

Listings 2020 of *China Communications*

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Listed are the information of Feature Topics and papers published in 2020

[Feature Topic: Enabling Technologies for Agile Maritime Communication networks](#)

Guest Editor: Wei Feng, Bin Lin, Yunfei Chen, Cheng-Xiang Wang,

Shengming Jiang, Yuguang Fang

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Guest Editor: Xiaofeng Liao, Shutang Liu, Chengqing Li, Yulong Zou

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2020, Vol.17, No. 11

[Feature Topic: Energy Self-Sustainability in 6G](#)

Guest Editor: Kun Yang , Shi Jin, Nandana Rajatheva, Jie Hu, Jun Zhang

2020, Vol.17, No. 12

Papers in 2020

January

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Joint Radar and Communication: A Survey

Keywords: joint radar and communication; system integration; survey; collaboration; 5G/B5G

Cite as: Zhiyong Feng, Zixi Fang, Zhiqing Wei, Xu Chen, Zhi Quan, Danna Ji "Joint Radar and Communication: A Survey"[J]China Communications,vol.17,no.1,pp.1-27,2020

Incentive Scheme for Slice Cooperation Based on D2D Communication in 5G Networks

Keywords: slice cooperation; incentive cooperation; resource allocation for slice; slice scheduling; wireless communication networks

Cite as: Qian Sun, Lin Tian, Yiqing Zhou, Jinglin Shi and Zongshuai Zhang "Incentive Scheme for Slice Cooperation Based on D2D Communication in 5G Networks" [J] China Communications, vol.17, no.1, pp.28-41, 2020

Adaptive Delay Optimization of Multicast-Enabled Coded Caching in Device-to-Device Networks

Keywords: coded caching; delay optimization; multicast; device-to-device

Cite as: Liang Zhong, Xueqian Zheng, Jie Lin, Yang Cao, Shenggen Ju "Adaptive Delay Optimization of Multicast-Enabled Coded Caching in Device-to-Device Networks" [J] China Communications, vol.17, no.1, pp.42-48, 2020

Hybrid Channel Access Mechanism Based on Coexistence Scenario of NR-Unlicensed

Keywords: NR-U; channel access mechanism; LBT; power reduction

Cite as: Zhening Zhang, Jingyi Chen, Mingyang Dong, Yuehong Gao, Jingjing Wang "Hybrid Channel Access Mechanism Based on Coexistence Scenario of NR-Unlicensed" [J] China Communications, vol.17, no.1, pp.49-62, 2020

TOA-based NLOS error mitigation algorithm for 3D indoor Localization

Keywords: NLOS; LLS; 2D; 3D

Cite as: Weigang Wang, Yunwei Zhang, Longbin Tian "TOA-based NLOS error mitigation algorithm for 3D indoor localization" [J] China Communications, vol.17, no.1, pp.63-72, 2020

A novel secure data transmission scheme in industrial Internet of Things

Keywords: industrial Internet of Things; data transmission; secure communication; fractional-order chaotic systems

Cite as: Hongwen Hui, Chengcheng Zhou, Shenggang Xu, Fuhong Lin "A novel secure data transmission scheme in industrial Internet of Things" [J] China Communications, vol.17, no.1, pp.73-88, 2020

Efficient Deployment of Multiple UAVs for IoT Communication in Dynamic Environment

Keywords: IoT; UAV communication; sto-chastic game; Nash equilibrium; distributed learning

Cite as: Haibo Dai, Haiyang Zhang, Chunguo Li, Baoyun Wang "Efficient Deployment of Multiple UAVs for IoT Communication in Dynamic Environment"[J]China

Communications,vol.17,no.1,pp.89-103,2020

Aggregator Based RPL for an IoT-Fog based Power Distribution System with 6LoWPAN

Keywords: IoT; 6LoWPAN; RPL; routing; distribution automation; smart grid; fog computing

Cite as: Rijo Jackson Tom, Suresh Sankaranarayanan, Victor Hugo C. de Albuquerque, Joel J. P. C. Rodrigues "Aggregator Based RPL for an IoT-Fog based Power Distribution System with

6LoWPAN"[J]China Communications,vol.17,no.1,pp.104-117,2020

Fragmental Weight-Conservation Combining Scheme for Statistical Signal Transmissions under Fast Time-Varying Channels

Keywords: Cyclostationary features; statistical signal transmission (SST); weight conservation; time-varying channels

Cite as: Xingwei Wang, Ting Zhou, Tianheng Xu, Songlin Feng, Honglin Hu, Yanliang

Jin"Fragmental Weight-Conservation Combining Scheme for Statistical Signal Transmissions under Fast Time-Varying Channels"[J]China Communications,vol.17,no.1,pp.118-128,2020

Carrier Frequency Offset Estimation for an FM and Symbiotic FM Radio Data System Hybrid Signal

Keywords: FM; OFDM; Symbiotic radio data system; Carrier offset estimation.

Cite as: Fei Wang, Xi Chen, Aidong Men, Lei Zhang, Sheng Wu"Carrier Frequency Offset Estimation for an FM and Symbiotic FM Radio Data System Hybrid Signal"[J]China

Communications,vol.17,no.1,pp.129-139,2020

Radiation Tolerant Viterbi Decoders for On-Board Processing (OBP) in Satellite Communications

Keywords: viterbi decoder; on-board processing; FPGA; user memory; fault tolerance; single event upsets

Cite as: Zhen Gao, Lina Yan, Jinhua Zhu, Ruishi Han, Anees Ullah, Pedro Reviriego "Radiation Tolerant Viterbi Decoders for On-Board Processing (OBP) in Satellite Communications"[J]China

Communications,vol.17,no.1,pp.140-150,2020

Performance Evaluation for Medium Voltage MIMO-OFDM Power Line Communication System

Keywords: power line communication (PLC); MIMO-OFDM; multi-conductor; medium voltage underground cables; turbo code

