2021 22nd Asia-Pacific Network **Operations and Management** Symposium (APNOMS 2021)

Virtual Conference 8 – 10 September 2021



IEEE Catalog Number: CFP2117R-POD ISBN:

978-1-6654-3174-3

Copyright © 2021, Institute of Electronics, Information and Communication Engineers (IEICE) 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:
 CFP2117R-POD

 ISBN (Print-On-Demand):
 978-1-6654-3174-3

 ISBN (Online):
 978-4-88552-332-8

ISSN: 2576-8565

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



2021 22nd Asia-Pacific Network Operations and Management Symposium (APNOMS)

Poster Session 1

| Enhanced Quality of Service Measurement Mechanism of Container-Based Cloud Network Architecture | |
|---|----|
| Jhih-Dao Jhan (Chunghwa Telecom Laboratories, Taiwan), Yung-Chang Lai (Chunghwa Telecom Laboratories, Taiwan), Yong-Ling Chen (Chunghwa Telecom Laboratories, Taiwan), Fei-Hua Kuo (Chunghwa Telecom, Taiwan) | 1 |
| NFV-Enabled Vertical Scalability for IoT Slices | |
| Hafizhuddin Zul Fahmi (National Yang Ming Chiao Thung University, Taiwan), Fuchun Joseph Lin (National Yang Ming Chiao Tung University, Taiwan) | 5 |
| New Multi-Access Network Transmission Technology to Enhance Edge Computing | |
| Pang-Chen Liu (Chunghwa Telecom, Taiwan), Huai-En Tseng (Chunghwa Telecom, Taiwan), Shun-Kai Yang (Chunghwa Telecom, Taiwan), Fei-Hua Kuo | _ |
| (Chunghwa Telecom, Taiwan) | ç |
| A Road-Aware Approach for Hierarchical Routing in IoV Based on Intents and Q-Values | |
| Asif Mehmood (Jeju National University, Korea (South)), Talha Ahmed Khan (Jeju National University, Korea (South)), Javier Jose Diaz Rivera (Jeju National University, Korea (South)), Afaq Muhammad (Jeju National University, Korea (South)), Wang-Cheol Song (Jeju National University, Korea (South)) | 13 |
| Measurement-Based IoT Server Selection for Mobile Edge Computing | |
| Nuntanut Bhooanusas (National Cheng Kung University, Taiwan), Sok-lan Sou (National Cheng Kung University, Taiwan) | 17 |
| Model-Based Anomaly Detection in Response Delay in Communication Through LTE Network | |
| Kohei Yamamoto (Osaka University, Japan), Naoki Wakamiya (Osaka University, Japan), Ryo Nakano (Hitachi, Ltd., Japan), Ryosuke Fujiwara (Hitachi, Ltd., | |
| Japan) ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | 21 |
