

2024 IEEE 29th Asia Pacific Conference on Communications (APCC 2024)

**Bali, Indonesia
5-7 November 2024**



**IEEE Catalog Number: CFP24790-POD
ISBN: 979-8-3315-1782-3**

**Copyright © 2024 by the Institute of Electrical and Electronics Engineers, Inc.
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:	CFP24790-POD
ISBN (Print-On-Demand):	979-8-3315-1782-3
ISBN (Online):	979-8-3315-1781-6
ISSN:	2163-0771

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

	Page
Cover Proceedings of APCC 2024	i
Description of APCC 2024	ii
Committees of APCC 2024	vi
APCC Steering Committee	vi
Organizing Committee	viii
Welcome Message From The General Chair	xxi
Welcome Message From The TPC Chair	xxii
Welcome Message From The ASC Chair	xxiii
Program at a Glance	xxiv
Table of Contents	xxvi
Author Index	xxxiii
 96 PAPERS	 xxxvii
1 Coverage Extension through MA-DQN-based Relaying for V2V Communications <i>Insung Lee; Duk Kyung Kim</i>	1
2 Enhancement of Reliability of Message Delivery in Many-Subscriber MQTT Networks <i>Sumika Kojima; Takumi Wada; Yuusuke Kawakita; Yui Yamashita; Yoshito Tobe</i>	6
3 Enhancing the Reliability of NR-V2X Sidelink Broadcast through Relay <i>Shiro Aoki; Suhua Tang</i>	13
4 TCP CUBIC with HyStart: Congestion Control for Satellite Communication in OMNeT++ INET <i>Luigi Martino; Jörg Deutschmann; Kai-Steffen J. Hielscher; Reinhard German</i>	19
5 A Method for Reducing End-to-End Delay with Priority Assignment in CAN-CAN Gateway <i>Shimpo Tsuchimoto; Ryo Kurachi</i>	26
6 OHDRL-Based Energy Consumption Optimization for Joint Content Fetching and Trajectory Design of UAVs <i>ELhadj Moustapha Diallo; Rong Chai; Abuzar Babikir Mohammad Adam; Chengchao Liang; Qianbin Chen</i>	32
7 Average System Cost Minimization-Based Joint UAV Deployment and Resource Allocation <i>Qinyuan Wang; Rong Chai; Chengchao Liang; Qianbin Chen</i>	39
8 System Design for ML based Detection of Unauthorized UAV and Integration within the UTM Framework <i>Mashuk Ahmed; Md. Ridoy Ad Sumon; Uma Sutradhar; Raqibul Mostafa</i>	46

9	Optimization of Vehicular Network Resource Allocation Based on MAAC Algorithm <i>Jun-han Wang; He He; Kosuke Tamura; Shun Kojima; Jaesang Cha; Chang-Jun Ahn</i>	52
10	On the bit error probability for constant Log-MAP decoding of convolutional codes with rate k/n <i>Hideki Yoshikawa</i>	59
11	Implementation of Channel Deinterleaver for 5G NR PUCCH Channel <i>Samudrala Soujanya; Arjun Menon K; Prem Singh; Ekant Sharma</i>	65
12	An OFDM Compatible Sensing Waveform Design for 6G ISAC System <i>Juan Liu; Wenjia Liu; Xiaolin Hou; Lan Chen</i>	71
13	Evaluation of Link Quality and Constellation Distance for RIS-Based Spatial Modulation System <i>Issei Maesaki; Tsuyoshi Inoue; Yafei Hou; Satoshi Denno</i>	77
14	Extreme Learning Approach for Timing Synchronization of ACO-OFDM under Nonlinear Distortions <i>Abhaynarasimha Karnam Sathyaprasad; Renikunta Mallaiiah; Venkata Mani Vakamulla; Ganesh Miriyala</i>	83
15	Evaluation of Atomic Clock-based Joint Transmission for Full-Duplex in IEEE 802.11 <i>Muhammad Harry Bintang Pratama; Yuhei Nagao; Masayuki Kurosaki; Hiroshi Ochi</i>	90
16	Bandwidth Enhancement in Circular Patch Antenna using Inset Feed and Slot for Ku-band Applications <i>Alif Fathoni Zidni; Catur Apriono; Aditya Inzani Wahdiyati</i>	96
17	Hybrid Beamforming Structure Using Grouping with Reduced Number of Phase Shifters in Multi-User MISO <i>Hiroya Hayakawa; Yudai Handa; Riku Tanaka; Kosuke Tamura; Jaesang Cha; Chang-Jun Ahn</i>	102
18	A QoS-aware Handover Mechanism for LEO Satellite Networks based on Multi-agent DRL <i>Chengchao Liang; Yihang Guo; Zhanglei Wu; Rong Chai</i>	108
19	BER for QAM Schemes and LDPC Coding Rates in the Presence of Strong Phase Noise in Sub-THz Bands <i>Manato Murakami; Takashi Ohiwa; Yoshiki Mori; Mamoru Sawahashi; Satoshi Suyama</i>	114
20	PCID Detection Probabilities in the Presence of CFO and Strong Phase Noise in Sub-THz Bands <i>Takashi Ohiwa; Yuki Mabuchi; Mamoru Sawahashi; Satoshi Nagata; Satoshi Suyama</i>	119
21	Increasing LoRa-like Physical Layer Capacity by Introducing Orthogonal Code <i>Harland Amin; Youki Kadobayashi; Yuzo Taenaka</i>	125
22	Design of a Rocket-Shaped 2D Photonic Crystal Coupler for Ultra-Compact 4x2 Encoder <i>Wafa Mehrez; Monia Najjar</i>	131
23	A Study on Point Cloud Clustering for Geo-referenced Positioning using mmWave Radar Sensor <i>Daeseung Park; Jaemin Choi; Hojong Chang; ChaeSeok Lee</i>	137

