

2019 IEEE/CIC International Conference on Communications in China (ICCC 2019)

**Changchun, China
11 – 13 August 2019**

Pages 1-511



**IEEE Catalog Number: CFP19ICL-POD
ISBN: 978-1-7281-0733-2**

**Copyright © 2019 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:	CFP19ICL-POD
ISBN (Print-On-Demand):	978-1-7281-0733-2
ISBN (Online):	978-1-7281-0732-5
ISSN:	2377-8644

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

DISTRIBUTED DOWNLOADING STRATEGY FOR MULTI-SOURCE DATA FUSION IN EDGE-ENABLED VEHICULAR NETWORK : (INVITED PAPER)	1
<i>Yue Yu ; Jun Wu ; Xiao Tang ; Tiecheng Song ; Baekgyu Kim ; Zhu Han</i>	
TUNABLE REFLECTORS ENABLED ENVIRONMENT AUGMENTATION FOR BETTER MMWAVE WLANS	7
<i>Lan Zhang ; Li Yan ; Bin Lin ; Yuguang Fang ; Xuming Fang</i>	
TOWARDS A BLOCKCHAIN-BASED HEALTHCARE INFORMATION SYSTEM : INVITED PAPER	13
<i>Vojislav B. Mišić ; Jelena Mišić ; Xiaolin Chang</i>	
DEEP LEARNING BASED BEAMFORMING FOR FD-MIMO DOWNLINK TRANSMISSION : (INVITED PAPER)	19
<i>Xiaoxiang Yu ; Xi Yang ; Xiao Li ; Shi Jin</i>	
NETWORK BEAMFORMING IN ENERGY-HARVESTING RELAY NETWORKS	25
<i>Dexin Wang ; Rongqing Zhang ; Xiang Cheng ; Liuqing Yang</i>	
JOINT RESOURCE ALLOCATION AND SECRECY CAPACITY OPTIMIZATION IN V2V COMMUNICATIONS : (INVITED PAPER)	30
<i>Xuewen Luo ; Hsiao-Hwa Chen ; Weixiao Meng</i>	
A PREDICTIVE ON-DEMAND PLACEMENT OF UAV BASE STATIONS USING ECHO STATE NETWORK	36
<i>Haoran Peng ; Chao Chen ; Chuan-Chi Lai ; Li-Chun Wang ; Zhu Han</i>	
DETECTING RSU MISBEHAVIOR IN VEHICULAR EDGE COMPUTING	42
<i>Nalam Venkata Abhishek ; Teng Joon Lim ; Biplab Sikdar ; Ben Liang</i>	
SECURE COMMUNICATION WITH A SWIPT-BASED ENERGY HARVESTING EAVESDROPPER	48
<i>Qun Li ; Ding Xu</i>	
A DOUBLE-CNN BP DECODER ON FAST FADING CHANNELS USING CORRELATION INFORMATION	53
<i>Jun Li ; Xiwei Zhao ; Jihao Fan ; Feng Shu ; Shi Jin ; Yuwen Qian</i>	
HIGH-ACCURACY LOCALIZATION USING SINGLE-ANCHOR ULTRA-WIDE BANDWIDTH SYSTEMS	59
<i>Tianyu Wang ; Hanying Zhao ; Yuan Shen</i>	
SPARSITY LEARNING BASED BLIND SIGNAL DETECTION FOR MASSIVE MIMO WITH GENERALIZED SPATIAL MODULATION	64
<i>Xiaoyan Kuai ; Xiaojun Yuan ; Wenjing Yan ; Hang Liu ; Ying Jun Angela Zhang</i>	
SINGLE-LETTERIZATION OF SUPPORTING HYPERPLANES TO OUTER BOUNDS FOR BROADCAST CHANNELS	70
<i>Yanlin Geng</i>	
PERFORMANCE OF 3D MASSIVE MIMO WITH TRANSCIEVER IMPAIRMENTS FOR K COMPOSITE FADING CHANNEL	75
<i>Haojin Li ; Haijun Zhang ; Chunxiao Jiang ; Arumugam Nallanathan</i>	
SECURE TRANSMISSION IN MULTICARRIER TIME-SWITCHING WIRELESS POWERED COMMUNICATION NETWORKS WITH FULL-DUPLEX RECEIVERS	80
<i>Qun Li ; Ding Xu</i>	
REINFORCEMENT LEARNING APPROACHES FOR IOT NETWORKS WITH ENERGY HARVESTING	85
<i>Xiaolan Liu ; Yue Gao</i>	
MACHINE LEARNING AND LOCATION VERIFICATION IN VEHICULAR NETWORKS	91
<i>Ullah Ihsan ; Robert Malaney ; Shihao Yan</i>	
CLUSTERING-AID SPARSE REPRESENTATION CLASSIFICATION	96
<i>Liangkun Xu ; Wenbo Xu ; Yifei Dang ; Xiaolin Wang</i>	
COMPRESSIVE CLASSIFICATION BASED ON ONE-BIT MEASUREMENTS	101
<i>Qihang Liu ; Wenbo Xu ; Yifei Dang ; Xiaolin Wang</i>	
ADAPTIVE DATA STORAGE SYSTEM FOR MOBILE SATELLITE-TERRESTRIAL IOT	106
<i>Niannian Wang ; Ye Wang ; Shushi Gu ; Qinyu Zhang ; Wei Xiang</i>	
AN INTEGRATED DESIGN OF COOPERATIVE LOCALIZATION AND MOTION CONTROL	112
<i>Xiaoxiang Li ; Kai Ma ; Jian Wang ; Yuan Shen</i>	