Cite as: Yingxue Li, Min Zhang, Wenguang Zhu, Mengyuan Cheng, Cheng Zhou, Yongpeng Wu"Performance Evaluation for Medium Voltage MIMO-OFDM Power Line Communication System"[J]China Communications,vol.17,no.1,pp.151-162,2020

Square Geometrical Shaping 128QAM based Time Domain Hybrid Modulation in Visible Light Communication System

Keywords: SGS128QAM; MPN; TDHM; non linear distortion; achievable information Rate

Cite as: Peng Zou, Yiheng Zhao, Fangchen Hu, Nan Chi"Square Geometrical Shaping 128QAM based Time Domain Hybrid Modulation in Visible Light Communication System"[J]China Communications,vol.17,no.1,pp.163-173,2020

Finding an Effective Distance between T-cell and B-cell using S/W ARQ in an Immune System Communication

Keywords: T-cell;B-cell; MC; antigens; an tibodies; diffusion coefficient (D); round trip time (RTT)

Cite as: Sanjit Ningthoujam, Tekcham Chingkheinganba, Swarnendu K Chakraborty"Finding an Effective Distance between T-cell and B-cell using S/W ARQ in an Immune System Communication "[J]China Communications,vol.17,no.1,pp.174-185,2020

February

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A Broad Learning-Driven Network Traffic Analysis System Based on Fog Computing Paradigm

Keywords: traffic analysis; fog computing; broad learning; radio access networks

Cite as: Xiting Peng, Kaoru Ota, Mianxiong Dong"A Broad Learning-Driven Network Traffic Analysis System Based on Fog Computing Paradigm"[J]China Communications,vol.17,no.2,pp.1-13,2020

Generative Neural Network based Spectrum Sharing using Linear Sum Assignment Problems

Keywords: autoencoder; linear sum assignment problems; generative models; resource allocation

Cite as: Ahmed B.Zaky y, Joshua Zhexue Huang , Kaishun Wuzx, Basem M. ElHalawany"Generative Neural Network based Spectrum Sharing using Linear Sum Assignment Problems"[J]China Communications,vol.17,no.2,pp.14-29,2020

Finite-State Markov Wireless Channel Modeling for Railway Tunnel Environments

Keywords: railway tunnel; FSMC; channel model; SNR; path loss

Cite as: Cuiran Li, Ling Liu, Jianli Xie. "Finite-State Markov Wireless Channel Modeling for Railway Tunnel Environments. "[J]China Communications,vol.17,no.2,pp.30-39,2020

Heterogeneous Network Selection Optimization Algorithm Based on a Markov Decision Model

Keywords: heterogeneous wireless networks; Markov decision process; reward function; genetic algorithm; simulated annealing

Cite as: Jianli Xie, Wenjuan Gao, Cuiran Li"Heterogeneous network selection optimization algorithm based on a Markov decision model"[J]China Communications,vol.17,no.2,pp.40-53,2020

Inter-data Commonality Detection for Spectrum Monitoring in Wireless Sensor Networks

Keywords: spectrum monitoring; wireless sensor network;inter-data commonality detection; measurement; CDM algorithm

Cite as: Zhijuan Hu, Danyang Wang, Chenxi Li, Tingting Wang"Inter-data Commonality Detection for Spectrum Monitoring in Wireless Sensor Networks"[J]China Communications,vol.17,no.2,pp.54-65,2020

Cross-Band Spectrum Prediction Based on Deep Transfer Learning

Keywords: cross-band spectrum prediction; deep transfer learning; long short-term memory; dynamic time warping; transfer component analysis

Cite as: Fandi Lin, Jin Chen, Jiachen Sun, Guoru Ding and Ling Yu"Cross-Band Spectrum Prediction Based on Deep Transfer Learning"[J]China Communications,vol.17,no.2,pp.66-80,2020

Collaborative Spectrum Sensing for Illegal Drone Detection: A Deep Learning-based Image Classification Perspective

Keywords: illegal drones detection; deep learning; collaborative spectrum sensing

Cite as: Huichao Chen, Zheng Wang, Linyuan Zhang "Collaborative Spectrum Sensing for Illegal Drone Detection: A Deep Learning-based Image Classification Perspective" [J]China Communications,vol.17,no.2,pp.81-92,2020

Deep Learning Based Physical Layer Security of D2D Underlay Cellular Network

Keywords: D2D underlay cellular network; physical layer security; deep learning; transmit antenna selection

Cite as: Lixin Li, Youbing Hu, Huisheng Zhang, Wei Liang, Ang Gao "Deep Learning Based Physical Layer Security of D2D Underlay Cellular Network" [J]China Communications,vol.17,no.2,pp.93-106,2020

Passive Localization of Signal Source Based on UAVs in Complex Environment

Keywords: passive localization; time difference of arrival; wireless sensor network; unmanned aerial vehicle; semidefinite programming

Cite as: Pengwu Wan, Qiongdan Huang, Guangyue Lu, Jin Wang, Qianli Yan, Yufei Chen "Passive Localization of Signal Source Based on UAVs in Complex Environment" [J]China Communications,vol.17,no.2,pp.107-116,2020

Face Image Recognition Based on Convolutional Neural Network

Keywords: convolutional neural network; face image recognition; machine learning; artificial intelligence; multilayer information fusion

Cite as: Guangxin Lou , Hongzhen Shi "Face Image Recognition Based on Convolutional Neural Network" [J]China Communications,vol.17,no.2,pp.117-124,2020

Cooperative Privacy Provisioning for Energy Harvesting Based Cognitive Multi-Relay Networks

Keywords: cognitive radio networks; energy harvesting; relay; security

Cite as: Dawei Wang, Wei Liang, Xiaoyu Hu, Daosen Zhai, and Di Zhang "Cooperative Privacy Provisioning for Energy Harvesting Based Cognitive Multi-Relay Networks" [J]China Communications,vol.17,no.2,pp.125-137,2020

