## Contents

### Data Mining in Heterogeneous Networks

An Emergency Event Driven Routing Algorithm for Bi-directional Highway in Vehicular Ad Hoc Networks ........................................ 3  
*Yajie Yang, Demin Li, Guanglin Zhang, Chang Guo, and Saifei Jin*

### Decentralized Learning for Wireless Communication Systems

A Novel Constellation Shaping Method to Reduce PAPR for Rate Compatible Modulation ......................................................... 15  
*Min Wang, Qin Zou, and Xiaoqiang Tu*

Application of Four-Channel Broadband Transmitter in Coal Mine ........ 25  
*Xiaobing Han, Qi Li, and Chenglin Fu*

### Intelligent Cooperative/Distributed Coding

A CRC-Aided LDPC Erasure Decoding Algorithm for SEUs Correcting in Small Satellites ............................................................ 35  
*Hao Zheng, Zinan Song, Shuyi Zhang, Shuo Chai, and Liwei Shao*

An MELP Vocoder Based on UVS and MVF ...................................... 44  
*Tangle Lu and Xiaoqun Zhao*

Optimization of Voiced Excitation Model by MVF Algorithm .............. 53  
*Bing Xue and Xiaoqun Zhao*

### Intelligent Cooperative Networks

Capacity of Content-Centric Hybrid Wireless Networks ...................... 65  
*Jian Liu, Guanglin Zhang, Demin Li, and Jiajie Ren*

D2D-Based Cooperative Uplink Transmission for Vehicular Users ........ 76  
*Yun Pan, Chao Wang, Fuqiang Liu, and Ping Wang*

Research on Data Transmission Protocol Performance of DTN Relay Channel Based on CFDP ....................................................... 86  
*Dezhi Li, Yaoqing Ni, Qun Wu, Zhenyong Wang, and Deyang Kong*

Multiple Relay Selection Scheme for Underwater Acoustic Cooperative Communication Based on Steady-State Mean-Square-Error Threshold ...... 97  
*Zhiyong Liu, Yinghua Wang, and Baoqi Ding*
Intelligent Massive MIMO

A Serial Time-Division-Multiplexing Chip-Level Space-Time Coded Multi-user MIMO System Based on Three Dimensional Complementary Codes .................................................. 107
  Siyue Sun, Guang Liang, and Kun Wang

A Spectrum Access Scheme for MIMO Cognitive Networks with Beamforming Design ........................................... 117
  Yanbing Wang, Weidang Lu, Hong Peng, Zhijiang Xu, and Xin Liu

Intelligent Positioning and Navigation Systems

Density-Based Dynamic Revision Path Planning in Urban Area via VANET .............................................................. 129
  Siwei Wu, Demin Li, Guanglin Zhang, Chang Guo, and Leilei Qi

An Intelligent Mobile Crowdsourcing Information Notification System for Developing Countries .................................. 139
  Arun Singh, YueXin (Sophia) Li, Yu Sun, and Qingquan Sun

  Tao Tang, Haicheng Liu, Haiyan Song, and Bao Peng

Reducing Calibration Effort for Indoor WLAN Localization Using Hybrid Fingerprint Database ................................ 159
  Mu Zhou, Yunxia Tang, Zengshan Tian, and Feng Qiu

Accuracy Enhancement with Integrated Database Construction for Indoor WLAN Localization ................................ 169
  Qiao Zhang, Mu Zhou, and Zengshan Tian

Intelligent Spectrum (or Resource Block) Allocation Schemes

Sensing-Throughput Tradeoff in Spectrum Handoff-Based Cognitive Radio .......................................................... 181
  Xin Liu, Weidang Lu, and Feng Li

Self-similar Traffic Prediction Scheme Based on Wavelet Transform for Satellite Internet Services .......................... 189
  Yu Han, Dezhi Li, Qing Guo, Zhenyong Wang, and Deyang Kong

Machine Learning Algorithm and Cognitive Radio Networks

Space-Based Information Integrated Network Technology and Performance Analysis Based on Cognitive Radio .......... 201
  Shuai Liu, Hu-mei Wang, Shi-tao Wang, and Ming-ming Bian
Koch Fractal-Based LED Lamp Appearance Design Method
Xin Cao, Xufen Xie, Weihao Xiao, Nianyu Zou, and Xiaoyang He