ENERGY EFFICIENT FUZZY TIME SLOT SCHEDULING SCHEME FOR MASSIVE CONNECTIONS	117
<i>Xiaorui Tang ; Zaichen Zhang ; Liang Wu ; Jian Dang</i>	
EXECUTION LATENCY AND ENERGY CONSUMPTION TRADEOFF IN MOBILE-EDGE COMPUTING SYSTEMS	123
<i>Xiaolong Lan ; Lin Cai ; Qingchun Chen</i>	
QUALITY OF SERVICE ASSISTED MAPPING STRATEGY IN VIRTUALIZATION ENVIRONMENT	129
<i>Haotong Cao ; Shengchen Wu ; Yao Zhang ; Meng Zhou ; Longxiang Yang ; Hongbo Zhu</i>	
DEEP REINFORCEMENT LEARNING FOR EDGE CACHING AND CONTENT DELIVERY IN INTERNET OF VEHICLES	134
<i>Yueyue Dai ; Du Xu ; Yunlong Lu ; Sabita Maharjan ; Yan Zhang</i>	
PERFORMANCE ANALYSIS OF AN INTELLIGENT ASSOCIATION SCHEME IN ULTRA-DENSE NETWORKS USING MATERN CLUSTER PROCESS.....	140
<i>Qiao Zhu ; Xue Wang ; Zhihong Qian ; Chunsheng Tian</i>	
CODEBOOK DESIGN BASED ON SELF-ORGANIZING MAP CLUSTERING FOR LIMITED FEEDBACK MIMO SYSTEMS	146
<i>Jing Jiang ; Danping Lu ; Li Zhen</i>	
SCHEDULING AND RESOURCE ALLOCATION OVER LAA-WLAN CO-SITED NETWORKS	152
<i>Wenyan Ding ; Pinyi Ren ; Qinghe Du</i>	
INDOOR VISIBLE LIGHT SENSING WITH SIGHT BLOCKAGE.....	157
<i>Jia Zeng ; Chen Gong ; Shuping Hu ; Zhengyuan Xu</i>	
PULSE-LASER BASED LONG-RANGE NLOS ULTRAVIOLET COMMUNICATION: PULSE RESPONSE POSITION ESTIMATION AND FRAME SYNCHRONIZATION OPTIMIZATION	163
<i>Ruixiong Xu ; Chen Gong ; Zhengyuan Xu</i>	
A 427.5 MBPS AUTOMOTIVE HEADLIGHT VISIBLE LIGHT COMMUNICATION SYSTEM UTILIZING 64QAM-DMT MODULATION WITH SOFTWARE PRE-EQUALIZATION	169
<i>Siqi Han ; Chaofan Wang ; Guoqiang Li ; Nan Chi</i>	
ENHANCED PERFORMANCE OF A PHOSPHORESCENT WHITE LED CAP 64QAM VLC SYSTEM UTILIZING DEEP NEURAL NETWORK (DNN) POST EQUALIZATION.....	173
<i>Guoqiang Li ; Fangchen Hu ; Yiheng Zhao ; Nan Chi</i>	
THE STRUCTURE DETERMINED OF LOW ILL-CONDITION STRUCTURE CONSTRAINT SPATIAL MODULATION FOR MASSIVE MULTI-COLOR MIMO-VLC.....	177
<i>Yumeng Zhang ; Yijun Zhu ; Yan-Yu Zhang ; Chao Wang ; Yu Mu</i>	
A NEURAL ATTACK MODEL FOR CRACKING PASSWORDS IN ADVERSARIAL ENVIRONMENTS	183
<i>Yushuo Guan ; Yuanxing Zhang ; Lin Chen ; Kaigui Bian</i>	
OPTIMAL STRATEGY IN COVERT COMMUNICATION BASED ON GAME THEORY	189
<i>Jianquan Wang ; Wanbin Tang ; Xiaoping Li ; Shaoqian Li</i>	
TWO-FACTOR AUTHENTICATION PROTOCOL USING PHYSICAL UNCLONABLE FUNCTION FOR IOV	195
<i>Qi Jiang ; Xin Zhang ; Ning Zhang ; Youliang Tian ; Xindi Ma ; Jianfeng Ma</i>	
ON SECURE UAV COMMUNICATION SYSTEMS WITH RANDOMLY LOCATED EAVESDROPPERS	201
<i>Hongliang Lei ; Di Wang ; Ki-Hong Park ; Imran Shafique Ansari ; Gaofeng Pan ; Mohamed-Slim Alouini</i>	
A NOVEL CACHE REPLACEMENT SCHEME AGAINST CACHE POLLUTION ATTACK IN CONTENT-CENTRIC NETWORKS.....	207
<i>Ying Liu ; Ting Zhi ; Haidong Xi ; Wei Quan ; Hongke Zhang</i>	
DISTRIBUTED MIMO COOPERATIVE TRANSMISSION TECHNIQUE AND ITS PERFORMANCE.....	213
<i>Fumiyuki Adachi ; Amnart Boonkajay ; Tomoyuki Saito ; Yuta Seki</i>	
NETWORK ANALYSIS OF COLLABORATIVE CYBER-PHYSICAL MULTI-AGENT SMART MANUFACTURING SYSTEMS : INVITED PAPER.....	219
<i>Jen-Hao Hsiao ; Kwang-Cheng Chen</i>	
EFFICIENT CACHING FOR 360 VIDEOS WITH DYNAMIC VIEW SELECTION	225
<i>Mengsi Yeh ; Chih-Hang Wang ; De-Nian Yang ; Wanjiun Liao</i>	
OFF-GRID ANGLE-DOPPLER ESTIMATION FOR SPACE-TIME ADAPTIVE PROCESSING: A SEQUENTIAL APPROACH.....	231
<i>Lei Lu ; Chengwei Zhou ; Zhiguo Shi ; Jiming Chen</i>	
POWER CONTROL FOR INTERFERENCE MANAGEMENT VIA ENSEMBLING DEEP NEURAL NETWORKS.....	237
<i>Fei Liang ; Cong Shen ; Wei Yu ; Feng Wu</i>	