Spectrum Sensing Based on Deep Learning Classification for Cognitive Radios

Keywords: spectrum sensing; deep learning; convolutional neural network; cognitive radio; spectrum management

Cite as: Shilian Zheng, Shichuan Chen, Peihan Qi, Huaji Zhou, Xiaoni Yang "Spectrum Sensing Based on Deep Learning Classification for Cognitive Radios" [J]China Communications,vol.17,no.2,pp.138-148,2020

EARS: Intelligence-driven Experiential Network Architecture for Automatic Routing in Software-Defined Networking

Keywords: software-defined networking (SDN); intelligence-driven experiential network; deep reinforcement learning(DRL); automatic routing

Cite as: Yuxiang Hu, Ziyong Li, Julong Lan, Jiangxing Wu "EARS: Intelligence-driven Experiential Network Architecture for Automatic Routing in Software-Defined Networking" [J]China Communications,vol.17,no.2,pp.149-162,2020

Optimal Power Allocation with Limited Feedback of Channel State Information in Multi-User MIMO Systems

Keywords: energy efficiency; unequal power allocation; limited feedback; MU-MIMO;QoS guarantee and precoding

Cite as: Kusi Ankrah Bonsu, Weiwei Zhou, Su Pan, Yan Yan "Optimal Power Allocation with Limited Feedback of Channel State Information in Multi-User MIMO Systems" [J]China Communications,vol.17,no.2,pp.163-175,2020

A Personalized Search Model Using Online Social Network Data Based on Holonic Multiagent System

Keywords: personalized search; online social network; holonic multiagent system

Cite as: Meijia Wang, Qingshan Li, Yishuai Lin "A Personalized Search Model Using Online Social Network Data Based on Holonic Multiagent System" [J]China Communications,vol.17,no.2,pp.176-205,2020

Quantitative Survivability Analysis Using Probability Model Checking: A Study of Cluster-based Vehicle Networks with Dual Cluster Heads

Keywords: cluster head; 5G; software recovery; survivability; vehicle networks

Cite as: Li Jin, Guoan Zhang, Jue Wang, Hao Zhu, Wei Duan "Quantitative Survivability Analysis Using Probability Model Checking: A Study of Cluster-based Vehicle Networks with Dual Cluster Heads" [J]China Communications,vol.17,no.2,pp.206-219,2020

Improved Clustering and Resource Allocation for Ultra-Dense Networks

Keywords: ultra-dense networks; clustering; resource allocation; system throughput; interference cancellation

Cite as: Xinji Tian, Wenjie Jia "Improved Clustering and Resource Allocation for Ultra-Dense Networks" [J]China Communications,vol.17,no.2,pp.220-231,2020

Cache Hit Ratio Maximization in Device-to-Device Communications Overlaying Cellular Networks

Keywords: Cache hit ratio; content placement; device-to-device; multicast

Cite as: Liang Zhong, Xueqian Zheng, Yong Liu, Mengting Wang, Yang Cao "Cache Hit Ratio Maximization in Device-to-Device Communications Overlaying Cellular Networks" [J]China Communications,vol.17,no.2,pp.232-238,2020

March

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Marine Mobile Wireless Channel Modeling Based on Improved Spatial Partitioning Ray Tracing

Keywords: marine wireless channel; ray tracing; channel modeling; path loss

Cite as: Zhibin Gao, Bang Liu, Zhipeng Cheng, Canbin Chen, Lianfen Huang "Marine Mobile Wireless Channel Modeling Based on Improved Spatial Partitioning Ray Tracing" [J]China Communications,vol.17,no.3,pp.1-11,2020

Sampled-data Consensus Control of MUSV Systems with Channel Fading and Transmission Delay

Keywords: consensus; sampled-data; unmanned surface vehicle; fading channel; time delay

Cite as: Liyuan Wang, Wei Yue, Rubo Zhang "Sampled-data consensus control of MUSV systems with channel fading and transmission delay" [J]China Communications,vol.17,no.3,pp.12-25,2020

Spatial-modulated Physical-layer Network Coding Based on Block Markov Superposition Transmission for Maritime Relay Communications

Keywords: block Markov superposition transmission; maritime relay communications; physical-layer network coding; Rician fading; spatial modulation

Cite as: Yao Shi, Liming Zheng, Wenchao Lin, Xiao Ma "Spatial-modulated Physical-layer Network Coding Based on Block Markov Superposition Transmission for Maritime Relay Communications" [J] China Communications, vol.17, no.3, pp.26-35, 2020

Modulation Recognition in Maritime Multipath Channels: A Blind Equalization-Aided Deep Learning Approach

Keywords: modulation recognition; deep learning; blind equalization

Cite as: Xuefei Ji, Jue Wang, Ye Li, Qiang Sun, Chen Xu "Modulation Recognition in Maritime Multipath Channels: A Blind Equalization-Aided Deep Learning Approach" [J] China Communications, vol.17, no.3, pp.36-45, 2020

Improved Denoising Autoencoder for Maritime Image Denoising and Semantic Segmentation of USV

Keywords: denoising; autoencoder; semantic segmentation; U-Net

Cite as: Yuhang Qiu, Yongcheng Yang, Zhijian Lin, Pingping Chen, Yang Luo, Wenqi Huang "Improved Denoising Autoencoder for Maritime Image Denoising and Semantic Segmentation of USV" [J] China Communications, vol.17, no.3, pp.46-57, 2020

Artificial Intelligence-Empowered Resource Management for Future Wireless Communications: A Survey

Keywords: 5G; beyond 5G (B5G); 6G; artificial intelligence (AI); machine learning (ML); network slicing; resource management

Cite as: Mengting Lin, Youping Zhao "Artificial Intelligence-Empowered Resource Management for Future Wireless Communications: A Survey" [J] China Communications, vol.17, no.3, pp.58-77, 2020