| BRAS Syslog Pattern Generation Method: A Preliminary Experiment on Clustering Algorithms | |
| Yun-Jie Li (Chunghwa Telecom, Taiwan), Jhao-Yin Li (Chunghwa Telecom, Taiwan) | 25 |
| Relation Between Warning Error and Vehicle Speed in Vehicle-To-Pedestrian Warning System | |
| Takahiro Suzuki (Waseda University, Japan), Kyoko Yamori (Asahi University, Japan), Cheng Zhang (Ibaraki University, Japan), Takumi Miyoshi (Shibaura | 20 |
| Institute of Technology, Japan), Yoshiaki Tanaka (Waseda University, Japan) | 29 |
| Design and Analysis of a Real-Time Multicast Routing Algorithm in Inter-Blockchain Networks | |
| Tzu-Lun Huang (St. John University, Taiwan), Jason Huang (Advanced Financial Engineering LLC, USA) | 33 |
| Lightweight Blockchain to Solve Forgery and Privacy Issues of Vehicle Image Data | |
| Dongjun Na (Keimyung University, Korea (South)), Sejin Park (Keimyung University, Korea (South)) | 37 |
| A Dynamic Selection Algorithm of Tor Relay Based on Client Bias | |
| Yun Zhang (Beijing University of Posts and Telecommunications, China), Xia Yamei (Beijing University of Posts & Telecommunications & Software Institute, China) | 41 |
| | 7, |
| Design and Implementation of Automatic Generation Method for API Adapter Test Code S Kanemaru (Nipponn Telegraph and Telephone Corporation, Japan), K Takahashi (Nipponn Telegraph and Telephone Corporation, Japan), T Toyoshima | |
| (Nipponn Telegraph and Telephone Corporation, Japan), Yukitsugu Sasaki (NTT, Japan) | 45 |
| Docker Container Networking Based Apache Storm and Flink Benchmark Test | |
| Tao Liu (China University of Mining And Technology, Beijing, China), Hong Z Yang (China University of Geosciences, Beijing, China), Yuzhong Sun (Institute | |
| of Computing Technology, Chinese Academy of Sciences, China) | 49 |
| Performance Analysis of Applying Deep Learning for Virtual Background of WebRTC-Based Video Conferencing System | |
| Sangwoo Ryu (POSTECH, Korea (South)), KyungChan Ko (POSTECH, Korea (South)), James Won-Ki Hong (POSTECH, Korea (South)) | 53 |
| A Survey on Public Blockchain-Based Networks: Structural Differences and Address Clustering Methods | |
| Hye-Yeong Shin (Keimyung University, Korea (South)), Meryam Essaid (Keimyung University, Korea (South)), Sejin Park (Keimyung University, Korea | _ |
| (South)), Hongtaek Ju (Keimyung University, Korea (South)) | 57 |