ROBUST RESOURCE ALLOCATION IN NOMA BASED COGNITIVE RADIO NETWORKS	243
<i>Yongjun Xu ; Fanyi Shu ; Rose Qingyang Hu ; Ying-Chang Liang</i>	
ACCELERATED DEEP REINFORCEMENT LEARNING FOR WIRELESS CODED CACHING	249
<i>Zhe Zhang ; Meixia Tao</i>	
GRAIN PILE TEMPERATURE FORECASTING FROM WEATHER FACTORS: A SUPPORT VECTOR REGRESSION APPROACH	255
<i>Shanshan Duan ; Weidong Yang ; Xuyu Wang ; Shiwen Mao ; Yuan Zhang</i>	
A RECEIVER DESIGN FOR MOLECULE SHIFT KEYING MODULATION IN DIFFUSION-BASED MOLECULAR COMMUNICATIONS	261
<i>Qingchao Li ; Hui Li</i>	
A NOVEL WAVELET DENOISING PRE-PROCESSING ALGORITHM FOR TDOA LOCALIZATION	266
<i>Wenping Zhu ; Shujuan Hou ; Yuan Yuan</i>	
OUTAGE ANALYSIS FOR FULL-DUPLEX COOPERATIVE NETWORKS WITH OPTIMAL RELAY SELECTION	271
<i>Xuan Wang ; Danyang Yu ; Yi Liu ; Tiantian Chen</i>	
LEARNING SPATIAL-CHANNEL ATTENTION FOR VISUAL TRACKING	277
<i>Yingsen Zeng ; Haiying Wang ; Ting Lu</i>	
ROBUST ADAPTIVE BEAMFORMING BASED ON COVARIANCE MATRIX RECONSTRUCTION AGAINST STEERING VECTOR MISMATCH	283
<i>Xue Zhang ; Shuai Liu ; Feng-Gang Yan ; Ming Jin ; Jun Wang</i>	
AGE-CONSTRAINED CONTENT ACCESS STRATEGY IN D2D-ASSISTED WIRELESS CACHING NETWORKS	287
<i>Shuonan Li ; Xiaoqi Qin ; Yunzheng Tao ; Baoling Liu ; Ping Zhang</i>	
ON THE PERFORMANCE OF CELL -FREE MASSIVE MIMO WITH ONE-BIT ADCS AND DACS	293
<i>Yao Zhang ; Haotong Cao ; Meng Zhou ; Xu Qiao ; Longxiang Yang</i>	
EXPEDITED EVICTION OF INVALID FLOW ENTRIES FOR SDN-BASED EPC NETWORKS	298
<i>Ruolan Ying ; Wen-Kang Jia ; Chunlan Luo ; Yi Wu</i>	
ADAPTIVE CONSISTENCY PROTOCOL BASED ON GROUPING MULTI-PAXOS	304
<i>Yizhen Wang ; Ye Wang ; Shushi Gu ; Qinyu Zhan ; Ning Zhang</i>	
A DUAL DECOMPOSITION METHOD FOR HIERARCHICAL TRAFFIC CONTROL IN INTER-DC WANS	310
<i>Qian Gao ; Jiang Liu ; Ningjie Gao ; Tao Huang</i>	
SCOD: A NOVEL SEMI-SUPERVISED OUTLIER DETECTION FRAMEWORK	316
<i>Shentai Liu ; Zhida Qin ; Xiaoying Gan ; Zhen Wang</i>	
UPLINK SECRECY RATE FOR ARTIFICIAL NOISE AIDED FULL-DUPLEX VLC SYSTEM	322
<i>Baoying Huang ; Xuefen Chi ; Linlin Zhao ; Lei Qian ; Wenxiao Shi</i>	
JOINT PHY/MAC LAYER AN-ASSISTED SECURITY SCHEME IN SVD-BASED MIMO HARQ SYSTEM	328
<i>Huiyun Xia ; Shuai Han ; Cheng Li ; Weixiao Meng</i>	
A TRUST-BASED REAL-TIME MAP UPDATING SCHEME	334
<i>Chengzhe Lai ; Yangyang Du ; Jiawei Men ; Dong Zheng</i>	
A SECURE BLOCKCHAIN-BASED GROUP MOBILITY MANAGEMENT SCHEME IN VANETS	340
<i>Chengzhe Lai ; Yuhan Ding</i>	
PEDESTRIAN DETECTION BASED ON IMPROVED FASTER RCNN ALGORITHM	346
<i>Xiaoqian Yu ; Yujuan Si ; Liangliang Li</i>	
STATISTICAL ASSESSMENT OF MIMO COOPERATIVE NETWORKS WITH SELECTIVE OFDMA RELAYING	352
<i>Yi Liu ; Bo Li ; Fu Gang Sun ; Teng Ma ; Hai Rui Yu ; Kai Feng Guo</i>	
OUTAGE PERFORMANCE OF MILLIMETER-WAVE BAND NOMA DOWNLINK SYSTEM IN SATELLITE-BASED IOT	356
<i>Yizhi He ; Jian Jiao ; Xiao Liang ; Shaohua Wu ; Ye Wang ; Qinyu Zhang</i>	
ZERO-FORCING BASED LIMITED FEEDBACK HYBRID PRECODING IN MMWAVE COMMUNICATIONS	362
<i>Shijian Gao ; Xiang Cheng ; Liuqing Yang ; Rongqing Zhang</i>	
DESIGN AND DEMONSTRATION OF TARGET DETECTION IN THE ULTRAVIOLET SPECTRUM	367
<i>Hao Qiao ; Chen Gong ; Zhengyuan Xu</i>	
OUTAGE MINIMIZED JOINT POWER SPLITTING AND RESOURCE ALLOCATION OPTIMIZATION FOR MULTIUSER OFDM SYSTEMS WITH SWIPT	373
<i>Qun Li ; Ding Xu</i>	