Design and Implementation of Dynamic High-Speed Switches in Super Base Station Architectures

Keywords: centralized base station architectures; dynamic high-speed switch; scheduling algorithm; BBU; RRH; super base station

Cite as: Yingjiao Ma, Jinglin Shi, Yiqing Zhou, Lin Tian, Manli Qian "Design and Implementation of Dynamic High-Speed Switches in Super Base Station Architectures" [J] China Communications, vol.17, no.3, pp.78-89, 2020

AoA-based Channel Estimation for Massive MIMO OFDM Communication Systems on High Speed Rails

Keywords: massive MIMO; high speed rail; channel estimation; AoA; OFDM

Cite as: Yanrong Zhao, Wenjing Zhao, Gongpu Wang, Bo Ai, Hervin Hidayat Putra and Bagus Juliyanto "AoA-based Channel Estimation for Massive MIMO OFDM Communication Systems on High Speed Rails" [J] China Communications, vol.17, no.3, pp.90-100, 2020

Blind Channel Identification for Cyclic-Prefixed MIMO-OFDM Systems with Virtual Carriers

Keywords: OFDM; MIMO; virtual carrier; channel identification; Cholesky factorization

Cite as: Jung-Lang Yu, Biling Zhang, Yipu Yuan, Wei-Ting Hsu "Blind Channel Identification for Cyclic-Prefixed MIMO-OFDM Systems with Virtual Carriers" [J] China Communications, vol.17, no.3, pp.101-116, 2020

Multiple Emitters Localization by UAV with Nested Linear Array: System Scheme and 2D-DOA Estimation Algorithm

Keywords: computational complexity; DOA estimation; discrete Fourier transform; degrees of freedom; nested array; sparse representation; unmanned aerial vehicle

Cite as: Xinping Lin, Xiaofei Zhang, Lang He, Wang Zheng "Multiple Emitters Localization by UAV with Nested Linear Array: System Scheme and 2D-DOA Estimation Algorithm" [J] China Communications, vol.17, no.3, pp.117-130, 2020

The Research on 220GHz Multicarrier High-Speed Communication System

Keywords: circuits and systems; communication systems; submillimeter wave communication; solid state circuits

Cite as: Zhongqian Niu, Bo Zhang, Jiale Wang, Ke Liu, Zhi Chen, Ke Yang, Zhen Zhou, Yong Fan, Yaohui Zhang, Dongfeng Ji, Yinian Feng, Yang Liu "The Research on 220GHz Multicarrier High-Speed Communication System" [J] China Communications, vol.17, no.3, pp.131-139, 2020

Monitoring and Early Warning of New Cyber-Telecom Crime Platform Based on BERT Migration Learning

Keywords: new cyber-telecom crime; BERT model; deep learning; monitoring and warning; text analysis

Cite as: Shengli Zhou, Xin Wang, Zerui Yang "Monitoring and Early Warning of New

Cyber-Telecom Crime Platform Based on BERT Migration Learning" [J]China Communications,vol.17,no.3,pp.140-148,2020

Cross-Layer QoS Enabled SDN-Like Publish/Subscribe Communication Infrastructure for IoT

Keywords: IoT; publish/subscribe; software defined networking; quality of service; middleware

Cite as: Yulong Shi, Yang Zhang, Junliang Chen "Cross-Layer QoS Enabled SDN-Like Publish/Subscribe Communication Infrastructure for IoT" [J]China Communications,vol.17,no.3,pp.149-167,2020

Tracking Your Browser with High-performance Browser Fingerprint Recognition Model

Keywords: browser fingerprint; AHP; finger print tracking algorithm

Cite as: Wei Jiang, Xiao-xi Wang, Xin-fang Song, Qixu Liu, Xiaofeng Liu "Tracking Your Browser with High-performance Browser Fingerprint Recognition Model" [J]China Communications,vol.17,no.3,pp.168-175,2020

Two-layer Coupled Network Model for Topic Derivation in Public Opinion Propagation

Keywords: complex network; public opinion propagation; SEIR model

Cite as: Yuexia Zhang, Yixuan Feng "Two-layer coupled network model for topic derivation in public opinion propagation" [J]China Communications,vol.17,no.3,pp.176-187,2020

A Hierarchical Game Model for Computation Sharing in Smart Buildings

Keywords: computation sharing; Stackelberg game; Cournot game; incomplete information

Cite as: Qianqian Wang, Qin Wang, Shi Jin, Hongbo Zhu, Xianbin Wang "A Hierarchical Game Model for Computation Sharing in Smart Buildings" [J]China Communications,vol.17,no.3,pp.188-204,2020

Forecasting Method of Stock Market Volatility in Time Series Data Based on Mixed Model of ARIMA and XGBoost

Keywords: hybrid model; discrete wavelet transform; ARIMA; XGBoost, grid search; stock price forecast

Cite as: Yan Wang, Yuankai Guo "Forecasting Method of Stock Market Volatility in Time Series Data Based on Mixed Model of ARIMA and XGBoost" [J]China Communications,vol.17,no.3,pp.205-221,2020

April

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A Decoding Method Based on RNN for OvTDM

Keywords: overlapped X-domain multiplexing (OvXDM); maximum likelihood sequence detection (MLSD); recurrent neural network(RNN); fast decoding algorithm

Cite as: Yue Hu, Yafeng Wang and Haocheng Wang"A decoding method based on RNN for OvTDM"[J]China Communications,vol.17,no.4,pp.1-10, 2020

Naive Echo-State-Network Based Services Awareness Algorithm of Software Defined Optical Networks

Keywords: software defined optical networks; naive echo-state-network; services awareness; openflow protocol

Cite as: Huifeng.Bai, Wenbin.Chen, Licheng.Wang, Chao.Huo"Naive Echo-State-Network Based Services Awareness Algorithm of Software Defined Optical Networks"[J]China Communications,vol.17,no.4,pp.11-18,2020

Performance of Free Space Optical Communication System based on M-ary PPM Modulation over Double Generalized Gamma Channel

Keywords: FSO; DGG atmospheric turbu lence; PPM modulation; SEP; pointing error.

