Contents


Design of System for Digital Sound Anti-monitoring Based on Wireless Sensor Networks and 3G ........................... 3
Hua Liu, Yong Wei, Ruo-kui Chang, Xuefeng Jin, and Yuan Yuan

Sensing Window Length Optimization in Low-SNR Regime ............ 13
Liaoyuan Zeng

Cognitive Group Power Assignment in Low-Power Regime ............. 21
Liaoyuan Zeng

A Three-Dimensional Space Coverage Algorithm in Wireless Sensor Networks ................................................................. 29
Meng Tang, Qiang Wan, Jin Li, and Yu Xiang

Security Analysis of Distributed Compressive Sensing-Based Wireless Sensor Networks ...................................................... 41
Ji Wu, Qilian Liang, Baoju Zhang, and Xiaorong Wu

Simplified Hybrid Routing Protocol in Low Complexity ZigBee Network ................................................................. 51
Jiasong Mu, Wei Wang, and Baoju Zhang

Real Time Routing Optimization in ZigBee Hierarchical Networks .... 59
Wei Song, Jiasong Mu, Wei Wang, and Baoju Zhang

Minimal Global Hops Algorithm for Energy Balancing in ZigBee Hierarchical Network .................................................. 67
Jiasong Mu, Wei Wang, Baoju Zhang, and Wei Song

Research and Design of Real-Time Monitoring Tidal System Based on Internet of Things .................................................. 75
Jincheng Wu, Xicheng Yang, Jingrui Sun, and Yanbo Wu
Research and Application of Building Monitoring Platform Based On the Internet of Things .............................. 83
Jincheng Wu and Jianbo Yu

A Novel Global Calibration Method for Multi-vision Sensors ........... 91
Xinghua Li, Jingmei Zhang, and Peifen Chen

Part II Image and Video Processing

Research on Face Recognition Method Based on Combination of SVM and LDA-PCA ........................................ 101
Ruian Liu, Junsheng Zhang, Lei Wang, and Mimi Zhang

Adaptive Retinex Tone Mapping for Image Enhancement under Nature Light ....................................................... 111
Yunfeng Sui

True-Error Detection of Compressed Video: Temporal Exploration ... 119
Xudong Zhao, Shenghong Li, Chenglin Zhao, and Shilin Wang

Image Splicing Detection Based on Improved Markov Model .......... 127
Su Bo, Yuan Quan-qiao, Wang Shi-lin, Zhao Cheng-lin, and Li Shen-ghong

Image Fusion Based on Compressed Sensing .......................... 137
Xin Zhou, Wei Wang, and Rui-an Liu

Freight Status Classification in Real-World Images Using SIFT and KNN Model ............................................... 145
Dongyang Wang, Dahai Yu, Junwei Han, and Shujun Li

Weakly Supervised Learning for Airplane Detection in Remote Sensing Images ...................................................... 155
Dingwen Zhang, Jianfeng Han, Dahai Yu, and Junwei Han

Measurement of Rice Growth Based on the Remote Video Images ... 165
Ruokui Chang, Hua Liu, YuanHong Wang, Yong Wei, and Nan Wang

Image Measurement Strategy for Extreme Circumstances ........... 171
Xiong Zhang, Xiaoli Yang, Ruizhu Yang, Jingxiong Huang, and Yelong Zheng

Blind Forensics of Median Filtering Based on Markov Statistics in Median-Filtered Residual Domain ........................... 179
Yujin Zhang, Chenglin Zhao, Feng Zhao, and Shenghong Li