Internet of Things and Wireless Sensor Networks

Efficient Path and Charge (P&C) Scheduling for a Mobile Charger to Improve Survivability and Throughput of Sensors with Adaptive Sensing Rates

| | Friendly Jamming in Wireless Networks: A Stackelberg Game Shilpa Rao (Indian Institute of Information Technology Guwahati, India), Rohit Tripathi (Indian Institute of Information Technology Guwahati, India) | . 67 |
|--------|---|-----------------|
| | Secrecy Outage Probability of Reconfigurable Intelligent Surface-Aided Cooperative Underlay Cognitive Radio Network Communications | |
| | Anh-Tu Le (Van Lang University, Vietnam), Munyaradzi Munochiveyi (University of Zimbabwe, China & Asia University, Taiwan) | . 73 |
| | SSAE - DeepCNN Model for Network Intrusion Detection Jonghwa Lee (Kangwon National University, Korea (South)), Jong-wouk Kim (Kangwon National University, Korea (South)), Mi-Jung Choi (Kangwon National University, Korea (South)) | ["] 78 |
| Mobile | and Wireless Network | |
| | Radio Resource Allocation for RIS-Aided D2D Communication Based on Greedy Hypergraph-With-Weight Coloring Tang Liu (Beijing University of Posts and Telecommunications, China), Lei Feng (Beijing University of Posts and Telecommunications, China), Li Wenjing (Beijing University of Posts and Telecommunications, China), Zhixiang Yang (Beijing University of Posts and Telecommunications, China) | . 84 |
| | Joint Power Control and Passive Beamforming in Intelligent Reflecting Surface Assisted Multi-Cell Uplink Communications Kunyi Xie (Beijing University of Posts and Telecommunications, China), Lie Feng (Beijing University of Posts and Telecommunications, China), Li Wenjing (Beijing University of Posts and Telecommunications, China), Jing Shen (State Grid | |
| | Henan Electric Power Company Information and Communication Company, China) Power Control and Evolutionary Strategy Based Slicing Resource Allocation for V2V Communication Yan Liang (Beijing Information Science and Technology University, China), Xin Chen (Beijing Information Science & Technology University, China), Teng Ma | . 9C |
| | (Beijing Information Science & Technology University, China), Shengcheng Ma (Beihang University, China), Libo Jiao (Beijing Information Science & Technology University, China), Shengcheng Ma (Beihang University, China), Libo Jiao (Beijing Information Science & Technology University, China) | 96 |
| | Cognitive Collision Resolution for Enhanced Performance in C-V2X Sidelink Mode 4 Moin Ali (Yeungnam University, Korea (South)), Young-Tak Kim (Yeungnam University, Korea (South)) | 102 |
| Edge/F | Edge Computing and Networking Resource Management for Decomposable Deep Learning: An Auction-Based Approach Ya-Ting Yang (National Taiwan University, Taiwan), Hung-Yu Wei (National Taiwan University, Taiwan) | 108 |
| | Text-To-Speech with Model Compression on Edge Devices Wai-Wan Koc (National Yang Ming Chiao Tung University, Taiwan), Yung-Ting Chang (National Yang Ming Chiao Tung University, Taiwan), Jian-Yu Yu (National Yang Ming Chiao Tung University, Taiwan), Tsi-Uí İk (National Chiao Tung University, Taiwan) | |
| | Business Demand-Oriented Intelligent Orchestration of Network Slices Based on Core-Edge Collaboration Naling Li (Beijing University of Posts and Telecommunications, China), Ying Wang (Beijing University of Posts and Telecommunications, China), Ke Chen (Beijing University of Posts and Telecommunications, China), Ke Chen (Beijing University of Posts and Telecommunications, China) | 120 |
| | Incentive-Stable Matching Protocol for Service Chain Placement in Multi-Operator Edge System Jen-Yu Wang (National Chiao Tung University, Taiwan), Li-Hsing Yen (National Yang Ming Chiao Tung University, Taiwan), Juliana Liman (National Yang Ming Chiao Tung University, Taiwan) | 126 |
| 5G Net | | |
| | Robotic Assistance Operation for Effective On-Site Network Maintenance Works Takayuki Warabino (KDDI Research Inc., Japan), Yusuke Suzuki (KDDI Research, Inc., Japan), Tomohiro Otani (KDDI Research, Inc., Japan) | 132 |
| | Design of a Network Management System for 5G Open RAN Tse-Han Wang (Chunghwa Telecom Co., Ltd., Taiwan), Yen-Cheng Chen (National Chi Nan University, Taiwan), Sin-Jie Huang (Chunghwa Telecom Co., Ltd., Taiwan), Chung-Hua Hu (ChungHwa Telecom, Taiwan) | 138 |
| | Cost-Effective Policy for Deployment of Dense 5G RAN with Fiber and Wireless Backhaul Link Archingo Hore (Jadayour University, India) Avan Paul (BSNL, India) Madhubanti Maitra (Jadayour University, India) | 140 |