Cite as: Mohamed Maalej , Hichem Besbes"Performance of Free Space Optical Communication System based on M-ary PPM Modulation over Double Generalized Gamma Channel"[J]China Communications,vol.17,no.4,pp.19-30,2020

Improved Algorithm for Solving Discrete Logarithm Problem by Expanding Factor

Keywords: discrete logarithm algorithm; pollard's kangaroo algorithm; jumping distance

Cite as: Bin Qi, Jie Ma, KeweiLv"Improved Algorithm for Solving Discrete Logarithm Problem by Expanding Factor"[J]China Communications,vol.17,no.4,pp.31-41,2020

Building a Cloud-based Energy Storage System through Digital Transformation of Distributed Backup Battery in Mobile Base Stations

Keywords: digital energy storage; dynamic reconfigurable battery network; energy digitization; software-defined battery system; cloud energy storage

Cite as: Song Ci; Yanglin Zhou; Yuan Xu; Xingjian Diao; Junwei Wang"Building a Cloud-based Energy Storage System through Digital Transformation of Distributed Backup Battery in Mobile Base Stations"[J]China Communications,vol.17,no.4,pp.42-50,2020

BER Performance of FSO Communication System with Differential Signaling over Correlated Atmospheric Turbulence Fading

Keywords: free space optical communication; BER performance; correlated atmospheric turbulence fading; differential signaling

Cite as: Xiaoyan Li, Xiaohui Zhao, Peng Zhang, Shoufeng Tong"BER Performance of FSO Communication System with Differential Signaling over Correlated Atmospheric Turbulence Fading"[J]China Communications,vol.17,no.4,pp.51-65,2020

Energy Efficiency and Latency Analysis of Fog Networks

Keywords: fog communications; cloud networks; models; modelling; power; energy efficiency; delay

Cite as: Raad S. Alhumaima"Energy Efficiency and Latency Analysis of Fog Networks"[J]China Communications,vol.17,no.4,pp.66-77,2020

Edgence: A Blockchain-enabled Edge-computing Platform for Intelligent IoT-based dApps

Keywords: mobile edge computing; IoT; crowd-intelligence; blockchain; dApp

Cite as: Jinliang Xu, Shangguang Wang, Ao Zhou, Fangchun Yang"Edgence: A Blockchain-enabled Edge-computing Platform for Intelligent IoT-based dApps"[J]China Communications,vol.17,no.4,pp.78-87,2020

Digital Watermarking Secure Scheme for Remote Sensing Image Protection

Keywords: data security; watermark; remote sensing image protection

Cite as: Guanghui YUAN, Qi HAO"Digital Watermarking Secure Scheme for Remote Sensing Image Protection"[J]China Communications,vol.17,no.4,pp.88-98,2020

A Novel Method for Detecting Disk Filtration Attacks via the Various Machine Learning Algorithms

Keywords: air-gapped computers; disk filtration; machine learning; intrusion detection

Cite as: Weijun ZHU, Mingliang XU"A novel Method for Detecting Disk Filtration Attacks via the various Machine Learning Algorithms"[J]China Communications,vol.17,no.4,pp.99-108,2020

Term-Based Pooling in Convolutional Neural Networks for Text Classification

Keywords: convolutional neural Networks; term-based; pooling; text Classification

Cite as: Shuifei Zeng, Yan Ma, Xiaoyan Zhang, Xiaofeng Du"Term-Based Pooling in Convolutional Neural Networks for Text Classification"[J]China Communications,vol.17,no.4,pp.109-124,2020

Network Protocol Recognition based on Convolutional Neural Network

Keywords: convolutional neural network; protocol recognition; network flow; classification model

Cite as: Wenbo Feng, Zheng Hong, Lifa Wu, Yihao Li, Peihong Lin, Menglin Fu"Network Protocol Recognition based on Convolutional Neural Network"[J]China Communications,vol.17,no.4,pp.125-139,2020

Enhancing Clustering Stability in VANET: a Spectral Clustering Based Approach

Keywords: VANET; spectral clustering; force-directed algorithm; whole cluster stability

Cite as: Gang Liu, Nan Qi ,JiaXin Chen , Chao Dong ,and ZanQi Huang"Enhancing Clustering Stability in VANET: a Spectral Clustering Based Approach"[J]China Communications,vol.17,no.4,pp.140-151,2020

Machine-Learning-Assisted Optimization and Its Application to Antenna Designs: Opportunities and Challenges

Keywords: Antenna designs; machine learning; optimization; sensitivity analysis ; surrogate models

Cite as: Qi WU, Yi CAO, Haieming WANG, Wei HONG"Machine-Learning-Assisted Optimization and Its Application to Antenna Designs: Opportunities and Challenges"[J]China Communications,vol.17,no.4,pp.152-164,2020

Adaptive Cascaded High-resolution Source Localization Based on Collaboration of Multi-UAVs

Keywords: source localization; multi-UAVs; adaptive cascaded high-resolution; direction of arrival (DOA); time difference of arrival (TDOA); self-delay-compensation (SDC)

Cite as: Yi He, Jianfeng Li, Xiaofei Zhang"Adaptive Cascaded High-resolution Source Localization Based on Collaboration of Multi-UAVs"[J]China Communications,vol.17,no.4,pp.165-179,2020

May

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Health Monitoring of Long-haul Fiber Communication System using Chaotic OTDR

Keywords: fiber communication system; chaotic signal; optical time domain reflectometry

Cite as: MengMeng Chen, MingJiang Zhang, Shaoxiang Chen, Jianguo

Zhang, Senlin Yan, Yuncui Wang"Health monitoring of long-haul fiber communication system using chaotic OTDR"[J]China Communications,vol.17,no.5,pp.1-11,2020