CLUSTERED BLOCK DIAGONAL DIGITAL PRECODING FOR BDMA DOWNLINK TRANSMISSIONS	378
<i>Guanchong Niu ; Qi Cao ; Man-On Pun</i>	
IMPROVED PREAMBLE DETECTION AND ROUND-TRIP DELAY ESTIMATION FOR RANDOM ACCESS IN HIGH-MOBILITY AIRBORNE COMMUNICATION SYSTEMS	384
<i>Songkang Huang ; Lei Zhao ; Ming Jiang ; Wei Liu</i>	
ACHIEVABLE RATE OPTIMIZATION FOR WET ENABLED MMWAVE D2D COMMUNICATION SYSTEMS	389
<i>Xiaoyan Ma ; Xiaotian Zhou ; Haixia Zhang ; Guannan Dong ; Dongfeng Yuan</i>	
ENHANCED SENSING-BASED RESOURCE SCHEDULING ALGORITHM FOR 5G V2V COMMUNICATIONS	395
<i>Xiaoran Wen ; Mugen Peng ; Xinran Zhang ; Shi Yan ; Yong Li</i>	
PRICE-BASED RESOURCE ALLOCATION IN COOPERATIVE COGNITIVE WIRELESS POWERED COMMUNICATION NETWORKS	401
<i>Li Wang ; Ding Xu</i>	
STACKELBERG DIFFERENTIAL GAME BASED RESOURCE ALLOCATION IN WIRELESS NETWORKS WITH FOG COMPUTING	406
<i>Bingjie Liu ; Haitao Xu ; Xianwei Zhou ; Zhu Han</i>	
SPECTRUM SHARING FOR HIGH ALTITUDE PLATFORM NETWORKS	411
<i>Zhan Gao ; Zhiqing Wei ; Ziyu Wang ; Jialin Zhu ; Gang Deng ; Zhiyong Feng</i>	
STREAMING TRANSFER MODEL AND FORWARD SCHEME FOR SATELLITE OPPORTUNISTIC NETWORK	416
<i>Guoqing Chen ; Shushi Gu ; Ye Wang ; Qinyu Zhang ; Ning Zhang</i>	
AN ENERGY-AWARE ANCHOR POINT SELECTION STRATEGY FOR WIRELESS RECHARGEABLE SENSOR NETWORKS	422
<i>Fang Liu ; Shuaishuai Lu</i>	
TANDEM SPREADING MULTIPLE ACCESS WITH SUCCESSIVE INTERFERENCE CANCELLATION	427
<i>Zichao Wei ; Fanggang Wang ; Guoyu Ma ; Bo Ai ; Zhangdui Zhong</i>	
USER ASSOCIATION FOR CACHE ENABLED MILLIMETER WAVE ULTRA DENSE DOWNLINK NETWORKS	432
<i>Hongxin Lin ; Cheng Zhang ; Yongming Huang ; Rui Zhao ; Luxi Yang</i>	
LDPC-CODED GENERALISED SPATIAL MODULATION SYSTEMS WITH ARBITRARY TRANSMIT ANTENNA COMBINATIONS	438
<i>Dan Feng ; Mengmeng Liu ; Baoming Bai</i>	
AN ALGORITHM FOR TRANSMITTING VR VIDEO BASED ON ADAPTIVE MODULATION	443
<i>Jie Feng ; Yongpeng Wu ; Guangtao Zhai ; Ning Liu ; Wenjun Zhang</i>	
ADAPTIVE CONSTRUCTION AND DECODING OF RANDOM CONVOLUTIONAL NETWORK ERROR-CORRECTION CODING	449
<i>Mingye Liu ; Wangmei Guo</i>	
A DISTRIBUTED USER ASSOCIATION METHOD FOR LTE-U BY ENABLING Q-LEARNING IN MINORITY GAME	455
<i>Yunjia Wang ; Guanding Yu ; Rui Yin</i>	
UNEQUAL RECOVERY TIME RANDOM ACCESS PROTOCOL FOR MASSIVE MIMO IOT SYSTEM	461
<i>Liang Xu ; Jian Jiao ; Xiaoyu Suo ; Shaohua Wu ; Ye Wang ; Qinyu Zhang</i>	
A HIGH ACCURACY INTEGRATED BAGGING-FUZZY-GBDT PREDICTION ALGORITHM FOR HEART DISEASE DIAGNOSIS	467
<i>Xiaoming Yuan ; Xue Wang ; Jianchao Han ; Jiemin Liu ; Haiyan Chen ; Kuan Zhang ; Qiang Ye</i>	
PRIORITY-BASED MASSIVE RANDOM ACCESS OF M2M COMMUNICATIONS IN LTE NETWORKS: THROUGHPUT ANALYSIS AND OPTIMIZATION	472
<i>Changwei Zhang ; Kinghua Sun ; Jun Zhang ; Hongbo Zhu</i>	
AP DEPLOYMENT OPTIMIZATION FOR WLAN: A FRUIT FLY OPTIMIZATION APPROACH	478
<i>Peng Liu ; Xin Meng ; Jianghong Wu ; Mengqian Yao ; Zhenzhou Tang</i>	
LEARNING-BASED CONTENT CACHING WITH UPDATE STRATEGY FOR FOG RADIO ACCESS NETWORKS	484
<i>Fan Jiang ; Zeng Yuan ; Changyin Sun ; Yuan Ren ; Junxuan Wang</i>	
EXACT PERFORMANCE ANALYSIS FOR MIXED κ-μ SHADOWED AND EXPONENTIATED WEIBULL DISTRIBUTED DUAL-HOP RF/FSO SYSTEMS	490
<i>Yamin Wang ; Peng Yue ; Xiang Yi ; Cong Shen</i>	