24	Dynamic User Clustering for mmWave-Based NOMA Networks <i>Sudhakar Rai; Ekant Sharma; Neeraj Varshney; Aditya K Jagannatham</i>	143
25	PISTON: PUF-Integrated Secure, Throughput-Optimized Network Protocol for IoV <i>Koustav Kumar Mondal; Ashi Gupta; Debasis Das; Chun-I Fan</i>	149
26	Dual-Band Triple-Slot Microstrip Antenna for X-Band and Ku-Band Communication <i>Muhammad Danny Naufal Syach; Aditya Inzani Wahdiyat; Catur Apriono</i>	155
27	Spectral Efficiency Analysis for Grant-Free Random Access Cell-Free Massive MIMO with Ricean Fading <i>Shuai Xiao; Pei Liu; Qi Zhang; Wen Zhan; Jie Ding; Jinho Choi</i>	162
28	Overloaded Multi-User MIMO With Receive Spatial Filters <i>Kosuke Ota; Satoshi Denno; Yafei Hou</i>	168
29	Secrecy Analysis of RIS-Aided mmWave Systems over Independent Fluctuating Two-Ray Fading Channels <i>Phuc V. Trinh; Shinya Sugiura</i>	174
30	Investigation of Reconfigurable Intelligent Surface for Millimeter-Wave Coverage Enhancement <i>Xiang Li; Xin Wang; Xiaolin Hou; Lan Chen</i>	180
31	Study on the Role of Adaptive Power Control in Jamming Mitigation for Remote Keyless Entry Systems <i>Hamza Alkofahi; Amani Altarawneh</i>	186
32	Multi-dimensional Quality of Experience for Customized User Requirements <i>Yingzhi Liu; Mulei Ma; Chenyu Gong; Yang Yang</i>	192
33	DL-based Satellite Image Segmentation for Improved Situational Awareness in Defense Operations <i>Dhruv Thakkar; Kavya Patel; Rajesh Gupta; Sudeep Tanwar; Noor Zaman Jhanjhi; Sayan Kumar Ray</i>	198
34	Multi-objective Hierarchical Task Offloading in IoV: an Attentive Multi-agent DRL Approach <i>Chenhao Wu; Jiang Liu; Kazutoshi Yoshii; Shigeru Shimamoto</i>	204
35	A Software-Defined Reconfigurable Battery System Prototype <i>Siyu Jin; Baochang Liu; Yanglin Zhou; Junrui Liang; Song Ci</i>	211
36	Optimal Coding Scheme Selection for LoRa-Based Satellite IoT Transmission <i>Zhongyang Yu; Yuqian Yan; Lingxi Guo; Wei Wang; Mengmeng Xu; Hengzhou Xu; Hai Zhu</i>	216
37	Enhanced Resource Allocation for Beam-Hopping Satellite Networks with Rate-Splitting Multiple Access <i>Chengchao Liang; Yuran Huang; Yidian Liu; Rong Chai; Qianbin Chen</i>	222
38	Performance Enhancement of ATSC3.0 Using Polarization Property and Frequency Symbol Spreading <i>Riku Tanaka; Yudai Handa; Hiroya Hayakawa; Jaesang Cha; Chang-Jun Ahn</i>	229
39	Optimizing Time Slot Allocation in LEO Satellite Beam Hopping for Uneven Traffic Demands <i>Satya Chan</i>	235

