

International Conference on Computer Engineering, Information Science & Application Technology 2016 (ICCIA 2016)

Advances in Computer Science Research Volume 56

Guilin, China
24-25 September 2016

Editors:

**Z. L. Ma
J. F. Ke**

Z. G. Fang

ISBN: 978-1-5108-3036-3

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.

Copyright© (2016) by Atlantis Press
All rights reserved.
<http://www.atlantis-press.com/php/pub.php?publication=iccia-16>

Printed by Curran Associates, Inc. (2016)

For permission requests, please contact the publisher:

Atlantis Press
Amsterdam / Paris

Email: contact@atlantis-press.com

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
Web: www.proceedings.com

TABLE OF CONTENTS

| | |
|---|-----|
| The Development and Application of the Replaceable Triangle Track Wheel | 1 |
| <i>Xiaodong Zhao, Xihui Mu, Haoliang Guo, Zihan Zhao</i> | |
| Research on Electricity Demand Combination Forecasting Model in Beijing-Tianjin-Hebei Region Based on Shapley Value | 4 |
| <i>Yuqing Wang, Chenjun Sun, Lilin Peng, Yang Liu, Ming Zeng</i> | |
| Reliability Test Cases Generation of Web Application Based On Log Analysis | 10 |
| <i>Shan Zhang, Junfei Huang</i> | |
| Automatic Download Design of STC MCU Based on CH340G | 17 |
| <i>Zilong Ma, Xiang Li</i> | |
| Design of Rolling Machine Intelligent Control System for Greenhouse Based on Internet of Things | 21 |
| <i>Hongjun Gu, Ji Li, Shijun Li, He Gong, Jian Li, Lixin Hou</i> | |
| Target Detection Algorithm Based on Region Segmentation in Moving Background | 26 |
| <i>Shanqiu Zhang, Jianhua Yang, Wei Lu</i> | |
| Study on Optimal Station Distribution Based on TDOA Measurements | 31 |
| <i>Shun Sun, Zhiguo Wang, Zhi Wang</i> | |
| Discussion On and Development Trend of Graphic and Image Processing Technologies of Computer | 37 |
| <i>Hongliang Xing</i> | |
| Simulation of Solar Wind Based on K-epsilon (k-ε) Turbulence Models | 41 |
| <i>Yong Ming, Xiaomin Gan, Huajun Wang</i> | |
| Development Trend of Support Vector Machine and Applications on the Field of Computer Science | 46 |
| <i>Hainan Wang, Haoming Liu, Xiaoliang Zhang</i> | |
| A Decoding Method For Modulo Operations-Based Fountain Codes Using the Accelerated Hopfield Neural Network | 56 |
| <i>Zaihui Deng, Xiaojun Tong, Liangcai Gan</i> | |
| Study on Positioning High Dynamic Distributed Platforms Based on LFM Signal | 62 |
| <i>Boyu Liu, Zhi Li, Yujie Yang, Hongyu Li, Xianghui Yuan</i> | |
| The Research of Students' Comprehensive Quality Evaluation System | 71 |
| <i>Haichang Yin, Cheng Liu</i> | |
| A Study on Government Emergency Disposal System of Network Emergencies | 75 |
| <i>Song Mei, Quanliang Mei</i> | |
| Analysis and Countermeasure Research about Sensitive Information of Complex Cyber Psychology of Cross-border Multi-ethnic Language | 81 |
| <i>Yingyu Yang, Bingze Li, Jiamei Wang, Changsen Yuan, Feng Liu, Gang Hu, Guangming Lu, Rui Lin</i> | |
| Empirical Research of the Impact of Internet Finance on Personal Finance | 88 |
| <i>Junwei Han, Yuzhong Sun</i> | |
| Solving Water Scarcity of North China Based on Method of Mathematical Modeling | 94 |
| <i>Lin Li, Yifeng Dou, Xueyan Zhang, Guocai Yang</i> | |
| Research on Weather Navigation Algorithm Based On Rolling Window Optimization | 102 |
| <i>Qin Wu, Yang Liu, Xiaogang Li</i> | |
| Research of Network Security Technology in Smart Home | 108 |
| <i>Liangying Chen</i> | |
| The Correlation Analysis of Curriculum Based On Clementine | 113 |
| <i>Xiaoming Du, Xinrong Tao, Zhen Yang</i> | |
| Precision Analysis of an Analytical Method in Space Debris Orbit Prediction | 117 |
| <i>Bin Wang, Huafeng Peng, Kun Li</i> | |
| The Design of Direct Digital Synthesizer Based On Cordic Algorithm and FPGA Implementation | 122 |
| <i>Xian Zhang, Xinghua Zhao, Binquan Zhou</i> | |
| Secure Routing Algorithm Based On Trust Value for Ad Hoc Networks | 127 |
| <i>Li Wang, Qingwen Wang, Haijing Zhang</i> | |
| Photoelectric Method of Measuring Laser Divergence Angle | 132 |
| <i>Xue Leng</i> | |
| Image Mosaic Based On Fisheye Camera | 135 |
| <i>Xue Leng</i> | |
| Numerical Simulation and Noise Prediction of the Aerial Propeller | 139 |
| <i>Liu Yang, Jun Huang, Mingxu Yi, Chaopu Zhang, Hao Song, Qian Xiao</i> | |
| Acoustic Noise Prediction and Reduction Research of Helicopter Ducted Tail Rotor | 143 |
| <i>Chaopu Zhang, Mingxu Yi, Jun Huang, Liu Yang</i> | |