A Color Image Encryption Algorithm Based on 2D-CIMM Chaotic Map

Keywords: image encryption; 2D-CIMM chaotic map; bit-level; higher security

Cite as: Cengfei Chen, Kehui Sun, Qiaoyun Xu"A Color Image Encryption Algorithm Based on 2D-CIMM Chaotic Map"[J]China Communications,vol.17,no.5,pp.12-20,2020

An Image Encryption Algorithm Based on BP Neural Network and Hyperchaotic System

Keywords: BP neural network; fractional-order hyperchaotic system; image encryption algorithm; secure communication

Cite as: Feifei Yang, Jun Mou, Yinghong Cao, Ran Chu"An image encryption algorithm based on BP neural network and hyperchaotic system"[J]China Communications,vol.17,no.5,pp.21-28,2020

Designing a Secure Round Function Based on Chaos

Keywords: image encryption; round function; chaos; pseudo-random function

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Design and Implementation of Initial Cell Search in 5G NR Systems

Keywords: 5G NR systems; physical layer; cell search; PSS timing synchronization algorithm; Conjugate symmetry

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Keywords: channel estimation; 1-bit ADC MIMO; sparsity recovery; compressive sensing; Internet of things

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Keywords: polar codes; belief propagation; SCAN algorithm; RLSC algorithm; iteration

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Keywords: non-binary LDPC; bit-reliability; GPU; SIMT; SIMD

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Keywords: QC-LDPC codes; permutation arrays; girth; explicit constructions

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Keywords: cognitive networks; two-way relay; sum rate; energy harvesting; beamforming

Cite as: Meijuan Zhang, Shibing Zhang, Zhihua Bao, Wei Wang, Xiaoge Zhang, Yonghong Chen "Joint Beamforming and Time Switching Designs for Energy-Constrained Cognitive Two-Way Relay Networks" [J]China Communications, vol.17, no.5, pp.110-118, 2020

CLEAN: Frequent Pattern-based Trajectory Compression and Computation on Road Networks

Keywords: trajectory compression; pattern mining; spatial-temporal compressions; range query; clustering

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Keywords: dynamic identifier-mapping; network scanning; worm propagation; smart identifier network

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Keywords: fuzzy entropy; weighted KNN; network attack detection; fuzzy membership; natural nearest neighbor; network security; intrusion detection system

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Secured Cloud Data Migration Technique by Competent Probabilistic Public Key Encryption

Keywords: Luhn algorithm; encryption; efficient probabilistic public key encryption (EPPKE); covariance matrix adaptation evolution strategies (CMA-ES); trusted third party (TTP)

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Energy-Optimal and Delay-Bounded Computation Offloading in Mobile Edge Computing with Heterogeneous Clouds

Keywords: mobile edge computing; hetero geneous clouds; energy saving; delay bounds; dynamic programming

Cite as: Tianchu Zhao, Sheng Zhou, Linqi Song, Zhiyuan Jiang, Xueying Guo, Zhisheng Niu "Energy-Optimal and Delay-Bounded Computation Offloading in Mobile Edge Computing with Heterogeneous Clouds" [J]China Communications,vol.17,no.5,pp.191-210,2020

Deep Reinforcement Learning based Joint Edge Resource Management in Maritime Network

Keywords: maritime network; edge computing; computation offload; computation latency; reinforcement learning; deep learning

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Mobile Edge Communications, Computing, and Caching (MEC3) Technology in the Maritime Communication Network

Keywords: best response-based offloading algorithm (BROA); energy consumption; mobile edge computing (MEC); mobile edge communications, computing, and caching (MEC3); task offloading

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Keywords: cooperative spectrum sensing; double threshold; maritime communication Network

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Keywords: mobile data offloading; network selection; route selection; semi-Markov decision process; vehicular network

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Keywords: vehicular network; mobile edge computing; software-defined networking; resource allocation

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Keywords: demand awareness; detection of phases; CRFID; RNN; smart library

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A SDN Oriented Loop Detection Mechanism Based on TTL Statistics

Keywords: SDN; Loop Detection; TTL; sFlow

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Keywords: explicit congestion control; active queue management; delay variation; low latency; high throughput

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Keywords: smart home(SH); semantic behavior assistance (SBA); user behavior intention;behavior assisted method

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Keywords: data center network; low-latency; priority; switch scheduling; transmission control protocol

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Keywords: 6G; Artificial intelligence; Wireless big data; Cloud computing; Knowledge + data driven deep learning; layered computing; layered network

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Keywords: direction-of-arrival (DOA) estimation; two parallel linear arrays; PM algorithm

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Keywords: compact; diplexer; lowpass-band pass; low-loss; microstrip; selectivity

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Keywords: Two-way relay; interference alignment; large system analysis

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Keywords: NOMA, grant-free random access;maritime-communication; bipartite graphs;density evolution

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Keywords: Internet of Things; SKIN NY-Hash; differential cryptanalysis; collision

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Keywords: cloud storage; dynamic update; keywords search; policy hidden

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Keywords: cloud storage; datacenter net works; flow scheduling; grey relational analysis; QoS; SDN

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Keywords: SDN; all-optical network; fault repair; routing and wavelength assignment

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Overfitting Reduction of Pose Estimation for Deep Learning Visual Odometry

Keywords: visual odometry; neural network; pose estimation; bayesian distribution; overfitting

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Textual Content Prediction via Fuzzy Attention Neural Network Model without Predefined Knowledge

Keywords: judgment content understanding; pre-trained model; fuzzification; content representation vectors

Cite as: Canghong Jin, Guangjie Zhang, Minghui Wu, Shengli Zhou, Taotao Fu"Textual Content Prediction via Fuzzy Attention Neural Network Model without Predefined Knowledge"[J]China Communications,vol.17,no.6,pp.211-222,2020