40	Interference evaluation between HAPS and neighboring HAPS considering overlapped ground service cover <i>Hyunduk Kang; Ho Kyung Son</i>	241
41	MFeRNet: A Deep CNN Approach for Detecting Median Filter Tampering in Re-Compressed Images <i>Vijayakumar Kadha; K. Rasool Reddy; Santos Ku Das; Madhusudhan Mishra</i>	246
42	Multi-Feature Based Client Selection and Feature Weight Update for Volatile Federated Learning <i>Yanyu Liu; Qiang Wang; Wenqi Zhang; Chen Sun</i>	252
43	Integrating AI with Robotic Process Automation (RPA): Advancing Intelligent Automation Systems <i>Chua JingXuan; Mohammad Tayyab; Syeda Mariam Muzammal; Noor Zaman Jhanjhi; Sayan Kumar Ray; Farzeen Ashfaq</i>	259
44	AI-based Approach for Radio Frequency Jamming Attack Detection in Unmanned Aerial Vehicles <i>Jetani Harshil; Harikrushna Goti; Nikunj Kumar Mahida; Rajesh Gupta; Sudeep Tanwar; Geetika Bhardwaj; Noor Zaman Jhanjhi; Sayan Kumar Ray</i>	266
45	One-shot Data Adaptive Semantic Communication for Image Transmission <i>Shiqi Cheng; Xuefei Zhang; Qimei Cui; Kechen Chen</i>	272
46	LoRa Microstrip Antenna with DGS and Truncated Corner Structure for CubeSat <i>Marisa Putri Supriadi; Edwar Edwar; Khilda Afifah; Dio Widiyanto; Puput Nurfaidah Taufik; Syachrul Gibran Muzhaffar; Tania Aprilya Fatimatudzahra; Nita Hanifah Hanifah</i>	278
47	MSE-Aware Performance Analysis in Multi-Cell Massive MIMO Systems Over Rician Fading <i>Yihang Sun; Shuai Xiao; Pei Liu; Kehao Wang; Xinghua Sun</i>	283
48	Performance Evaluation of mmWave Terminal Cooperative Communications Using Directional Antennas <i>Hiraku Okada; Yiche Li; Chedlia Ben Naila</i>	289
49	Sidelobe Suppression in Antenna Array via Amplitude Tapers for Ku-band Internet of Things Satellites <i>Muhammad Athallah Adriansyah; Aditya Inzani Wahdiyat; Catur Apriono</i>	294
50	Experimental Performance of Null-Space Expanded MIMO Reception Technique <i>Shohei Kobayashi; Yuki Ohi; Hidekazu Murata; Makoto Taromaru; Tatsuhiko Iwakuni; Daisei Uchida; Takafumi Fujita</i>	300
51	A Review on Near-Field Communications for 6G and Beyond <i>The Vi Nguyen; Thi My Tuyen Nguyen; Thanh Phung Truong; Sungrae Cho</i>	303
52	Investigation on Information Set Optimization of Polar Codes Using Concatenated NNDs <i>Tsukasa Bando; Satoshi Suyama; Satoshi Nagata; Nobuhiko Miki</i>	307
53	Human-Blockage Comparison Between SHF and UHF Bands: A Reciprocating Motion Pedestrian Case <i>Shotaro Shigenaga; Xin Du; Hidekazu Murata; Satoshi Suyama; Huling Jiang</i>	311
54	Dynamic Resource Allocation in Cell-Free MEC: Leveraging Attention Mechanism with MADDPG <i>Fitsum Tilahun; Chung G. Kang</i>	315