| | |
|---|-----|
| An Improved Reversible Data-Hiding Scheme for LZW Codes | 150 |
| <i>Wenqiang Zhao, Bailong Yang, Shizhong Gong, Xuesong Li</i> | |
| Numerical Method for Three-Dimensional Heat Conduction in Cylindrical and Spherical Coordinates | 156 |
| <i>Xinxin Jia, Zongrui Hao, Hu Wang, Lei Wang, Xin Wang</i> | |
| A New Linear Interpolation Algorithm | 163 |
| <i>Min Zeng, Yanjie Zhang, Jian Huang</i> | |
| Design of Double Environment Dynamical Simulation System for Fuze | 171 |
| <i>Bin Zhang, Qiang Xiao, Shiyin Huang, Han Wei, Manyi Ding</i> | |
| Implementation of High Accuracy Trigonometric Function on FPGA by Taylor Expansion | 175 |
| <i>Duoli Zhang, Jingju Yu, Yukun Song</i> | |
| Application of Industrial Control Configuration Software WinCC in the Monitoring System of Ship Steering Gear | 180 |
| <i>Jiayu Chen, Hongbo Wang, Hongjun Lv</i> | |
| Region-based Image Fusion Method with Dual-Tree Complex Wavelet Transform | 185 |
| <i>Xuanni Zhang, Fan Lu</i> | |
| Demographic Data Visualization on Continuous Area Cartograms | 190 |
| <i>Lijing Ren, Zhengxu Zhao</i> | |
| An Image Dehazing Method Based On an Improved Retinex Theory | 194 |
| <i>Ebtesam Mohameed Alharbi, Yilin Shan, Peng Ge, Hong Wang</i> | |
| Attenuation Characteristics of Laser in Rain | 201 |
| <i>Yuewei Wei, Jun Xu, Bin Xu</i> | |
| Short-Term Bus Load Matching and Forecasting Model | 206 |
| <i>Ran Li, Chenjun Sun, Yang Liu, Lilin Peng, Ming Zeng</i> | |
| Influences of Groove Depth on the Coupling of Small Tip Clearance and Circumferential Grooves | 211 |
| <i>Tianye Ji, Xie Fang, Youjun Wang, Tao Yi</i> | |
| Simulation and Analysis of Function Damage Effect for Typical Mechanical Transmission System | 217 |
| <i>Cai Chen, Quan Shi, Guangyan Wang, Qiang Wang, Bangjun Chen</i> | |
| Acoustic Scattering Performance of a Duct for a Monopole Source Using Thin-Body BEM Method | 224 |
| <i>Chuxiong Yan, Jun Huang, Mingxu Yi, Yacong Wu</i> | |
| An Event Modeling and Analysis Method Based on Bipartite Graph | 229 |
| <i>Mei Xu, Yanlei Shang</i> | |
| A Cross-platform and User Transparent Mobile Application Event Collection Mechanism | 240 |
| <i>Yue Tang, Yanlei Shang</i> | |
| Research of Automatically Light-Adjusting Lamp | 249 |
| <i>Biqing Li, Aizhen Zhou, Chongjun Yang, Shiyong Zheng</i> | |
| Design of Target Detection and Tracking Simulation System of Networking Fire Control Radar | 253 |
| <i>Qiang Xiao, Tengfei Gao, Yongshi Xu, Ran Xiong, Weiqiang Fu</i> | |
| Email Information Security of Enterprise based on Big Data | 257 |
| <i>Ying Wu</i> | |
| The Design and Realization of Fruit Harvesting Robot Based on IOT | 261 |
| <i>Biqing Li, Aizhen Zhou, Chongjun Yang, Shiyong Zheng</i> | |
| A Greedy Routing Algorithm for Deep Sea without Location Information | 265 |
| <i>Hongning Hu, Zhong Liu</i> | |
| Intelligent Curriculum Arrangement Subsystem of Educational Administration Oriented Stratified Teaching Model Design | 271 |
| <i>Zhe Zhang</i> | |
| Application of An Improved K-means Clustering Algorithm in Intrusion Detection | 277 |
| <i>Dongmei Yu, Guoli Zhang, Hui Chen</i> | |
| Design and Implementation of a Private Cloud's Database as a Service | 284 |
| <i>Peng Lv, Xiuquan Qiao</i> | |
| Prediction-Based Elastic Load Balancing Mechanism in Cloud Environment | 289 |
| <i>Xin Yang, Xiuquan Qiao</i> | |
| The Decision of Fatigue State Based On Characteristics' Fuzzy Fusion | 295 |
| <i>Guozhen Cao, Han Peng</i> | |
| QoS Evaluation Based on Fuzzy Neural Networks | 299 |
| <i>Khurrum Jalil, Khurrum Hussain, Asad Ahmad, Xiaolin Gui</i> | |
| High-speed and Huge-capacity Data Cache System Based on FPGA | 306 |
| <i>Fei Gao, Wenge Chang, Xiangyang Li</i> | |
| A kind of Image De-noising Method Based on Improved Intersecting Cortical Model | 311 |
| <i>Bo Zhu</i> | |
| Adaptive Medical Image Fusion Method based on NSCT and Unit-Linking PCNN | 317 |
| <i>Wei Liu</i> | |