A Method for Improving Power Distribution Characteristics of Space Time Block Codes

Keywords: full diversity; linear receiver; maximum likelihood; peak to average power ratio; power distribution; space time block codes

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Design and Analysis of Novel Ka Band NOMA Uplink Relay System for Lunar Farside Exploration

Keywords: lunar farside exploration; non-orthogonal multiple access; Ka band; multiple antennas; power allocation coefficients

Cite as: Jian Jiao, Yizhi He, Ye Wang, and Shaohua Wu."Design and Analysis of Novel Ka Band NOMA Uplink Relay System for Lunar Farside Exploration"[J]China Communications,vol.17,no.7,pp.1-14,2020

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Keywords: lunar space communication networks; streaming transmission model; coded forward scheme; multi-service priority; delay; energy

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Dual-hop Deep Space-Terrestrial FSO/RF Communication under Solar Scintillation: Performance Analysis and Challenges

Keywords: deep space communication; FSO/RF relaying system; amplify-and-forward; Gamma-Gamma distribution; shadowed-Rician fading

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Keywords: DSN; ICN; publish-subscribe; architecture; routing; multi-source

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Keywords: delay-tolerant networks; contact graph routing; schedule aware bundle routing

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Fault Tolerant Design of Large-Scale Digital Beam Forming in SRAM-FPGAs for Software Defined Satellite Platforms

Keywords: fault tolerance; large-scale digital beam forming; FPGA; single event upsets

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Study on the Two-Sides Matching between Multiple Rovers and Multiple Orbiters in Mars Relay Communications

Keywords: Mars relay communications; multiple access; resource allocation optimizations; fitness of preference; two-sides matching

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Keywords: composite transmission; optimal quality; rate allocation

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Non-coherent Multi-Symbol Detection of PR-CPM for Deep Space Relay Satellites with Physical-layer Network Coding

Keywords: physical-layer network coding (PNC); non-coherent multiple-symbol detector; partial response continuous phase modulation; deep-space communication; relay satellite

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Keywords: DTN; routing algorithm; queue scheduling; elastic loadbalancing

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An Overview of Terahertz Antennas

Keywords: THz antennas; photoconductive antennas; horn antennas; microstrip antennas; on-chip antennas; technical challenges

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Multi-Users File-Sharing System Based on LWE

Keywords: multi-user file-sharing; proxy re-encryption; LWE; secret security

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Keywords: overlapped time domain multi plexing (OvTDM); Viterbi algorithm (VA); bi-directional Viterbi algorithm (BVA); decoding performance

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Keywords: intention detection; deep learning; EEG

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Keywords: air quality prediction; machine learning; model ensemble

Cite as: Hong Zheng, Yunhui Cheng, Haibin Li "Investigation of Model Ensemble for Fine-grained Air Quality Prediction" [J] China Communications, vol.17, no.7, pp.207-223, 2020

The Analysis of Multiuser Relaying Mixed RF/FSO Networks over exponentiated Weibull Fading Channel

Keywords: Multiuser relaying; exponentiated Weibull fading channel; transmit opportunistic scheduling; aperture averaging; heterodyne detection

Cite as: Zhengguang Gao, Jiawei Zhang, Pengfei Zhu, Yuefeng Ji "The Analysis of Multiuser Relaying Mixed RF/FSO Networks over exponentiated Weibull Fading Channel" [J]China Communications,vol.17,no.7,pp.224-235,2020

Use of NOMA for Maritime Communication Networks with P-DF Relaying Channel

Keywords: maritime communication networks; non-orthogonal multiple access (NOMA); power allocation; cooperative relaying networks (CRN); partial decode-and-forward (P-DF); outage probability

Cite as: Yancheng Ji, Xiao Zhang, Guoan Zhang, Xiaojun Zhu, Qiang Sun, and Wei Duan "Use of NOMA for Maritime Communication Networks with P-DF Relaying Channel" [J]China Communications,vol.17,no.7,pp.236-246,2020

A WiFi Fingerprint Based High-adaptability Indoor Localization via Machine Learning

Keywords: indoor localization; WiFi finger print; machine learning; RSS

Cite as: JianzheXue, Junyu Liu, Min Sheng, Yan Shi, Jiandong Li "A WiFi Fingerprint Based High-adaptability Indoor Localization via Machine Learning" [J]China Communications,vol.17,no.7,pp.247-259,2020

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The Interplay Between Artificial Intelligence and Fog Radio Access Networks

Keywords: artificial intelligence (AI); fog radio access network (F-RAN); machine learning; network optimization

Cite as: Wenchao Xia, Xinruo Zhang, Gan Zheng, Jun Zhang, Shi Jin, Hongbo Zhu "The Interplay Between Artificial Intelligence and Fog Radio Access Networks" [J]China Communications,vol.17,no.8,pp.1-13,2020

Joint Resource Allocation and Admission Control in Sliced Fog Radio Access Networks

Keywords: NOMA; fog radio access networks; resource allocation; admission control

Cite as: Yuan Ai, Gang Qiu, Chenxi Liu, and Yaohua Sun "Joint Resource Allocation and Admission Control in Sliced Fog Radio Access Networks" [J]China Communications,vol.17,no.8,pp.14-30,2020

Reinforcement Learning-Based Joint Task Offloading and Migration Schemes Optimization in Mobility-aware MEC Network

Keywords: MEC; computation offloading; mobility-aware; migration scheme; Markov decision process; reinforcement learning

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Performance Analysis of Cooperative NOMA Based Intelligent Mobile Edge Computing System

Keywords: cooperative communication; mobile edge computing; non-orthogonal multiple access; offloading outage probability

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PVF-DA: Privacy-preserving, Verifiable and Fault-tolerant Data Aggregation in MEC

Keywords: MEC; data aggregation; verifiability; privacy-preserving; fault-tolerance