Bandwidth and Power Allocation for Wireless Cognitive Network
with Eavesdropper.
Kecai Gu, Weidang Lu, Guomin Zhou, Hong Peng, Zhijiang Xu, and Xin Liu

A Machine Learning Based Forwarding Algorithm over Cognitive Radios
in Wireless Mesh Networks
Jianjun Yang, Ju Shen, Ping Guo, Bryson Payne, and Tongquan Wei

Machine Learning and Information Processing in Wireless Sensor Networks

Energy-Balanced Routing Algorithm in Wireless Sensor Networks
Using Cauchy Operator
Feng Li, Li Wang, Jiangxin Zhang, and Xin Liu

Coverage Improvement Strategy Based on Voronoi for Directional
Sensor Networks
Shan You, Guanglin Zhang, and Demin Li

Shupeng Wang, Chenglin Fu, and Qi Li

Machine Learning for Multimedia

Research of Speech Amplitude Distribution Based
on Hadamard Transformation
Jingxue Tu, Jingyun Xu, and Xiaoqun Zhao

A Pitch Estimation Method Robust to High Levels of Noise
Xu Jingyun, Zhao Xiaoqun, and Cai Zhiduan

Main Track

An Redundant Networking Channel to Support Reliable Communications
in the Internet of Things Applications
Michael Ortiz, Yu Sun, Gilbert S. Young, and Qingquan Sun

Research on Decentralized Group Replication Strategy Based on Correlated
Patterns Mining in Data Grids
Danyang Qin, Ruixue Liu, Jiaqi Zhen, Songxiang Yang, and Erfu Wang

Calibration Method of Gain-Phase Errors in Super-resolution Direction
Finding for Wideband Signals
Jiaqi Zhen, Danyang Qin, Jie Yang, and Yanchao Li
Invited Paper

A Research on Underwater Acoustic Channel Modeling and Simulation of Shallow Sea .................................................. 317
Bo Li, Hong-juan Yang, Gong-liang Liu, and Xi-yuan Peng

Indoor WLAN Deployment Optimization Based on Error Bound of Neighbor Matching ................................................... 328
Feng Qiu, Mu Zhou, Zengshan Tian, Yunxia Tang, and Qiao Zhang

An ASIC Fast Decoder of Rate Compatible Modulation and Its Application in Wireless Communication System .......................... 336
Wei Yu, Jun Wu, Hao Cui, Zhifeng Zhang, and Haoqi Ren

Research on Cooperative Spectrum Sensing Algorithm ................................. 346
Yu Gao, Xin-Lin Huang, Si-Yue Sun, Xiaowei Tang, and Yuan Xu

Intelligent Recognition of Traffic Video Based on Mixture LDA Model ................................. 356
Xiaowei Tang, Xin-Lin Huang, Si-Yue Sun, Hang Dong, Xin Zhang, Yu Gao, and Nan Liu

SLNR-Oriented Power Control in Cognitive Radio Networks with Channel Uncertainty ................................. 364
Le Wang, Guoru Ding, Guochun Ren, Jin Chen, Zhen Xue, Haichao Wang, and Yumeng Wang

Research on LMMSE Channel Estimation Algorithm Using SLSM in WPM System .................................................. 374
Weizhi Zhong, Sheng Su, Xin Liu, and Jianjiang Zhou

Virtual Memory Based Radar Display and Control System ................................. 383
Zengshan Tian, Mingxiao Wang, Mu Zhou, and Feng Qiu

Robust Spectral-Temporal Two-Dimensional Spectrum Prediction ......................... 393
Guoru Ding, Siyu Zhai, Xiaoming Chen, Yuming Zhang, and Chao Liu

Spectrum Sensing and Spectrum Allocation Algorithms in Wireless Monitoring Video Transmission ..................................... 402
Xin-Lin Huang, Yu-Bo Zhai, Si-Yue Sun, Qing-Quan Sun, and Shu-Qi Hu

Author Index ............................................. 413