

# **2nd Annual International Conference on Cloud Technology and Communication Engineering (CTCE2018)**

IOP Conference Series: Materials Science and Engineering  
Volume 466

Nanjing, China  
17 - 19 August 2018

## **Editors:**

**Yu-Chen Hu  
Wen-Tsai Sung  
Simon K.S. Cheung**

ISBN: 978-1-5108-8010-8  
ISSN: 1757-8981

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

This work is licensed under a Creative Commons Attribution 3.0 International Licence. Licence details:  
<http://creativecommons.org/licenses/by/3.0/>.

Printed by Curran Associates, Inc. (2019)

For permission requests, please contact the Institute of Physics  
at the address below.

Institute of Physics  
Dirac House, Temple Back  
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481  
Fax: 44 1 17 920 0979

[techtracking@iop.org](mailto:techtracking@iop.org)

**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  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Table of contents

## Volume 466

**2018 the 2nd annual International Conference on Cloud Technology and Communication Engineering**

**17–19 August 2018, Nanjing, China**

**Accepted papers received: 12 November 2018**

**Published online: 28 December 2018**

### **Preface**

[2018 the 2<sup>nd</sup> annual International Conference on Cloud Technology and Communication Engineering](#)

[Keynote Speakers](#)

[Organizing Committee](#)

[Peer review statement](#)

### **Papers**

[Design and Implementation of Equipment Maintenance Predictive Model Based on Machine Learning](#)

Xiang Li, Li Wei and Jianfeng He.....1

[Design and Implementation of the Cloud File Management Service System Based on LAN](#)

C Yang, F Pan and Y Zhang.....7

[Using SVM to Detect DDoS Attack in SDN Network](#)

Dong Li, Chang Yu, Qizhao Zhou and Junqing Yu.....13

[Highly Available Dynamic Deployment Algorithm Based on Leader-Follower Mode in SDN](#)

Peng Kuang, Yiwen Qiu, Hailan Kuang and Xinhua Liu.....20

[Discussion on Data Center Infrastructure Energy Saving Reconstruction Plan](#)

Fang Fang and Xiaofeng Yu.....27

[Application of AADL in Integrated Electronic Systems](#)

Lie Liu, Guangding Feng and Weipeng Wang.....31

[Functional Modules Sharing and Blockchain Based Validation in Office Automation Systems](#)

H Zheng and J Yang.....38

[An Improved Mutual Authentication Scheme with Smart Cards and Password under Trusted Computing](#)

Eko Fajar Cahyadi, Yung-Chen Chou, Cheng-Ying Yang and Min-Shiang Hwang.....43

[The Weaknesses of the Virtual Password Authentication Protocol with Cookie](#)

Hsieh-Tsen Pan, Chia-Chun Wu, Cheng-Ying Yang and Min-Shiang Hwang.....49

[Cryptanalysis of A Hierarchical Data Access and Key Management in Cloud Computing](#)

Cheng-Ying Yang, Cheng-Chi Lee, Tsuei-Hung Sun and Min-Shiang Hwang.....55

[Dynamic Balance Strategy of High Concurrent Web Cluster Based on Docker Container](#)

Weizheng Ren, Wenkai Chen and Yansong Cui.....60

[A Study on Outlier Detection and Its Effects: Using the South Korean Residential Condition Survey](#)

Jungmin Choi.....66

[Cultural Distance aware Collaborative Filtering Algorithm in Recommendation System](#)

Zhipeng Gao, Yuan Liu, Kaile Xiao and Yang Yang.....77

[Modified Fama-French Three-Factor Model and the Equity Premium: An Empirical Test in the Chinese Stock Market](#)

Xiaoyuan Wang.....86

[Design and Implementation of Real-Time Management System Architecture based on GraphQL](#)

Ying Guo, Fang Deng and Xiudong Yang.....92

[Research on MapReduce Task Scheduling Optimization](#)

Ying Ren, Huawei Li and Lina Wang.....100

[Researching Characterization of Adsorbed Water Parameters Based on Macro - mechanics Index](#)