55	Generalization Performance of Deep Learning-based Multi-User Detection for GF-SCMA Systems <i>Metasebia D. Gemedá; Minsig Han; Ameha Tsegaye Abebe; Chung G. Kang</i>	319
56	Experimental Demonstration of Passive Channel Sounding in 28-GHz-band 5G Systems <i>Hirofumi Sukanuma; Kota Kuramitsu; Tsutomu Mitsui; Takahiro Matsuda</i>	323
57	Throughput Efficient Dynamic Spectrum Sharing Between 4G-LTE and 5G-NR Using LTE CRS <i>Goutham L; Prem Singh</i>	328
58	Resource Scheduling for User-Centric Cell-Free Network with Computing-Constrained Access Points <i>Xiyue Li; Na Li; Xiao Li; Xiaofeng Tao</i>	334
59	Evaluation of 6G Candidate Waveforms Under RF Impairments <i>Wei Qi; Wenjia Liu; Juan Liu; Xiaolin Hou; Chen Li; Lan Chen</i>	340
60	Digital Self-Interference Cancellers for In-Band Full-Duplex Systems with High-Power Amplifiers <i>Motoshi Tawada; Yuki Takagi</i>	346
61	Impact of Transceiver Alignment on a Software-defined Underwater Visible Light Communication System <i>Sana Rehman; Yue Rong; Peng Chen</i>	352
62	Blind Interleaver Classification Using Deep Learning Techniques over Rayleigh Fading <i>Nayim Ahamed; Swaminathan Ramabadran; Sudhakara Rao Yepuri</i>	359
63	Synchronization for VLC Using Orthogonally Aligned Rolling Shutter Cameras and LED Array <i>Ayumu Otsuka; Takaya Yamazato; Hiraku Okada; Toshiaki Fujii; Koji Kamakura; Masayuki Kinoshita; Shintaro Arai; Tomohiro Yendo; Shan Lu</i>	365
64	Performance Analysis of ASTARS-Assisted Uplink Communication Networks <i>Fangxin Liu; Yingjie Pei; Xuefei Zhang; Xiaofeng Tao</i>	371
65	Optimizing Voice Biometric Verification in Banking with Machine Learning for Speaker Identification <i>Oluwatobi Oyewale Oyebode; Md Delwar Hossain; Yuzo Taenaka; Youki Kadobayashi</i>	377
66	Collaborative Decentralized Learning for Detecting Bearing Faults in Industrial Internet of Things <i>Made Adi Paramartha Putra; Ahmad Zainudin; Gabriel Avelino R Sampedro; Nengah Widya Utami; Dong Seong Kim; Jae Min Lee</i>	385
67	A Publish/Subscribe Forwarding Scheme Based on Mobility Information for Opportunistic Networks <i>Bambang Soelistijanto</i>	390
68	Efficient Coordination in Internet-of-Things through Fast Many-to-Many Conveyance of Bulk-data <i>Anwasha Patel; Jagnyashini Debadarshini; Sudipta Saha</i>	397
69	Maximum Doppler Shift Identification using Decision Feedback Channel Estimation <i>Yudai Handa; Kosuke Tamura; Hioya Hayakawa; Riku Tanaka; Jaesang Cha; Chang-Jun Ahn</i>	403

