Y. Yamamoto</i>	

---

---

Radio Identity Verification-Based IoT Security Using RF-DNA Fingerprints and SVM .....	8356
.....D. Reising, J. Cancellari, T. D. Loveless, F. Kandah, and A. Skjellum	
HARQ-Based Grant-Free NOMA for mMTC Uplink .....	8372
.....F. Jabbarvaziri, N. M. Balasubramanya, and L. Lampe	
Permissioned Blockchain-Based Anonymous and Traceable Aggregate Signature Scheme for Industrial Internet of Things .....	8387
.....T. Li, H. Wang, D. He, and J. Yu	
Joint Beamforming and Power Control for Throughput Maximization in IRS-Assisted MISO WPCNs .....	8399
.....Y. Zheng, S. Bi, Y.-J. A. Zhang, X. Lin, and H. Wang	
A Network-Aware Internet-Wide Scan for Security Maximization of IPv6-Enabled WLAN IoT Devices .....	8411
.....S. Verma, Y. Kawamoto, and N. Kato	
Hybrid Power Management System for LoRa Communication Using Renewable Energy .....	8423
.....A. I. Petrariu, A. Lavric, E. Coca, and V. Popa	
Centralized and Distributed Age of Information Minimization With Nonlinear Aging Functions in the Internet of Things .....	8437
.....T. Park, W. Saad, and B. Zhou	
FogFL: Fog-Assisted Federated Learning for Resource-Constrained IoT Devices .....	8456
.....R. Saha, S. Misra, and P. K. Deb	
AoI-Aware Control and Communication Co-Design for Industrial IoT Systems .....	8464
.....X. Wang, C. Chen, J. He, S. Zhu, and X. Guan	
EM-RPL: Enhanced RPL for Multigateway Internet-of-Things Environments .....	8474
.....S. Taghizadeh, H. Elbiaze, and H. Bobarshad	
Joint Sensing Task Assignment and Collision-Free Trajectory Optimization for Mobile Vehicle Networks Using Mean-Field Games .....	8488
.....Y. Kang, S. Liu, H. Zhang, W. Li, Z. Han, S. Osher, and H. V. Poor	
Vulnerability of WiFi's Noise Floor Calibration .....	8504
.....S. Kim and J. Paek	
Energy-Adaptive and Bottleneck-Aware Many-to-Many Communication Scheduling for Battery-Free WSNs .....	8514
.....B. Yao, H. Gao, Q. Chen, and J. Li	
Dynamic Resource Optimization for Decentralized Estimation in Energy Harvesting IoT Networks .....	8530
.....C. Battiloro, P. Di Lorenzo, P. Banelli, and S. Barbarossa	
Quality-Aware Video Streaming for Green Cellular Networks With Hybrid Energy Sources .....	8543
.....G. Huang, B. Zhang, Z. Yao, and C. Li	
Distributed Deep Reinforcement Learning for Renewable Energy Accommodation Assessment With Communication Uncertainty in Internet of Energy .....	8557
.....D. Fang, X. Guan, Y. Peng, H. Chen, T. Ohtsuki, and Z. Han	
Energy Consumption Minimization in UAV-Assisted Mobile-Edge Computing Systems: Joint Resource Allocation and Trajectory Design .....	8570
.....J. Ji, K. Zhu, C. Yi, and D. Niyato	
Beamforming Optimization for Intelligent Reflecting Surface-Aided SWIPT IoT Networks Relying on Discrete Phase Shifts .....	8585
.....S. Gong, Z. Yang, C. Xing, J. An, and L. Hanzo	
Context-and-Social-Aware Online Beam Selection for mmWave Vehicular Communications .....	8603
.....D. Li, S. Wang, H. Zhao, and X. Wang	
An Incentive Mechanism for Privacy-Preserving Crowdsensing via Deep Reinforcement Learning .....	8616
.....Y. Liu, H. Wang, M. Peng, J. Guan, and Y. Wang	
Secure Data Access Control With Fair Accountability in Smart Grid Data Sharing: An Edge Blockchain Approach .....	8632
.....W. Yang, Z. Guan, L. Wu, X. Du, and M. Guizani	
WiCrowd: Counting the Directional Crowd With a Single Wireless Link .....	8644
.....L. Zhang, Y. Zhang, B. Wang, X. Zheng, and L. Yang	

---