Yan Li, Na Li, Jing Wang, and Guiling Li
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Development and Application of Video’s Color Gamut Test Sequence</td>
<td>195</td>
</tr>
<tr>
<td>Yan Li, Na Li, Jing Wang, Guiling Li, Weihua Wu, and Mo Li</td>
<td></td>
</tr>
<tr>
<td>Error and Artifact Detection in Video Decoding: A Temporal Method</td>
<td>203</td>
</tr>
<tr>
<td>Daqing Zhang, Shenghong Li, Kongjin Yang, and Yuchun Jing</td>
<td></td>
</tr>
<tr>
<td>A Novel Fractional Fourier Domain Filter Design Based on Time–Frequency Image Edge Detection</td>
<td>213</td>
</tr>
<tr>
<td>Jiexiao Yu, Kailhua Liu, Xiangdong Huang, and Ge Yan</td>
<td></td>
</tr>
<tr>
<td>A Novel 3D Video Format Identification Algorithm</td>
<td>225</td>
</tr>
<tr>
<td>Sheng Su and Zhuo Chen</td>
<td></td>
</tr>
<tr>
<td>Research on HD Video Wireless Transmission System Based on Mesh Network</td>
<td>233</td>
</tr>
<tr>
<td>Ruian Liu, Daxi Liu, Junsheng Zhang, and Lei Wang</td>
<td></td>
</tr>
<tr>
<td>FPGA-Based Single-Phase Photovoltaic Inverter Design</td>
<td>241</td>
</tr>
<tr>
<td>Bin Liang, Jun Shi, and Mingcheng Liu</td>
<td></td>
</tr>
<tr>
<td>The Design and Implementation of Linear Array Image Acquisition System</td>
<td>247</td>
</tr>
<tr>
<td>Baoju Zhang, Xiang Tong, Wei Wang, and Jiazu Xie</td>
<td></td>
</tr>
<tr>
<td>Experimental Study of Torque Measurement Based On FBG</td>
<td>255</td>
</tr>
<tr>
<td>Shengnan Fu, Yinguo Huang, and Xinghua Li</td>
<td></td>
</tr>
<tr>
<td>Face Detection Based on Cost-Gentle Adaboost Algorithm</td>
<td>263</td>
</tr>
<tr>
<td>Jian Cheng, Haijun Liu, Jian Wang, and Hongsheng Li</td>
<td></td>
</tr>
<tr>
<td>The Uncertainty Assessment of Vehicle Speed Measurement Based on Laser Switch</td>
<td>271</td>
</tr>
<tr>
<td>Li Li and Hong He</td>
<td></td>
</tr>
<tr>
<td>Adaptive Threshold Nonlinear Image Enhancement Algorithm Based on NSCT Transform</td>
<td>279</td>
</tr>
<tr>
<td>Ying Tong, Meirong Zhao, and Zilong Wei</td>
<td></td>
</tr>
<tr>
<td>Sub-pixel Edge Detection Algorithm Based on the Fitting of Gray Gradient and Hyperbolic Tangent Function</td>
<td>287</td>
</tr>
<tr>
<td>Zilong Wei, Meirong Zhao, and Ying Tong</td>
<td></td>
</tr>
<tr>
<td>Self-Adaptive Image Transfer with Unequal Protection by Prioritized LT Code</td>
<td>295</td>
</tr>
<tr>
<td>YaXian Wang and Ting Jiang</td>
<td></td>
</tr>
</tbody>
</table>
Part III Circuit Processing System

Detection Accuracy Comparison Between the High Frequency and Low Frequency SSVEP-Based BCIs ................................................................. 307
Zhenghua Wu and Sheng Su

A New Simulated Floating Inductor Synthesized by Nodal Admittance Matrix Expansion ................................................................. 313
Lingling Tan, Xin Guan, Jianfu Teng, and Kailhua Liu

Design of C8051F340 USB Communication System Based on USBXpress ................................................................. 321
Yuan Lu, Xiaoli Lu, Zhenchao Wang, and Xiaoou Song

Speeding Up Colon CAD Using KD-Tree ................................................................. 329
Zhangjing Wang and Junhai Luo

Low-Power Design of Hybrid Instruction Cache Based on Branch Prediction and Drowsy Cache ................................................................. 335
Li Wei and Xiao Jian-qing

Simple and Efficient Algorithm for Automatic Modulation Recognition for Analogue and Digital Signals ................................................................. 345
Badreldeen Ismail Dahap, Liao HongShu, and Mohammed Ramadan

Control System by Laser Positioning Based on Free Pendulum ................................................................. 359
Liguo Hao, Xueling Zhao, and Shengbin Liang

Humanoid Robot Design ................................................................. 367
Xueling Zhao, Shouquan Bian, Liguo Hao, and Peng Zhao

Comparative Study on the Textbooks of Classic “Electric Circuits Analysis” ................................................................. 377
Guanglin Han and Xiaoyang Song

MIMO System Based on UWB Transmitter Channel Transmission Matrix Optimization ................................................................. 383
Guanglin Han and Tingting Wang

Research of Fine Control Technology About the Tire Rubber Production Line Auxiliary Machine ................................................................. 391
Jin Chen, Rong-rong Zhang, Mao-lin Ji, Feng-cai Fang, Qing Wang, and Ying Tong

The PLL Amplifier Design Based on Analog Multiplier ................................................................. 401
Lei Fan, Feng-cai Fang, Heng Quan, Qiang Li, Hui Wang, Yue-yang Cui, and Jin Chen
Part IV  Millimeter Wave and UWB Technology

Rain Attenuation Prediction Models of 60GHz Based on Neural Network and Least Squares-Support Vector Machine .............................................. 413
Lina Zhao, Long Zhao, Qizhu Song, Chenglin Zhao, and Bin Li

The Received Signal Characteristics-Based TOA Estimation in UWB Dense Multipath Channels .................................................. 423
Xinyue Fan, Wei Lu, and Fei Zhou

A Method of Object Identification Based on Gabor-Network and UWB ................................................................. 433
Kang Liu and Ting Jiang

A Method of Target Detection and Identification Based on UWB and PSO-WNN ............................................................... 443
Feng Gao and Ting Jiang

A New UWB Target Detection and Identification Method Based on Extreme Learning Machine ................................................. 453
Hao Shen and Ting Jiang

Target Detection and Classification by UWB Communication Signal Based on Third-Order Cumulants ........................................... 461
Yi Zhong, Zheng Zhou, and Ting Jiang