| | |
|--|-----|
| Discrimination Method of Ship and Corner Reflector Based on Micro-Doppler Feature | 324 |
| <i>Zhiyu Tao, Qiang Fu</i> | |
| Remote Sensing Image Fusion Method Based on improved Radial Basis and Fast partition Interpolation | 330 |
| <i>Zhanwei Qu</i> | |
| The Research and Implementation of the Critical Path on a Processor (CPOP) Algorithm Based on Pi Calculus | 337 |
| <i>He Yuan, Yongzhe Zhao, Hui Kang</i> | |
| Responses to Stimulating Signals of Memristive Circuit Based On LC Contour | 346 |
| <i>Yujie Cao, Shuai Ye</i> | |
| A SVT-ESPRIT Estimation Algorithm in Sparse Array | 350 |
| <i>Wenhao Zeng, Junjie He, Hongtao Li, Xiaohua Zhu</i> | |
| Design of a Decoupled Six-axis Force Sensor for Powered Lower Limb Exoskeleton | 356 |
| <i>Kai Yang, Shun Ma, Tianshuo Wang, Yanhe Zhu</i> | |
| Research of Multiple Channels Synchronous Wideband LFM Signal Generation Technology | 360 |
| <i>Kuan Wang, Xiangyang Li</i> | |
| The Effect in the Production and Luminescence Property of $Zn_3V_2O_8$ with Fluxing | 364 |
| <i>Jiaolian Luo, Weifu Cen, Xiaoming Zhang, Shilin Yu, Ruxue Chen, Zhenglin Zhou, Yingfu Zhang, Ting Huang</i> | |
| Research on the Biological Data Visualization Algorithm based on Self-Organizing Network | 369 |
| <i>Xiaohan Mei, Da Liu</i> | |
| Bioinformatics Analysis on Molecular Mechanism of Poria Cocos in Treatment of Jaundice | 376 |
| <i>Shan Si, Nie Peng, Jiang Li, Yuwen Yan, Xiaojun Yan</i> | |
| Research on Simulation and Experiment of Hydro-pneumatic Spring Thermodynamic Characteristics | 381 |
| <i>Xiangrui Cheng, Qinhe Gao, Wenxin Qian</i> | |
| A New Ant Colony Algorithm for Deep Sea Sparse Network | 390 |
| <i>Hongning Hu, Zixi Tian</i> | |
| Research on Small Hydropower Group Output Characteristics of Multiple Time Scales | 396 |
| <i>Xiankui Wen, Li Su, Chenghui Lin, Qiang Fan, Jiqun Tang, Cheng Mao</i> | |
| Research of Situ Strain of Measuring Flexible Truss Deformation Based on Fuzzy Network Method | 401 |
| <i>Yong Zhao, Hong Bao, Xuechao Duan, Hongmei Fang</i> | |
| Modal Analysis of the Frame Structure of a Hybrid Electric City Bus | 411 |
| <i>Kan Hu, Zuoqiang Dai, Tiezhu Zhang</i> | |
| Research on the Emission Reduction Problem of Biomass Power Generation | 414 |
| <i>Xin Wang, Chenjun Sun, Zhuhan Long, Lilin Peng, Ming Zeng</i> | |
| Temperature Distribution Characteristics of Asphalt Pavement Based on the Field Measured Data | 421 |