70	Queue Assisted Random Early Detection for Congestion in Software Defined Networks <i>Ata Ullah; Sobia Bibi; Moeenuddin Tariq; Noor Zaman Jhanjhi; Sayan Kumar Ray</i>	409
71	Empowering Seamless Handover Authentication for High-speed UEs via Dual-blockchain over STINs <i>Shiyun Xie; Guoshun Nan; Xiaofeng Tao</i>	417
72	xPayments: Cross-Domain End-to-End Payment Protocol using Payment Channel Network <i>Anupa De Silva; Subhasis Thakur; John G. Breslin</i>	423
73	Suggestion of JP Zone Authoritative DNS Server Locations by Country Analysis of Query IP Address <i>Katsuya Sugizaki; Rei Nakagawa; Nariyoshi Yamai; Shinta Sato; Takeshi Mitamura</i>	429
74	Design of a Communication Protocol for a Hoverboard Mobile APP: Mobility For Smart City <i>Suraksha R; Roopa Manjunatha</i>	435
75	Ontology Development for Sustainable Intelligent Transportation Systems <i>Bikram Pratim Bhuyan; Manolo D. Hina; Jean Tshibangu-Muabila; Yunus Emre Coban; Amar RamdaneCherif</i>	442
76	Inter Smart Contract Communication for Smart Bag to Enhance Child Safety in Blockchain Environment <i>Priyal Bhinde; Dhruvi Tanna; Keyaba Gohil; Rajesh Gupta; Sudeep Tanwar; Noor Zaman Jhanjhi; Sayan Kumar Ray</i>	450
77	MMSE Equalization-Based MIMO Demodulation with Random Walk along Gradient Descent Direction <i>Ryo Kikuchiahira; Yukitoshi Sanada</i>	456
78	Statistical Analysis of the Properties of Geometric Network with Node Mobility <i>Md. Arquam; Utkarsh Tiwari; Suchi Kumari</i>	462
79	Hardware Evaluation of Multi-Scalable Video Transmission <i>Keigo Fukuda; Masayuki Kurosaki; Yuhei Nagao; Hiroshi Ochi</i>	470
80	UV-Plane Beam Mapping for Non-Terrestrial Networks in 3GPP System-Level Simulations <i>Dong-Hyun Jung; Sucheol Kim; Miyeon Lee; JoonGyu Ryu; Junil Choi</i>	478
81	Erasure Demodulation Characteristics with Erasure Overflow threshold <i>Akira Sato; Yukitoshi Sanada</i>	483
82	Experimental Performance of Frequency-Domain MIMO Receiver Using 25.9 GHz Terminal Collaboration <i>Ryosuke Kanda; Hidekazu Murata; Xin Du; Satoshi Suyama; Huiling Jiang</i>	489
83	Effect of Fractal Geometry in Bowtie Antennas for Terahertz Applications <i>Andrano Mario Hitipeuw; Aditya Inzani Wahdiyat; Catur Apriono</i>	492
84	Improvement in EVM by Cryogenically Cooled Technique for Millimeter Wave Band Receiving Amplifiers <i>Yasunori Suzuki; Tomoyuki Furuichi; Noriharu Suematsu</i>	499
85	Field Experiment of a Dynamic Area Optimization Algorithm Using a Cylindrical Antenna for HAPS <i>Yohei Shibata; Wataru Takabatake; Kenji Hoshino</i>	503

86	Energy Efficiency Improvement in One-Layer Rate-Splitting Multiple Access <i>Desti Madya Saputri; Iskandar Iskandar; Mohammad Sigit Arifianto; Aloysius Adya Pramudita</i>	507
87	Spoofing Attack Detection Method by Estimating Transmitting Device on 10BASE-T1S <i>Kazuki Iehira; Hiroyuki Inoue</i>	511
88	Block Group Distribution Methods that Ensure Persistence in Blockchain <i>Fumiya Wakinaka; Takeshi Ogawa</i>	515
89	Firmware Distribution with Erasure Code for IoT applications on IEEE 802.15.4g Mesh Network <i>Takenori Sumi; Yukimasa Nagai; Jianlin Guo; Hiroshi Mineno</i>	519
90	TeachNet: A Lightweight and User-Friendly Network Visualization and Experimentation Tool <i>Safiqul Islam; Visar Morina; Michael Welzl; Boning Feng</i>	523
91	Smart Device Counting and Tracking for People Flow Observation <i>So-Yeon Kim; Dae-Ho Kim; Goo-Rak Kwon; Jae-Young Pyun</i>	527
92	Joint AP Selection and Power Control Optimization for Uplink User-centric Cell-free Massive MIMO <i>Xiao Li; Na Li; Xiyue Li; Xiaofeng Tao</i>	530
93	Plane Wave Expansion-based Codebook Design for 6G Near-field MIMO <i>Fan Wang; Xiaolin Hou; Xiang Li; Lan Chen</i>	536
94	Hotspotter: An Incentivized Crowdsensing System for WiFi and Cellular Network Coverage Visualization <i>Sebastian Luis S. Ortiz; Justin Gabriel R. Enriquez; Wilson Tan; Cedric Angelo Festin</i>	542
95	Affiliation Macrocell Switching of Picocells in Uplink for Distributed Antenna System <i>Ayumu Takada; Yukitoshi Sanada</i>	549
96	Joint Task Offloading and Beam Hopping for Satellite-Terrestrial-MEC Networks with MADRL <i>Zhihao Yan; Ailing Xiao; Sheng Wu</i>	555