| | Network Data Analytics Function for IBN-Based Network Slice Lifecycle Management | |
|----------|---|-----|
| | Khizar Abbas (Jeju National University, South Korea, Korea (South)), Talha Ahmed Khan (Jeju National University, Korea (South)), Afaq Muhammad (Jeju National University, Korea (South)), Javier Jose Diaz Rivera (Jeju National University, Korea (South)), Wang-Cheol Song (Jeju National University, Korea (South)) | 148 |
| | | |
| Config | guration and Fault Management | |
| | History Data Management Method of API Request Order Using Bitemporal Data Model for Application Layer Recovery K Takahashi (Nipponn Telegraph and Telephone Corporation, Japan), S Kanemaru (Nipponn Telegraph and Telephone Corporation, Japan), Yukitsugu Sasaki (NTT, Japan) | 154 |
| | Multiple-Layer-Topology Discovery Method Using Traffic Information Mizuto Nakamura (NTT Corporation, Japan), Naoki Hayashi (NTT Corporation, Japan), Atsushi Takada (NTT Corporation, Japan), Toshihiko Seki (NTT Corporation, Japan), Kyoko Yamagoe (NTT Corporation, Japan) | 160 |
| | Orchestrator for Automating Failure Response in Telecom Carriers Yuichi Suto (NTT, Japan), Ryosuke Sato (NTT Corporation, Japan), Yuichiro Ishizuka (NTT, Japan), Kosuke Sakata (NTT, Japan), Yoshikazu Hagiwara (NTT, Japan), Tsuyoshi Furukawa (NTT, Japan) | 166 |
| | Bayesian Network Equipped Workflow Engine to Coordinate Artificial Intelligence for Automating Network Operation Ryosuke Sato (NTT Corporation, Japan), Mizuto Nakamura (NTT Corporation, Japan), Atsushi Takada (NTT, Japan), Kyoko Yamagoe (NTT Corporation, Japan) | 172 |
| Intallia | gent Network Management | |
| | Jent Network Management | |
| | Detection of Hypergiants in AS-Level Topology Using Machine Learning Michiko Harayama (Gifu University, Japan), Takuro Kudoh (Grad. Sch. Natural Science and Technology, Gifu University, Japan) | 178 |
| | Automating Web-Based Infrastructure Management via Contextual Imitation Learning Jieyu Lin (University of Toronto, Canada), Hongxiang Geng (University of Toronto, Canada), Alberto Leon-Garcia (University of Toronto, Canada) | 184 |
| | Time-Aware Stream Reservation for Distributed TSN Ching-Chih Chuang (National Pingtung University, Taiwan), Yuan-Yao Shih (National Chung Cheng University, Taiwan), Jian-Cheng Chen (National Taiwan University, Taiwan), Ai-Chun Pang (National Taiwan University, Taiwan) | 190 |
| | Distilling Knowledge in Federated Learning Huy Q. Le (Kyung Hee University, Korea (South)), Jong Hoon Shin (Kyung Hee University, Korea (South)), Minh N. H. Nguyen (Kyung Hee University, Korea (South)), Choong Seon Hong (Kyung Hee University, Korea (South)) | 196 |
| | | |
| Poste | r Session 2 | |
| | An SDN Controller Enabled Architecture for 5G Backhaul Networks Hao-Ze Fang (Chunghwa Telecom Co., Ltd., Taiwan), Hsing-Chen Chi (Chunghwa Telecom Co., Ltd., Taiwan), MinChi Tseng (Chunghwa Telecom Co., Ltd., Taiwan), Yu-Ping Yu (Chunghwa Telecom Co., Ltd., Taiwan) | 202 |
| | Study of Contention Window Adjustment for CSMA/CA by Using Machine Learning Yen-Wen Chen (National Central University, Taiwan), Kuo-Che Kao (National Central University, Taiwan) | 206 |
| | Development of Reference Model for Enterprise Architecture Leveraging TM Forum Assets M Ohtani (Nipponn Telegraph and Telephone Corporation, Japan), S Omata (Nipponn Telegraph and Telephone Corporation, Japan), K Kanishima (Nipponn Telegraph and Telephone Corporation, Japan) | 210 |
| | Method of Constructing Petri Net Service Model Using Distributed Trace Data of Microservices Masaru Sakai (NTT, Japan), K Takahashi (Nipponn Telegraph and Telephone Corporation, Japan), Satoshi Kondoh (NTT, Japan) | 214 |
| | An API-Based In-Service Surveillance Approach for Enterprise PBX Chu Chen-Hung (Chunghwa Telecom Co. Ltd & Telecommunication Laboratories, Taiwan), Fan Gong-Da (Chunghwa Telecom Co. Ltd & Telecommunication Laboratories, Taiwan), Chiang Yi-Kai (Chunghwa Telecom Co. Ltd, Taiwan), Huang Chao-Chun (Chunghwa Telecom Co. Ltd, Taiwan), Chiang-Shih Tang | |
| | (Chunghwa Telecom, Taiwan) | 218 |