Tianqing Chen and H W Liu.....107

[Happy Bits Based BSR Mechanism in 5G Networks](#)

Shangjing Lin and Jianguo Yu.....113

[Exploration and Research on the Engineering Education Model of "Practicing while Teaching with Curriculum Integration"](#)

Dashe Li, Yanli Feng, Dapeng Cheng and Yi Lu.....120

[Research and Application of Data Standard Construction](#)

Haitian Jia and Chun Jia.....126

[An Efficient Algorithm to Compute Compositional Skyline](#)

Xiaowei Cui and Leigang Dong.....132

[Research on Network Privacy Protection Mechanism Based on Trust Agent in Big Data Environment](#)

Hong Wang, Na Lei and Liumei Zhang.....139

[The Comprehensive Analysis of Flood Disasters Losses in China from 2000 to 2010](#)

Lei Zhang, Jing Geng and Chunbo Fan.....144

[Study on Simulation of Sea Sky Infrared Imaging based on Neural Network and Measured Data](#)

Simi Tang, Zhongwei Chen and Xianbin Li.....152

[Region-tree Based Sorted List Indexing for Real-time Entity Resolution in  \$n\$ -Dimensional Data Space](#)

Liang Zhu, Weipeng Lu, Qin Ma and Weiyi Meng.....159

[Some Properties of the Legendre-Stirling Numbers](#)

Haili Guo and Kelun Wang.....166

[Research on Network Anomaly Detection Based on Coordinated Multiple Algorithms](#)

Yezhao Chen, Yingyan Jiang, Zhihua Yang, Yuanfeng Wang and Peng Lin.....170

[Data Sharing of Power Grid Meteorological Disaster based on Metadata](#)

Yusong Guo, Zhen Yu, Yongsheng Men and Xiyuan Xu.....176

[Thoughts on the Problem of Small Data](#)

Jingtao Cheng, Wenhui Chen and Yuhong Gong.....183

[Survey of Analytical Methods for Big Data of Quality Inspection](#)

Yingcheng Xu, Wei Jiang, Xiuli Ning, Bisong Liu and Ya Li.....188

[Gold Price Forecast based on ESMD Multi-Frequency Combination Model](#)

Yating Yang.....195

[Complete Genomes of Two Novel Active Prophages Discovered by Bioinformatics Methods from High-Throughput Sequencing Data](#)

Xiangcheng Xie, Qiang Sun, Xiangke Liao, Yigang Tong and Shaoliang Peng.....202

[Method of Anomaly Measurement of GPS Elevation in Sea Area](#)

Lin Zhong, Long Cheng and Shijie Li.....209

[Sensor Gain-Phase Errors Estimation for an Improved Data Model](#)

Zheng Dai and Yan Liu.....215

[The Design and Implementation of the Intelligent Warehouse Voice Control Guard System Based on Voiceprint Recognition](#)

Lijun Yu and Kefeng Li.....220

[Query Optimum Scheduling Strategy on Network Security Monitoring Data Streams](#)

Lina Wang and Ying Ren.....225

[Development and Application of Ship Process Measurement, Acquisition and Control System](#)

Haiyan Yu, Haibo Meng and Liang Li.....230

[A Multi-type Data Acquisition Platform Based on LabVIEW](#)

Haiyan Yu, Haibo Meng and Liang Li.....237

[A Novel Digital Watermarking Approach against Geometrical Distortions using DWT and LS-SVM](#)

Hui Chen, Fei Long and Zhiyun Duan.....242

[An Improved Double-talk Detection Algorithm for Echo Cancellation in Teleconference System](#)

Ruxue Guo and Li Zhao.....248

[An Improved Algorithm based on MOLS for CS](#)

B Wang, L Wang, D Y Wu, F M Xin and X Song.....254

[Radar Signal Sorting Algorithm Based on PRI for Large Jitter](#)

B Wang, B Gao, L Wang, F M Xin and X Song.....260

[An Improved Low-Complexity Decoding Algorithms for Non-Binary LDPC Codes in BeiDou Navigation System](#)