TRANSMIT ANTENNA SELECTION IN MASSIVE MIMO SYSTEMS: AN ONLINE LEARNING FRAMEWORK	496
<i>Zhenran Kuai ; Tianyu Wang ; Shaowei Wang</i>	
THROUGHPUT ANALYSIS FOR WPT NETWORKS OVER TWO-WAY LOG-NORMAL FADING CHANNELS	502
<i>Yingting Liu ; Zhengwei Pan ; Ruyi Xiao ; Hongwu Yang ; Chunman Yan</i>	
AN AREA-BASED OFFLOADING POLICY FOR COMPUTING OFFLOADING IN MEC-ASSISTED WIRELESS MESH NETWORK	507
<i>Wenxiao Shi ; Jiadong Zhang ; Ruidong Zhang ; Kegang Hu</i>	
PHYSICAL-LAYER SECURITY OF VISIBLE LIGHT COMMUNICATIONS WITH JAMMING	512
<i>Dinghui Tian ; Wensheng Zhang ; Jian Sun ; Cheng-Xiang Wang</i>	
SLOTTED ALOHA GAME FOR MEDIUM ACCESS CONTROL IN SATELLITE NETWORKS	518
<i>Bo Zhao ; Guangliang Ren ; Huining Zhang</i>	
ROBUST BEAMFORMING DESIGN FOR SWIPT IN CELLULAR INTERNET OF THINGS	523
<i>Qiao Qi ; Xiaoming Chen ; Derrick Wing Kwan Ng ; Caijun Zhong ; Zhaoyang Zhang</i>	
A SCALABLE IMPLEMENTATION FOR REAL-TIME PHASED ANTENNA ARRAY MMWAVE TESTBEDS	529
<i>Xi Yang ; Jing Zhang ; Binqi Yang ; Kang Wang ; Xiao Li ; Shi Jin</i>	
A TWO-SIDED MATCHING APPROACH FOR DISTRIBUTED EDGE COMPUTATION OFFLOADING	535
<i>Hongyi Bao ; Yuan Liu</i>	
FINGERPRINTING-BASED INDOOR LOCALIZATION WITH RELATION LEARNING NETWORK	541
<i>Lingyan Zhang ; Hongyu Wang</i>	
AUTOMATIC BRAIN TUMOR SEGMENTATION USING CASCADED FCN WITH DENSECRF AND K-MEANS	545
<i>Lizhu Yang ; Weinan Jiang ; Hongkun Ji ; Zijun Zhao ; Xukang Zhu ; Alin Hou</i>	
SEQUENCE SET DESIGN WITH MIN-MAX CRITERION USING MAJORIZATION-MINIMIZATION	550
<i>Zhiyu Zhou ; Shengjie Zhao ; Qingjiang Shi ; Rongqing Zhang</i>	
SPEEDING UP LDPC DECODER BY INTER-FRAME PIPELINE FOR WIRELESS LASER COMMUNICATIONS	556
<i>Jipeng Zhang ; Zhongyang Yu ; Ji Zhang ; Baoming Bai ; Chao Chen ; Fuwei Huang</i>	
RESEARCH ON FEATURE SELECTION AND CLASSIFICATION ALGORITHM OF MEDICAL OPTICAL TOMOGRAPHY IMAGES	561
<i>Hongkun Ji ; Kaiwen Guo ; Lizhu Yang ; Weinan Jiang ; Zijun Zhao ; Xukang Zhu ; Alin Hou</i>	
A STUDY OF DISPARITY MAP BASED ON IMPROVED DYNAMIC PROGRAMMING ALGORITHM	567
<i>Ziwei Zhao ; Yan Piao ; Che Liu</i>	
REINFORCEMENT LEARNING BASED VNF SCHEDULING WITH END-TO-END DELAY GUARANTEE	572
<i>Junling Li ; Weisen Shi ; Ning Zhang ; Xuemin Sherman Shen</i>	
REDUCING REDUNDANT CONTROL MESSAGING FOR FAST RESPONSE IN SDN	578
<i>Gang Wu ; Peng Yang ; Jingjing Luo ; Li Yu</i>	
IPTV USER QOE PREDICTION BASED ON BROAD LEARNING SYSTEM	584
<i>Liqiu Xu ; Xin Wei ; Yun Gao ; Jiali Mao</i>	
ENERGY MINIMIZATION FOR FOG COMPUTING-ENABLED HIERARCHICAL NETWORKS WITH DYNAMIC TDD	590
<i>Qi Zhang ; Haina Zheng ; Zhangdui Zhong ; Siqi Mu</i>	
FULL-DUPLEX RELAY ASSISTED SECURE TRANSMISSION FOR NOMA NETWORKS	596
<i>Yang Cao ; Jie Tang ; Nan Zhao ; Yunfei Chen ; Xiu Yin Zhang ; Minglu Jin ; Mohamed-Slim Alouini</i>	
CANCELLATION SYMBOL INSERTION TECHNIQUE FOR SIDELobe SUPPRESSION IN OFDM PILOT WAVEFORM	602
<i>Wei-Chang Chen ; Jia-Ling Jiang ; Char-Dir Chung</i>	
OPTIMAL ALTITUDE OF UAV-BS FOR MINIMUM BOUNDARY OUTAGE PROBABILITY WITH IMPERFECT CHANNEL STATE INFORMATION	607
<i>Bo Wang ; Jian Ouyang ; Wei-Ping Zhu ; Min Lin</i>	
COUPLED OR UNCOUPLED? MULTI-PATH TCP CONGESTION CONTROL FOR HIGH-SPEED RAILWAY NETWORKS	612
<i>Chengxiao Yu ; Wei Quan ; Nan Cheng ; Shihua Chen ; Hongke Zhang</i>	