| <i>Shenbo Zhou, Shengjie Liu</i> | |
| Application of the Phase Recovery Algorithm Based on the Parallel Architecture in the Holographic Projection Technology | 426 |
| <i>Guangzhi Wu, Mingxin Kou, Qian He</i> | |
| Design and Realization Visible Light Communication Transmitter Circuit | 430 |
| <i>Shuai Liu, Gang Cheng, Yuming Zhu, Xiao Wang</i> | |
| Bit Synchronization of Data Transmission Signal Based On Instantaneous Frequency Measurement | 434 |
| <i>Gang Fu, Jian Chen, Yue Feng</i> | |
| Starting of Shipboard ESG Monitors at Low Latitudes | 438 |
| <i>Zhi Liu, Jian Zhou, Hang Liu, Jun Yan</i> | |
| Realization of High-Speed Data Transmission between Modules within Single Computer | 443 |
| <i>Shangyong Yu, Gang Fu, Guangzhi Wu</i> | |
| The Feasibility Research of GNSS Difference Positioning Based on Maritime Removed Datum | 447 |
| <i>Jian Zhou, Yuyong Shang, Zhi Liu, Jun Yan</i> | |
| D-STATCOM Optimal Allocation Based On Investment Decision Theory | 451 |
| <i>Yongjun Zhang, Yifu Mo, Huazhen Cao</i> | |
| Feature Extraction of Precession Targets Based on Multi-aspect Range-Profile Sequence | 456 |
| <i>Dan Xu, Bo Tian, Cunqian Feng, Shuang Zhao, Yizhe Wang</i> | |
| Multi Laser Displacement Sensors Based Three-dimensional Pavement Measuring Technology | 462 |
| <i>Jianfeng Wang, Xueqin Wu, Wenfeng Song</i> | |
| Maneuverable Warhead Tracking Based on CKF | 467 |
| <i>Zhimin Xiong, Dangwei Wang, Xiao Yan</i> | |
| Design of High Speed Sampling Clock Based on LMX2531 | 475 |
| <i>Bing Zhou, Zhengsheng Li, Hao Chen</i> | |
| Infrared Thermal Wave Nondestructive Testing Technology and Its Application | 480 |
| <i>Yang Zhou, Jing Cai</i> | |

| | |
|--|-----|
| Development of Full-waveform Acquisition Device in High Power Electrical Transmitter | 487 |
| <i>Juan Wang, Shengli Hou, Shengquan Zhang</i> | |
| Digital Image Information Hiding Technology Based on Lifting Wavelet Transform and Image Fusion | 492 |
| <i>Lei Yun</i> | |
| Robot Path Planning Based on an Improved Multi-Objective PSO Method | 496 |
| <i>Li Di, Zheng Zheng, Meng Xia, Min Xia</i> | |
| Civil Marginalization from Multi-Criteria Decision Science Perspective | 502 |
| <i>Long Yan</i> | |
| Mechanical and Control System Digital Simulation Based on MATLAB | 506 |
| <i>Caixia Han</i> | |
| The Enterprise Human Resources Management Based On Knowledge Management and Collaboration | 510 |
| <i>Ying Cai</i> | |
| Author Index | |