Yumeng Tan, Xiaoli Xi, Hailong Yang and Ronghua Jiang.....266

[Time Reversal ESPRIT Imaging with Frequency-domain Sampling of Single Target](#)

Ronghua Jiang, Zhongguo Song, Chen Zheng, Minchao Li and Xiaoli Xi.....272

[Model Reduction Method based on Rational Canonical form of System Matrix and Krylov Subspace](#)

Zunhai Gao and Zhuo Chen.....278

[Defocus Fuzzy Image Restoration](#)

Chengcheng Li, Gongfa Li, Ying Sun, Guozhang Jiang, Du Jiang and Shuang Xu.....283

[A Chaotic Image Encryption Algorithm for Smart Phones](#)

Xuan Chen.....289

[Application of Augmented Reality Technology in Workshop Production Management](#)

Chenlin Zhang, Jianfeng Lu and Hui Wang.....295



[Synchronization of Memristor-Based Delayed Neural Networks via Aperiodically Intermittent Control](#)

Mengzhuo Luo.....301

[A Multi-source Alarm Information Fusion Processing Method for Network Attack Situation](#)

Jiawei Du, Ronghua Guo, Guowei Suo and Xing Zhang.....308

[Design of Genetic Circuit for Monitoring and Treatment of Stroke](#)

Xiang Wang, Qianqian Yu, Yu Si, Xiaocui Wang, Wei Shi, Tongsheng Xia and Hongge Li.....316

[Research on Non Intrusive Methods for Dynamic Monitoring of Software](#)

Wei Zhang, Bowen Yuan, Zhenyu Ma and Qingling Lu.....330

[A Study on Quality Evaluation Methods of Hyperspectral Image](#)

Xiaoyan Wang, Jianqing Li and Jie Li.....336

[Fuzzy Adaptive PID Control for Missile Guidance](#)

Yuhao Xie and Zihan Su.....346

[An Application of the Poincare-Hopf Index Theorem: A Mathematical Model of Earthquake](#)

Shaoyu Zhang, Shuhao Sun, Hang Zhao and Shenggang Li.....353

[Single-Phase-to-Ground Fault Location Method Based on SOGI](#)

Baikui Li.....361

[Performance Evaluation for Optical Measurement-Based Non-Holosymmetric Rocket at Taking-Off Stage](#)

Shuhua Cui, Si Shen, Haichen Lin, Yuanyuan Kang and Bo Qing.....368

[Maintenance Reliability index system and its analysis method of Public Transit](#)

Yazhong Guo, Bin Xu and Quan Xiao.....374

[Design and Implementation of Image Encryption System Based on Random Grids and Mscan Patterns](#)

Guangming Yang, Jingying Ma and Zhenhua Tan.....379

[Power Integrity Analysis of Low Power SOC Design](#)

Wu Yang, Xin He, Jun Deng, Keliu Hu, Kun Huang and Yiru Fu.....389

[A Fault Diagnosis System for Main Fan in Coal Mine Based on BP Neural Network](#)

Linlian Ma, Yuzhu Zhang and Zhangbing Li.....395

[Constructing Symmetric-Antisymmetric Multi-wavelets and Transforming Digital Image by Multi-wavelets](#)

Xiaorong Tan and Peng Li.....403

[Novel Non-iterative Least Square Method with Adjustable Weighting Vector for Filter Design](#)

Jie Chen and Yingzeng Yin.....410

[Qualitative Identification of Pesticide Residues in Pakchoi Based on Near Infrared Spectroscopy](#)

Min Li, Xiaoying Zhang and Qiang Jiang.....416

[Design of PID Coprocessing Module for CPT Atomic Clock Control SoC](#)

Kun Huang, Yiru Fu, Jun Deng, Keliu Hu and Tao Zhang.....420

[Research on High Voltage Capacitor Voltage Drop Device](#)

Ling Zhang, Te Ba and Xiao Luo.....425

[Modeling and Simulation of Photovoltaic Grid-connected Inverter](#)

Wenhao Zhang, Xianglian Xu, Sunong Yao and Muyao Deng.....429

[Analyses on Related Properties of a Ridged Horn Antenna](#)