CROWD-SOURCING AND MODEL-DRIVEN BASED ONLINE DICTIONARY LEARNING FOR FDD MASSIVE MIMO SYSTEMS	618
<i>Tong Yue ; Aijun Liu ; Kui Xu</i>	
NON-ORTHOGONAL CODED ACCESS BASED UPLINK GRANT-FREE TRANSMISSION FOR URLLC	624
<i>Mingshan Zhang ; Mengting Lou ; Hong Zhou ; Yuantao Zhang ; Ming Liu ; Zhangdui Zhong</i>	
CAPACITY CHARACTERIZATION OF UAV-ENABLED MULTIPLE ACCESS CHANNEL WITH TRAJECTORY OPTIMIZATION	630
<i>Peiming Li ; Jie Xu</i>	
A NEW LOW-RESOLUTION MIN-SUM DECODER BASED ON DYNAMIC CLIPPING FOR LDPC CODES	636
<i>Huanyu He ; Lei Chu ; Robert Caiming Qiu</i>	
REINFORCEMENT LEARNING-BASED USER SCHEDULING AND RESOURCE ALLOCATION FOR MASSIVE MU-MIMO SYSTEM	641
<i>Gaojing Bu ; Jing Jiang</i>	
FREQUENCY OFFSET ESTIMATION FOR 5G BASED LEO SATELLITE COMMUNICATION SYSTEMS	647
<i>Ding Tian ; Yue Zhao ; Jianfei Tong ; Gaofeng Cui ; Weidong Wang</i>	
IMPROVED COMNET BASED ON EXPECTATION PROPAGATION FOR CP-FREE OFDM SYSTEM.....	653
<i>Jing Zhang ; Xi Yang ; Chao-Kai Wen ; Xiao Li ; Shi Jin</i>	
CAPACITY ANALYSIS AND SCHEDULING FOR DISTRIBUTED LIS-AIDED LARGE-SCALE ANTENNA SYSTEMS	659
<i>Fan Cao ; Yu Han ; Qi Liu ; Chao-Kai Wen ; Shi Jin</i>	
EFFECTIVE CAPACITY ANALYSIS FOR VR-HARQ SYSTEMS	665
<i>Zheng Shi ; Theodoros Tsiftsis ; Weiqiang Tan ; Guanghua Yang ; Shaodan Ma ; Mohamed-Slim Alouini</i>	
DISTORTION-AWARE VIRTUAL ENVIRONMENTS TRANSMISSION SCHEME OVER A BANDWIDTH-LIMITED NETWORK.....	671
<i>Jingfeng Guo ; Yitong Liu ; Lin Sang ; Hongwen Yang</i>	
DEEP LEARNING METHOD OF POLAR CODES UNDER COLORED NOISE.....	677
<i>Danqiu Xiong ; Bin Tian</i>	
SHAPE-UNCONSTRAINED PRIVACY-PRESERVING RANGE QUERY FOR FOG COMPUTING SUPPORTED VEHICULAR NETWORKS USING IMAGE	683
<i>Haoran Liang ; Jun Wu ; Zhi Liu ; Jianhua Li</i>	
COOPERATIVE TWO-KEY GENERATION IN SOURCE-TYPE MODEL WITH PARTIAL-TRUSTED HELPERS	689
<i>Shixun Gong ; Na Li ; Huici Wu ; Xiaofeng Tao</i>	
LOCATION PRIVACY PRESERVATION SCHEME BASED INCENTIVE FOR CROWD-SENSING NETWORKS	695
<i>Minghui Dai ; Zhou Su ; Qichao Xu</i>	
SECRECYPERFORMANCE ANALYSIS OF COGNITIVE RADIO NETWORKS WITH FULL-DUPLEX RELAYING	700
<i>Zhihui Shang ; Tao Zhang ; Yongxiang Liu ; Yueming Cai ; Weiwei Yang</i>	
PROTECTING ACCESS PRIVACY FOR BITCOIN LIGHTWEIGHT CLIENT USING TRUSTED HARDWARE.....	706
<i>Xudong Li ; Zhe Yang ; Lingbo Wei ; Chi Zhang</i>	
LINK DATA OPTIMIZATION BASED ON PSO ALGORITHM IN ETHERNET PROTOCOL	712
<i>Hongzhi Wang ; Hao Wang ; Hongwu Lyu</i>	
RESEARCH ON POWER ALLOCATION OF COGNITIVE RADIO BASED ON ROBUST COOPERATIVE RELAY	718
<i>Mingyue Zhou ; Tianyuan Cai ; Hongzhi Wang</i>	
AN LLR-BASED SEGMENTED FLIPPED SCL DECODING ALGORITHM FOR POLAR CODES	724
<i>Anqi Cao ; Li Zhang ; Jian Qiao ; Yejun He</i>	
AN EFFICIENT PIECEWISE NONLINEAR COMPANDING TRANSFORM FOR PAPR REDUCTION IN UFMC SYSTEMS	730
<i>Kaiming Liu ; Yaning Ge ; Yuanan Liu</i>	
MISO WIRELESS COMMUNICATION SYSTEMS VIA INTELLIGENT REFLECTING SURFACES : (INVITED PAPER).....	735
<i>Xianghao Yu ; Dongfang Xu ; Robert Schober</i>	
OUTAGE ANALYSIS AND OPTIMIZATION OF NOMA-BASED INTEGRATED SATELLITE-TERRESTRIAL SYSTEM WITH AN AF RELAY	741
<i>Silin Xie ; Bangning Zhang ; Daoxing Guo ; Kongzhe Yang</i>	