| Learning for Prediction of Maritime Collision Avoidance Behavior from AIS Network Po-Ruey Lei (ROC Naval Academy, Taiwan), Pei-Rong Yu (National Chiao Tung University, Taiwan), Wen-Chih Peng (National Chiao Tung University, Taiwan) | 222 |
|--|-----|
| A Multi-Objective Approach for Optimizing Content Delivery Network System Configuration Loc Hoang La (Ho Chi Minh City University of Technology, Vietnam), Thanh Le Hai Hoang (Ho Chi Minh City University of Technology (HCMUT), VNU HCM & Vietnam Blockchain, Vietnam), Nam Thoai (Ho Chi Minh City University of Technology, Vietnam) | 226 |
| SPENT+: A Category- and Region-Aware Successive POI Recommendation Model Hsu-Chao Lai (National Yang Ming Chiao Tung University & Academia Sinica Institute of Information Science, Taiwan), Yi-Shu Lu (National Chiao Tung University, Taiwan), Mu-Fan Wang (Nationa Chiao Tung University, Taiwan), Yi-Cheng Chen (National Central University, Taiwan), Wen-Yueh Shih (National Chiao Tung University, Taiwan), Jiun-Long Huang (National Yang Ming Chiao Tung University, Taiwan) | 230 |
| The Design and Implementation of a Blockchain-Based Logistics Platform for International Trade Yen-Yu Chen (Natjonal Yang Ming Chiao Tung University, Taiwan), Hsu-Chao Lai (National Yang Ming Chiao Tung University & Academia Sinica Institute of Information Science, Taiwan), Jiun-Long Huang (National Yang Ming Chiao Tung University, Taiwan), Ming-Jiu Hwang (National Yang Ming Chiao Tung University, Taiwan) | 234 |
| Encrypted Network Traffic Identification Based on 2D-CNN Model Yan Zhou (Qilu University of Technology, China), Huiling Shi (Shandong Computer Science Center, China), Yuhan Zhao (Qilu University of Technology, China), Wei Gao (Qilu University of Technology, China), Wei Zhang (Qilu University of Technology(Shandong Academy of Sciences), China) | 238 |
| Dynamic Network Provisioning with Reinforcement Learning Based on Link Stability Hong-Nam Quach (Chonnam National University, Korea (South)), Sungwoong Yeom (Chonnam National University, Korea (South)), Kyungbaek Kim (Chonnam National University, Korea (South)) Graph Convolutional Network Based Link State Prediction | 242 |
| Sungwoong Yeom (Chonnam National University, Korea (South)), Chulwoong Choi (Chonnam National University, Korea (South)), Shivani Kolekar (Chonnam National University, Korea (South)), Kyungbaek Kim (Chonnam National University, Korea (South)) Machine Learning-Based Cache Optimization on MEC Platform | 246 |
| Waleed Akbar (Jeju National University, Korea (South)), Afaq Muhammad (Jeju National University, Korea (South)), Javier Jose Diaz Rivera (Jeju National University, Korea (South)), Wang-Cheol Song (Jeju National University, Korea (South)) | 250 |
| Applying RouteNet and LSTM to Achieve Network Automation: An Intent-Based Networking Approach Talha Ahmed Khan (Jeju National University, Korea (South)), Khizar Abbas (Jeju National University, South Korea, Korea (South)), Javier Jose Diaz Rivera (Jeju National University, Korea (South)), Wuhammad Afaq (Jeju National University, Korea (South)), Wang-Cheol Song (Jeju National University, Korea (South)) | 254 |
| A Flexible P4-Based Pin-Point In-Band Network Monitoring Toshihiro Sato (Hosei University, Japan), Toshio Hirotsu (Hosei University, Japan) | 258 |
| | |
| Proposal and Evaluation of Automatic Registration Method of Service Information by Distribution from Deployment System to Maintenance System | |
| R Katayanagi (Nipponn Telegraph and Telephone Corporation, Japan), K Takahashi (Nipponn Telegraph and Telephone Corporation, Japan), Satoshi Kondoh (NTT, Japan) | 262 |
| P4MT: Designing and Evaluating Multi-Tenant Services for P4 Switches Buck Chung (National Yang Ming Chiao Tung University, Taiwan), Chien Chen (National Yang Ming Chiao Tung University, Taiwan), Chien-Chao Tseng (National Chiao-Tung University, Taiwan), Jim Chen (Northwestern University, USA), Joel Mambretti (Northwestern University, USA) | 267 |
| Design of a Network Scan Defense Method by Combining an SDN-Based MTD and IPS Shoya Chiba (Tohoku University, Japan), Luis Guillen (Tohoku University, Japan), Satoru Izumi (National Institute of Technology, Sendai College, Japan), Toru Abe (Tohoku University, Japan), Takuo Suganuma (Tohoku University, Japan) | 273 |
| Virtual Machine Failure Prediction Using Log Analysis Sukhyun Nam (Pohang University of Science and Technology, Korea (South)), Jibum Hong (Pohang University of Science and Technology, Korea (South)), | |