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Energy Efficiency Optimization for Heterogeneous Cellular Networks Modeled by Matérn Hard-core Point Process

Keywords: energy efficiency; heterogeneous cellular networks; coverage probability; matérn hard-core point process

Cite as: Yonghong Chen, Jie Yang, Xuehong Cao and Shibing Zhang "Energy Efficiency Optimization for Heterogeneous Cellular Networks Modeled by Matérn Hard-core Point Process" [J] China Communications, vol.17, no.8, pp.70-80, 2020

Non-orthogonal Multiple Access in Cell-Free Massive MIMO Networks

Keywords: non-orthogonal multiple access; CF-mMIMO; successive interference cancellation; power optimization; sequential convex approximation

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Outage Probability and Achievable Rate Analysis for Massive MIMO Downlink with Mixed-DAC and MF Precoding

Keywords: Massive MIMO; mixed-DACs; matched-filter precoding; mixed-resolution choose; outage probability and achievable rate

Cite as: Qingfeng Ding, Hui Shi, YichongLian"Outage Probability and Achievable Rate Analysis for Massive MIMO Downlink with Mixed-DAC and MF Precoding"[J]China Communications,vol.17,no.8,pp.95-105,2020

A Receiver-Forwarding Decision Scheme Based on Bayesian for NDN-VANET

Keywords: named-data networking; content routing; Bayesian decision theory; broadcast storm; VANET.

Cite as: Xian Guo, Yuxi Chen, Laicheng Cao, Di Zhang, Yongbo Jiang"A Receiver-Forwarding Decision Scheme Based on Bayesian for NDN-VANET"[J]China Communications,vol.17,no.8,pp.106-120,2020

Research on D2D Co-positioning Algorithm Based on Clustering Filtering

Keywords: co-location; D2D; clustering; DB SACN

Cite as: Jiawen Zhang, Fuxing Yang, Zhongliang Deng, Xiao Fu, Jiazhi Han"Research on D2D Co-positioning Algorithm Based on Clustering Filtering"[J]China Communications,vol.17,no.8,pp.121-132,2020

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Keywords: OFDM; PAPR; nonlinear companding transform; tangent linearization

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Keywords: MIMO; beamforming; statistical CSI; intelligent reflecting surface(IRS); ergodic rate

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Keywords: autonomous system; inter-domain routing system; internet governance

Cite as: Yuan Li, Wenyan Yu, Xiang Li, Ziyang Yang"Research on the Evolution of Global Internet Network Interconnection Relationship in 21 Years"[J]China

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Timely Updates in MEC-Assisted Status Update Systems: Joint Task Generation and Computation Offloading Scheme

Keywords: mobile edge computing; age of information; constrained Markov decision process; structural analysis; Q-learning

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Keywords: speech enhancement; approximate message passing; Gaussian model; expectation maximization algorithm

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Jointly Optimized Request Dispatching and Service Placement for MEC in LEO Network

Keywords: Low Earth Orbit (LEO) network; Multi-access Edge Computing (MEC); request dispatching; service placement

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Placement Optimization of Caching UAV-assisted Mobile Relay Maritime Communication

Keywords: UAV; caching; placement optimization; achievable rate; maritime communication

Cite as: Jun Zhang, Fengzhu Liang, Bin Li, Zheng Yang, Yi Wu, Hongbo Zhu"Placement Optimization of Caching UAV-assisted Mobile Relay Maritime Communication"[J]China Communications,vol.17,no.8,pp.209-219,2020

Research on Multi-Authority CP-ABE Access Control Model in Multicloud

Keywords: CP-ABE; access control; multi cloud; multi-authority; trust

Cite as: Shengli Zhou, Guangxuan Chen, Guangjie Huang, Jin Shi, KongTing"Research on Multi-Authority CP-ABE Access Control Model in Multicloud"[J]China Communications,vol.17,no.8,pp.220-233,2020

Parallel Implementation of the Non-overlapping Template Matching Test Using CUDA

Keywords: random numbers; CUDA; non-overlapping template matching test; parallel implementation; NIST test

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Keywords: object detection; convolutional neural networks; feature pyramid

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September

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HCloud: A Trusted Joint Cloud Serverless Platform for IoT Systems with Blockchain

Keywords: IoT; blockchain; serverless; joint cloud

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Keywords: NOMA; energy-efficient scheduling; vehicular edge computing; imitation learning

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Keywords: non-orthogonal multiple access; massive connection; active user detection; channel estimation; multi-user detection and alternating direction method of

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Keywords: artificial noise; non-orthogonal multiple access; physical-layer secrecy; robust resource allocation; visible light communication

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Keywords: spatial modulation; index modulation; non-orthogonal multiple access; bit error rate; pre-coding

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Keywords: dedicated intelligent reflecting surfaces; internet of things; practical path loss; cognitive network; Stackelberg game

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Keywords: Terahertz (THz) communications; mobile edge computing (MEC); ultra-reliable low end-to-end latency (URLLC) services; green communications

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Keywords: distributed compressed sensing; energy harvesting; internet of things; energy self-sustainability

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Keywords: ambient backscatter communications; spatial modulation; joint detector; union bounding technique

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Keywords: cognitive radio network; non-orthogonal multiple access scheme; power allocation; reinforcement learning

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Keywords: 6G network; cell-free massive MIMO; energy self-sustainability; Internet of Everything

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Capacity Optimization using Augmented Lagrange Method in Intelligent Reflecting Surface-Based MIMO Communication Systems

Keywords: IRS; capacity; augmented La grange; quasi-Newton updates; BFGS

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Keywords: resource allocation; alternating optimization; energy harvesting; self-sustainable

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Keywords: satellite communication; terrestrial mobile communication; system integration; B5G; 6G; space internet

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Keywords: orthogonal frequency division multiplexing(OFDM); subcarrier interactive mapping; inter-carrier interference (ICI); spectral efficiency; highly mobile environment

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