IMPACT OF PREDICTION UNCERTAINTY OF POPULARITY DISTRIBUTION ON PROACTIVE CACHING	747
<i>Pengyu Cong ; Kaiqiang Qi ; Chenyang Yang</i>	
PERFORMANCE OF JOINT RADAR AND COMMUNICATION ENABLED COOPERATIVE DETECTION	753
<i>Zixi Fang ; Zhiqing Wei ; Zhiyong Feng ; Xu Chen ; Zijun Guo</i>	
JOINT COMPUTING AND RADIO RESOURCE ALLOCATION IN C-RAN SYSTEMS UNDER IMPERFECT CSI.....	759
<i>Kangkang Wang ; Ying Wang ; Runcong Su</i>	
A 3-DIMENSIONAL MATCHING METHOD FOR RESOURCE ALLOCATION IN D2D-ASSISTED INDOOR WIRELESS COMMUNICATIONS	765
<i>Chenglin Li ; Zhi Zhang ; Baoling Liu</i>	
THROUGHPUT ANALYSIS OF MRT-ZF WIRELESS BODY AREA NETWORK WITH MULTI-ANTENNA AP	770
<i>Zhi Mao ; Fengye Hu ; He Liu ; Zhuang Ling</i>	
RANGE-FREE LOCALIZATION BASED ON ADAPTIVE ANCHOR SELECTION FOR WIRELESS SENSOR NETWORKS	775
<i>Wenjie Ji ; Xingcheng Liu ; En Zou</i>	
DESIGN AND ANALYSIS OF BIDIRECTIONAL RELAYING NCED-HARQ TRANSMISSION SCHEME FOR S-IOT	780
<i>Zilin Ni ; Jian Jiao ; Xiaoxin Li ; Shaohua Wu ; Ye Wang ; Qinyu Zhang</i>	
INTELLIGENT MARITIME COMMUNICATIONS ENABLED BY DEEP REINFORCEMENT LEARNING.....	786
<i>Jiabo Li ; Tingting Yang ; Hailong Feng</i>	
PREDICTIVE SERVICE PLACEMENT IN MOBILE EDGE COMPUTING	792
<i>Huirong Ma ; Zhi Zhou ; Xu Chen</i>	
AUTOMOTIVE RADAR SIGNAL CLASSIFICATION USING BYPASS RECURRENT CONVOLUTIONAL NETWORKS.....	798
<i>Sangtae Kim ; Kwangjin Lee ; Seungho Doo ; Byonghyo Shim</i>	
OBJECT-AWARE IMAGE COMPRESSION WITH ADVERSARIAL LEARNING	804
<i>Yunfei Du ; Nan Zhao ; Yiping Duan ; Chaoyi Han</i>	
LOCATION INFORMATION BASED BEAM TRAINING FOR UAV MMWAVE SYSTEM	809
<i>Weizheng Zhang ; Wei Zhang ; Shengli Zhang</i>	
A NEAR-OPTIMAL CONDITION FOR EXACT SPARSE RECOVERY WITH ORTHOGONAL LEAST SQUARES	814
<i>Junhan Kim ; Byonghyo Shim</i>	
QAM CONSTELLATION DIVISION BASED USER GROUPING TRANSMISSION FOR MASSIVE MIMO UPLINK SYSTEMS	818
<i>Jingjie Zong ; Gangtao Han ; Dalong Zhang ; Di Zhang ; Xiaomin Mu</i>	
OPTIMAL PRECODING DESIGN FOR UNIFORM LINEAR ANTENNA ARRAYS WITH THE SPHERICAL-WAVE MODEL	823
<i>Lei Yang ; Xumin Pu ; Jide Yuan ; Shi Jin ; Qianbin Chen</i>	
COMPARISON OF OTFS DIVERSITY PERFORMANCE OVER SLOW AND FAST FADING CHANNELS	828
<i>Hongyang Zhang ; Xiaojing Huang ; J. Andrew Zhang</i>	
CSI FEEDBACK BASED ON SPATIAL AND FREQUENCY DOMAINS COMPRESSION FOR 5G MULTI-USER MASSIVE MIMO SYSTEMS	834
<i>Zhengxuan Liu ; Shaohui Sun ; Qiubin Gao ; Hui Li</i>	
DEMONSTRATION OF DCSK-AIDED OFDM DESIGN FOR COGNITIVE RADIO SYSTEM VIA USRP.....	840
<i>Zuwei Chen ; Lin Zhang ; Zhiqiang Wu</i>	
A LOW COMPLEXITY MULTIUSER DETECTION SCHEME WITH DYNAMIC FACTOR GRAPH FOR UPLINK SCMA SYSTEMS	846
<i>Jiansong Miao ; Xuejia Hu ; Zhenmin Zhao</i>	
JOINT DOWNLINK-UPLINK THROUGHPUT OPTIMIZATION IN WIRELESS POWERED COMMUNICATION NETWORKS	852
<i>M. S. Syam ; Yue Ling Che ; Sheng Luo ; Kaishun Wu</i>	
DIVERSITY-ACHIEVING SECURE SCHEME FOR SIMO-MBM SYSTEMS.....	858
<i>Shaozhuang Bai ; Zhenzhen Gao ; Xuwen Liao</i>	
MULTI-FACTOR BASED DYNAMIC OFFLOADING WITH COALITIONAL GAME IN MOBILE CLOUD COMPUTING.....	863
<i>Shan Guo ; Ying Wang ; Hong Wang</i>	