Lei Xie and Wei He.....436

[Lightning Protection Measurements for Solar Water Heaters](#)

Wei He and Lei Xie.....442

[Hardware-Based Protection for Data Security at Run-Time on Embedded Systems](#)

Xiang Wang, Xiaobing Zhang, Weike Wang, Pei Du, Zhun Zhang, Yuntong Tian, Qiang Hao and Bin Xu.....447

[Fair-CDUS for Equalization of User Selection Frequency in Massive Multi-User MIMO System](#)

Dhoni Putra Setiawan, Ryo Takahara and Hua-An Zhao.....456

[A Network Selection Algorithm Based On Combined Weights](#)

Hongbing Wu, Yunfei Mao, Wenjian Wu and Wei Zhang.....462

[VDES Data Transmission Encryption Based on ECC Algorithm](#)

Zhen Kang, Jiaxuan Yang and Zuohuan Chen.....471

[Big Data Driven Mobile Cellular Networks: Modelling, Experiments, and Applications](#)

Shangjing Lin, Jianguo Yu and Ji Ma.....479

[Research on Smart Grid Power Line Broadband Communication System](#)

Yiying Zhang, Fei Liu, Haoyuan Pang, Xiangzhen Li, Qinghai Ou and Zhu Liu.....485

[Design of Intelligent Power Terminal System Based on Family Heterogeneous Network](#)

Yunxiang Zhang, Houen Li, Zhuyi Rao, Wentong Zhang and Sheng Zhang.....491

[Design of WirelessHART Protocol Stack Based on Qp Architecture](#)

Houen Li, Yunxiang Zhang, Zhuyi Rao, Wentong Zhang, Yue Yu and Sheng Zhang.....498

[Traffic Analysis of a Networks based on Stochastic Geometry to Exclude Malice Flow](#)

Jiahao Dai and Xiaofeng Xu.....505

[Cooperative Spectrum Sharing Scheme for Overlay D2D-enable Cellular Network](#)

Jiao Feng, Chenchen Shu and Peng Li.....512

[Future Development Trend of Multimedia Network](#)

Li Huang, Kai Zhang, Wei Hu and Chengcheng Li.....518

[Ka-satellite Communication: A Filter with High Restraint in Band-stop](#)

Chenxi Liu.....523

[L\(j, k\)-labeling Number of Cactus Graph](#)

Qiong Wu.....531

[Research on Massive MIMO Key Technology in 5G](#)

Jiarui Wu.....538

[L\(j, k\)-labeling Number of Generalized Petersen Graph](#)

Qiong Wu .....544

[IT Supports and Computer Bilingual Education with Belt and Road](#)

Limin Liu.....554

[Research on Safety Evaluation Method of Hydropower Plant based on Extension Theory](#)

Jundi Liu, Mingdong Wang, Yuqian Li and Kunming Mu.....561

[An Advanced Secure Scheme of Domestic E-medical System in Body Area Network](#)

Enjian Bai, Yajie Gao, Xueqin Jiang and Yun Wu.....567

[The Current Condition and Developing Tendency of Mobile Communication Interconnection Technology](#)

Weiyang Zeng, Yining Jin, Zenan Zhou and Siyang Yin.....574

[Empirical Analysis of TOA and AOA in Hybrid Location Positioning Techniques](#)

Fangliang Wang and Xinhong Liu.....580

[Research and Implementation of Chinese Text Automatic Proofreading System](#)

Yonggang Gong, Junying Fu, Xiaoqin Lian and Yuying Li.....587

[A Word Elimination Strategy for Learning Document Representation](#)

Ying Liu, Tongzhou Zhao, Yue Chai and Yiqi Jiang.....594

[Fixed-Point Target Control of Library Management Robot: A Linear Decomposition Approach](#)

Lina Tang, Lin Li and Hao Su.....600

[Accelerometer Optimization Placement Using Improved Particle Swarm Optimization Algorithm Based on Structural Damage Identification](#)

Zhuoda Jiang and Yang Gao.....612

[Design and Implementation of Intelligent Hardware of Neural Network Based on FPGA](#)