Jae-Hyoung Yoo (Pohang University of Science and Technology, Korea (South)), James Won-Ki Hong (POSTECH, Korea (South))

SDN

Heterogeneous Networks

| | A Resilient Mechanism for Multi-Controller Failure in Hybrid SDN-Based Networks Luis Guillen (Tohoku University, Japan), Satoru Izumi (National Institute of Technology, Sendai College, Japan), Toru Abe (Tohoku University, Japan), Takuo Suganuma (Tohoku University, Japan) | 285 | |
|------------------|---|-----|--|
| | An Intelligent Fault Location Approach Using Fuzzy Logic for Improving Autonomous Network | | |
| | Kuan-Yu Nie (Chunghwa Telecom, Taiwan), Chih-Wei Chang (Chunghwa Telecom, Taiwan), Chien-Chi Kao (Chunghwa Telecom, Taiwan), Jung Pei | | |
| | (Chunghwa Telecom, Taiwan) | 291 | |
| | Evaluation of Resource Sharing Framework for Heterogeneous Network Services | | |
| | Haruo Oishi (Waseda University, Japan), Kyoko Yamori (Asahi University, Japan), Cheng Zhang (Ibaraki University, Japan), Yoshiaki Tanaka (Waseda University, Japan) | 297 | |
| | Cos-CBDC: Design and Implementation of CBDC on Cosmos Blockchain | | |
| | Jungsu Han (Pohang University of Science and Technology, Korea (South)), Jeongheon Kim (Pohang University of Science and Technology, Korea (South)), Jongsoo Woo (POSTECH, Korea (South)), James Won-Ki Hong (POSTECH, Korea (South)) | 303 | |
| Networ | k Monitoring and Measurements Discovery of Ethereum Topology Through Active Probing Approach Soo Hoon Maeng (Keimyung University, Korea (South)), Meryam Essaid (Keimyung University, Korea (South)), Sejin Park (Keimyung University, Korea | | |
| | (South)), Hongtaek Ju (Keimyung University, Korea (South)) | 309 | |
| | Analysis of Compact Block Propagation Delay in Bitcoin Network | | |
| | Aeri Kim (Keimyung University, Korea (South)), Jungyeon Kim (Keimyung University, Korea (South)), Meryam Essaid (Keimyung University, Korea (South)), Sejin Park (Keimyung University, Korea (South)), Hongtaek Ju (Keimyung University, Korea (South)) | 313 | |
| | FullSight: A Deep Learning Based Collaborated Failure Detection Framework of Service Function Chain Kuo Guo (Beijing Jiaotong University, China), Jia Chen (Beijing Jiaotong University, China), Ping Dong (Beijing Jiaotong University, China), Yu Zhao (Beijing Jiaotong University, China), Deyun Gao (Beijing Jiaotong University, China), Liu (Beijing Jiaotong University, China) | 319 | |
| | Performance Evaluation of Ethereum Private and Testnet Networks Using Hyperledger Caliper | | |
| | Wonseok Choi (POSTECH, Korea (South)), James Won-Ki Hong (POSTECH, Korea (South)) | 325 | |
| NFV | | | |
| | Convity Oriented Naturals Cline Bookup Mathad | | |
| | Security-Oriented Network Slice Backup Method Ke Chen (Beijing University of Posts and Telecommunications, China), Ying Wang (Beijing University of Posts and Telecommunications, China), Peng Yu (Beijing University of Posts and Telecommunications, China), Naling Li (Beijing University of Posts and Telecommunications, China) | 330 | |
| | On-Demand Service Function Chain Based on IPv6 Segment Routing | | |
| | Chia Wei Wu (Telecommunication Laboratories, Chunghwa Telecom Corporation, Taiwan), Chia-Wei Tseng (Chunghwa Telecom Laboratories, Taiwan), Wei Yu Chen (Telecommunication Laboratories, Chunghwa Telecom, Taiwan), Li-Fan Wu (Chunghwa Telecom Laboratories, Taiwan), Shih-Chun Hsu (Chunghwa Telecom Laboratories, Taiwan), Sheng -Wang Yu (Telecommunication Laboratories, Chunghwa Telecom Co., LTD., Taiwan) | 336 | |
| | | 000 | |
| | A Flexible vCPE Framework to Enable Dynamic Service Function Chaining Using P4 Switches Muthuraman Elangovan (National Yang Ming Chiao Tung University, Taiwan), Chien Chen (National Yang Ming Chiao Tung University, Taiwan), Jyh-Cheng | | |
| | Chen (National Yang Ming Chiao Tung University, Taiwan) | 342 | |
| | Energy-Efficient VNF Deployment for Graph-Structured SFC Based on Graph Neural Network and Constrained Deep Reinforcement Learning | | |
| | Siyu Qi (Beijing University of Technology, China), Shuopeng Li (Beijing University of Technology, China), Shaofu Lin (Beijing University of Technology, China), Mohand Yazid Saidi (University of Paris 13, France), Ken Chen (Université Paris 13, France) | 348 | |
| | | | |
| Poster Session 3 | | | |
| | | | |