SLICE-AWARE RESOURCE MANAGEMENT IN SDN ENABLED HETEROGENEOUS CELLULAR NETWORKS	869
<i>Jinliang Ma ; Chunyu Pan ; Changchuan Yin ; Xuehua Li</i>	
POPULARITY TRACKING FOR PROACTIVE CONTENT CACHING WITH DYNAMIC FACTOR ANALYSIS	875
<i>Sajad Mehrizi ; Anestis Tsakmalis ; Shahram Shahbazpanahi ; Symeon Chatzinotas ; Björn Ottersten</i>	
OPTIMIZATION OF JOINT LOAD BALANCING AND BANDWIDTH ALLOCATION IN SPACE INFORMATION NETWORKS	881
<i>Siyang Liu ; Jingchao Wang ; Shentai Liu ; Xiaoying Gan</i>	
PERFORMANCE ANALYSIS OF JOINT RADAR AND COMMUNICATION ENABLED VEHICULAR AD HOC NETWORK	887
<i>Hao Ma ; Zhiqing Wei ; Xu Chen ; Zixi Fang ; Yunfeng Liu ; Fan Ning ; Zhiyong Feng</i>	
FINGERPRINT SIMILARITY INDOOR LOCALIZATION: AN AP SELECTION BASED APPROACH	893
<i>Chengyi Zhou ; Junyu Liu ; Min Sheng ; Linlin Peng ; Danni Hou ; Jiandong Li</i>	
DELAY OUTAGE PROBABILITY OF MULTI-RELAY SELECTION FOR MOBILE RELAY EDGE COMPUTING SYSTEM	898
<i>Jie Liang ; Zhiyong Chen ; Cheng Li ; Bin Xia</i>	
OPTIMAL BANDWIDTH ALLOCATION WITH EDGE COMPUTING FOR WIRELESS VR DELIVERY	903
<i>Tanyue Xu ; Yaping Sun ; Shijia Xia ; Hua Li ; Ling Luo ; Zhiyong Chen</i>	
THE ANALYSIS OF MOBILITY PERFORMANCE IN MMWAVE-μWAVE HETEROGENEOUS NETWORKS	908
<i>Fangchao Du ; Guangji Chen ; Ling Qiu</i>	
UPLINK SPECTRAL EFFICIENCY ANALYSIS IN VEHICLE-TO-INFRASTRUCTURE MASSIVE MIMO SYSTEMS	914
<i>Yuanxue Xin ; Rongqing Zhang ; Pengfei Shi ; Xuewu Zhang ; Lei Zhang</i>	
OPTIMAL POWER ALLOCATION WITH A COOPERATIVE RELAY IN MULTI-POINT WBAN	919
<i>Shuang Li ; Fengye Hu ; Jingjing Yu ; Ziqiu Huang</i>	
PROACTIVE PROPORTIONAL FAIR: A NOVEL SCHEDULING ALGORITHM BASED ON FUTURE CHANNEL INFORMATION IN OFDMA SYSTEMS	925
<i>Linzhi Shen ; Tianyu Wang ; Shaowei Wang</i>	
CRT SEQUENCES FOR MEDIUM ACCESS CONTROL	931
<i>Yi Chen ; Kenneth W. Shum ; Wing Shing Wong</i>	
TASK-ORIENTED AND DISRUPTION-TOLERANT TRAFFIC STEERING IN UAV NETWORKS	937
<i>Taiheng Ge ; Chi Zhang ; Miao Pan</i>	
MARITIME OPPORTUNISTIC TRANSMISSION: WHEN AND HOW MUCH CAN DTN NODE DELIVER?	943
<i>Lingzheng Kong ; Tingting Yang ; Nan Zhao</i>	
STATISTICAL PRIORITY CONTROL FOR AD HOC NETWORKS WITH DIFFERENT COMMUNICATION RANGES	949
<i>Junzhi Hao ; Yuan Cao ; Lianghui Ding ; Liang Qian ; Feng Yang ; Yunfeng Guan</i>	
JOINT POWER AND CHANNEL ALLOCATION BASED ON CACHING WITH USER PREFERENCES IN D2D HETNETS	955
<i>Xinpeng Lyu ; Ying Wang ; Man Liu ; Zhendong Li ; Zixuan Fei ; Weichen Ning</i>	
A DISTRIBUTED BI-CONNECTIVITY MAINTENANCE MECHANISM FOR FLYING AD HOC NETWORK TOPOLOGY	961
<i>Xiaohan Qi ; Haojie Jin ; Qinyu Zhang ; Zihua Yang</i>	
A 3D GBSM FOR SHIP-TO-LAND COMMUNICATIONS	967
<i>Yubei He ; Hengtai Chang ; Yu Liu ; Wensheng Zhang ; Jian Sun ; Cheng-Xiang Wang</i>	
ENERGY EFFICIENT PREDICTION BASED D2D-ASSISTED PUSHING IN HETEROGENEOUS ULTRA-DENSE NETWORKS	973
<i>Rui Liu ; Xiaodong Xu ; Wenwan Chen ; Mengying Sun ; Xiaofeng Tao</i>	
PERFORMANCE ANALYSIS FOR THE COEXISTENCE OF RADAR AND COMMUNICATION IN VANETS	979
<i>Bingqi Jia ; Zhiqing Wei ; Baoling Liu ; Zhiyong Feng</i>	
REINFORCEMENT LEARNING BASED MATCHING FOR COMPUTATION OFFLOADING IN D2D COMMUNICATIONS	984
<i>Bingxin Tian ; Li Wang ; Yutong Ai ; Aiguo Fei</i>	
RELIABLE ROTATION TRANSFORM AIDED MIMO SCHEME FOR UNDERWATER VISIBLE LIGHT COMMUNICATION	989
<i>Guixun Huang ; Lin Zhang</i>	

EXPLORE ADAPTIVE DROPOUT DEEP COMPUTING AND REINFORCEMENT LEARNING TO LARGE-SCALE TASKS PROCESSING FOR BIG DATA	994
<i>Jia Zhao ; Ming Hu ; Yan Ding ; Gaochao Xu ; Chunyi Wu</i>	
SECURE TRANSMISSION IN NOMA-BASED MMTC NETWORKS UNDER STATISTICAL DELAY QOS GUARANTEES	1000
<i>Suyu Lv ; Xiaodong Xu ; Shujun Han ; Xiaofeng Tao</i>	
A PRIVACY-PRESERVING ETHEREUM LIGHTWEIGHT CLIENT USING PIR	1006
<i>Yankai Xie ; Chi Zhang ; Lingbo Wei ; Yukun Niu ; Faxing Wang ; Jianqing Liu</i>	
SMART CYBER FORENSICS OF REAR-END COLLISION BASED ON MULTI-ACCESS EDGE COMPUTING	1012
<i>Xianwei Wang ; Yi Zhou ; Xiaoyong Ma ; Ning Lu ; Nan Cheng ; Kuan Zhang</i>	
DATA COMPRESSION OPTIMIZATION STRATEGY BASED ON PIECEWISE FITTING AND MATRIX COMPLETION FOR WSNS	1018
<i>Shuang Zhai ; Zhihong Qian ; Xin Wang ; Xue Wang</i>	
Author Index	