Haiming Jing and Ning Zhao.....620

[The Survey of CNN-based Cancer Diagnosis System](#)

Mingzhe Ruan, Yongshuo Ren, Zhiqi Wu, Jianrui Wu, Shuai Wang and Xulei Yang.....625

[Superfamily Analysis in Mobile Social Networks](#)

Wei Zheng, Zhao Kang and Xiaokang Zhao.....633

[Small Quadrotor Plant Protection UAV System Based on Big Data](#)

Shuting Zeng and Qingfeng Xia.....641

[Design and Construction of Manuscript Acquisition, Editing and Distribution Platform Based on iOS System](#)

Yansong Cui, Mingli Guo and Weizheng Ren.....646

[Fault Diagnosis of Power Network based on Radial basis Function Neural Network](#)

Yilin Wang.....652

[Multi-object Recognition Algorithm based on Euclidean Feature Match in Fuzzy Remote Sensing Images](#)

Fan Huang.....658

[ResSleepNet: Automatic sleep stage classification on raw single-channel EEG](#)

Cheng Liu, Tongfeng Weng and Xinhua Liu.....666

[Research on Discrete Hash Algorithm Based on Deep Semantics](#)

Qinjin Jia.....673

[Study on Augmented Reality Method for Unlabeled Recognition Based on Filtering Processing Optimization](#)

Sihao Chen.....679

[Application of Google SketchUp in Tourism Planning—In Case of Heilongjiang Ningan Jiatai Manor](#)

Kai Huang, Jinbin Wang, Dongdong Lin and Yu Liu.....688

[Construction of Quantitative Model for Network Security Situation Assessment Based on Intelligent Immunity](#)

Guowei Suo, Jiawei Du, Ying Zhou and Ronghua Guo.....695

[System Identification and Prediction of Dynamic System and Microwave Thermal Process Using a Recurrent Fuzzy Quantum Neural Network](#)

Chaoyin Li, Qingyu Xiong, Kai Wang, Yang Yu and Tong Liu.....703

[College Student Attendance System Based on Face Recognition](#)

Qingdong Liang and Wenting Fang.....714

[Trajectory Planning Strategy for Robotic Water Polo Matches](#)

Chao Wang, Yanyan Huo and Xiaojun Xiong.....720

[Integration and Service Strategy of VR/AR in Practical Teaching](#)

Junming Chang, Qiong Ren, Hai Han and Lu Xu.....726

[Deep Reinforcement Learning based Recommend System using stratified sampling](#)

Zhiruo Zhao and Xiliang Chen.....732

[A New SSOPMV Learning for Matrix Data Sets](#)

Changming Zhu, Chengjiu Mei, Rigui Zhou, Lai Wei, Xiafen Zhang and Min Yao.....740

[Research on Preprocessing Method for Microscopic Image of Sputum Smear and Intelligent Counting for Tubercule Bacillus](#)

Zhisong Li, Jiayao Ling, Jing Wu, Nian Luo, Min Tan and Ping Zhong.....747

[Research of Solar Eclipse Impact on Power System Using Neural Network](#)

Weihua Chen and Yanbo Che.....756

[Autonomous Mobile Robot Visual SLAM Based on Improved CNN Method](#)

Xuanbo Wang.....761

[Risk Analysis of Pedestrians Evacuations Based on Crowd Energy](#)

Yizhou Chen, Haodong Yin, Yan Cheng, Xuan Sun, Feng Yan and Di Wu.....769

[Machine Vision Based Yak Body Size Measuring Points](#)

Zijie Sun, Chen Zhang, XiaoFeng Qin, Yu-an Zhang, Meiyun Du, Weiru Song and Rende Song.....778

[Kinematics Modeling and Simulation of GantryShip Welding Manipulator with Hybrid Structure](#)

Zhengqiang Guo, Yuchen Pan and Xuepeng Yuan.....785

[Image Segmentation of Field Rape Based on Template Matching and K-means Clustering](#)

Dujuan Shuai, Changhua Liu, Xiaoming Wu, Hao Li and Fugui Zhang.....792