| On Detecting Cloud Container Failures from Computing Utility Sequences Yu-Shao Liu (Yu-Shao, Taiwan), Hsu-Chao Lai (National Yang Ming Chiao Tung University & Academia Sinica Institute of Information Science, Taiwan), Jiun-Long Huang (National Yang Ming Chiao Tung University, Taiwan), August F. Y. Chao (Taiwan Web Service Corporation, Taiwan) | 358 |
|---|-----|
| On the Performance of NOMA with Bi-Directional in Weibull-Channel Hung-Anh Tong (Van Lang University, Vietnam), Anh-Tu Le (Van Lang University, Vietnam) | 362 |
| 5G Radio Frequency Conformance Test Based on Polymorphic Adaptation Zhen Wei (Beijing University of Posts and Telecommunications, China), Ying Wang (Beijing University of Posts and Telecommunications, China), Hongbin (Beijing Smart Testing Technology Co. Ltd., Beijing, China) | 366 |
| Design and Implementation of a DNS Server with Geolocation Capability Ta-Li Lai (National Cheng Kung University, Taiwan), Meng-Hsun Tsai (National Cheng Kung University, Taiwan) | 370 |
| Mitigating SYN Flooding and UDP Flooding in P4-Based SDN Zi-Yang Shen (National Cheng-Kung University, Taiwan, Taiwan), Ming-Wei Su (National Cheng Kung University, Taiwan), Yun-Zhan Cai (National Cheng Kung University, Taiwan), Meng-Hsun Tsai (National Cheng Kung University, Taiwan) | 374 |
| Real-Time License Plate Recognition and Vehicle Tracking System Based on Deep Learning Guan-Wen Chen (National Yang Ming Chiao Tung University, Taiwan), Chun-Min Yang (National Yang Ming Chiao Tung University, Taiwan), (National Chiao Tung University, Taiwan) | 378 |
| An Association Control Method in LAA/Wi-Fi Coexistent Networks Considering Uplink/Downlink Communications Yoshiki Morimoto (Tokushima University, Japan), Kazuhiko Kinoshita (Tokushima University, Japan) | 382 |
| On-Demand MEC Empowered UAV Deployment for 6G Time-Sensitive Maritime Internet of Things Sheikh Salman Hassan (Kyung Hee University, Korea (South)), Yu Min Park (Kyung Hee University, Korea (South)), Choong Seon Hong (Kyung Hee University, Korea (South)) | 386 |
| An Efficient Resource Sharing Model for Multi-UAV-Assisted Wireless Networks Yan Kyaw Tun (Kyung Hee University, Korea (South)), Ki Tae Kim (Kyung Hee University, Korea (South)), Pyae Sone Aung (Kyung Hee University, Korea (South)), Madyan Alsenwi (Kyung Hee University, Korea (South)), Choong Seon Hong (Kyung Hee University, Korea (South)) | 390 |
| Decentralized Collaborative Caching-Based Virtual Reality for 5G and Beyond Tri Nguyen Dang (Kyung Hee University, Korea (South)), Aunas Manzoor (Kyung Hee University, Korea (South)), Latif Ullah Khan (Kyung Hee University, Korea (South)), Jeong Min Jeon (KyungHee University, Korea (South)), Choong Seon Hong (Kyung Hee University, Korea (South)) | 394 |
| Intelligent Grid Shepherd: Towards a Resilient Distributed Energy Resources Control System Md. Shirajum Munir (Kyung Hee University, Korea (South)), Do Hyeon Kim (Kyung Hee University, Korea (South)), Seok-Won Kang (Kyung Hee University, Korea (South)), Luyao Zou (Kyung Hee University, Korea (South)), Choong Seon Hong (Kyung Hee University, Korea (South)) | 398 |
| Study on the Online Charging System in B5G Era Wei-Lun Lin (Fu Jen Catholic University, Taiwan), Chien-Hsuan Chen (Fu Jen Catholic University, Taiwan), Huai-Sheng Huang (National Taipei University, Taiwan) | 402 |
| WITSE: A Testbed for Performance Evaluation of TaiSEIA 101 over Wireless Protocols Yan-Ann Chen (Yuan Ze University, Taiwan), Shao-Yi Chen (Yuan Ze University, Taiwan) | 406 |
| Adaptive Wireless Multi-Hop Routing Less Affected by Processing Delay Hiroshi Katada (Waseda University, Japan), Taku Yamazaki (Shibaura Institute of Technology, Japan), Takumi Miyoshi (Shibaura Institute of Technology, Japan), Shigeru Shimamoto (Waseda University & Graduate School of Global Information and Telecommunication Studies, Japan), Yoshiaki Tanaka (Waseda University, Japan) | 410 |