A New Method of Target Identification in UWB Communication System Based on Smooth Pseudo Wigner Ville Distribution and Semi-supervised Clustering ........................................... 469
Qiqi Tang and Ting Jiang

Part V  Radar Signal Processing

A SVD-Based Visual Attention Detection Algorithm of SAR Image .... 479
Shuo Liu, Zongjie Cao, and Jin Li

SAR Target Recognition via Sparsity Preserving Projections .......... 487
Lan Li, Jian Cheng, and Haijun Liu

Comparing Spectral Analysis Methods of the Wind Profiling Radar Echoes ................................................................. 495
Mingbao Hu, Hongbing He, Weihua Ai, and Miaoying Li

Improved Multi-Channel Reconstruction Algorithm for High Resolution Wide Swath Imaging with Squint Stripmap SAR ........ 501
Weihua Zuo and Rui Min
Design and Implementation of 0.28 THz Terahertz Radar System with Ranging Capabilities ........................................... 511
Kun Tian, Jin Li, and Gang Yao

The Impact Analysis of the Array Elements Number on the Beam Direction in the Presence of Amplitude and Phase Errors ............. 517
Xu Wang, Huiyong Li, and Julan Xie

Virtual Transmitting-Receiving Beamforming Approach to Achieving Narrower Mainlobe for MIMO Radar by Tapering ........ 525
Yubing Jiang, Wei Zhang, Huiyong Li, and Cheng Luo

CFAR Detection Method in Multi-target Environments for Foreign Object Debris Surveillance Radar ........................................ 533
Jing Wu, Hong Wang, Xuelian Yu, Xuegang Wang, and Meng Zhao

Time-Shifted Synchronization Applied into the Low-Cost Chaos Radar ............................................................ 541
Lianjun Sun, Jinfeng Hu, Cheng Luo, and Zishu He

High Squint SAR Imaging Using the Modified Range-Doppler Algorithm .......................................................... 549
Zhihao Mei, Youxin Lv, Jing Wu, and Meng Zhao

A Two-Stage Target Detection Method for High-Resolution SAR Images .......................................................... 557
Yuchen Ge, Zongjie Cao, and Jilan Feng

Bistatic ISAR Imaging Algorithm Based on Compressed Sensing ...... 567
Lin Dong, Fan Luhong, and Jin Li

Continuous Potts Model Based SAR Image Segmentation by Using Dictionary-Based Mixture Model ............................. 577
Yadan Yu, Zongjie Cao, and Jilan Feng

A High-Resolution Terahertz LFMCW Experimental Radar ......... 587
Yao Gang, Zhang Biao, and Min Rui

A Spatial Regularity Constrained Active Contour Model for PolSAR Image Segmentation .............................................. 597
Zongjie Cao and Ying Tan

The Research on Fuzzy Ontology Modeling Method and Its Application on Intelligent Household Security ..................... 607
Huang Lin, Yongheng Wang, and Xiaoming Zhang

Wideband Radar Target Detection Based on the Probability Distance of Empirical Cumulative Distribution Function .......... 617
Guishan Lin, Zhiming He, Jing Wu, Meng Zhao, and Zhihao Mei
Study of Illuminated Area and Doppler Characteristics of Airborne Pulse Radar Based on Vector Analysis ........................................ 625
Haijiang Wang

Part VI  Intelligent System and Technology

FOD Detection on Airport Runway with an Adaptive CFAR Technique .......................................................... 637
Weidong Liu, Zhongjin Zhang, and Xuelian Yu

Complex Event Processing Over Uncertain Event Stream ................. 647
Xinlong Zhang, Yongheng Wang, Xiaoming Zhang, and Xinhui Zhu

The Application of Speech Synthesis in Car Warning System .......... 657
Jianli Liu and Jinying Chen

Null Space Pursuit Algorithm Based on a Fourth-Order Differential Operator ............................................ 663
Weiwei Xiao and Shuying Zhang

High Efficient Complex Event Processing Based on Storm ............. 671
Shengjian Liu, Yongheng Wang, Shuguang Peng, and Xinlong Zhang

The Design of Traffic Monitoring Module of COFN Management ...... 679
Jianli Liu, Jinying Chen, Wei Tang, and Zhan Li

Part VII  Wireless Communication and Networks

New Blind Recognition Method of SCLD and OFDM Based on Cyclostationarity ........................................ 689
Yilong Chen, Changzhong Zhang, and Zhuo Sun

A Novel ICI-SC Scheme in MIMO-OFDM System ..................... 697
Zhenchao Wang, Jianping Zhang, Yanqin Wang, Zhenpeng Liu, and Zhenyang Guan

An Improved Blind Detection Method for PDCCH in TD-LTE System .................................................. 707
Zengshan Tian, Li Zhang, Mu Zhou, and Qiping Zhou

Simple and Efficient Algorithm for Automatic Digital Modulation Recognition ........................................ 715
Badreldeen Ismail Dahap and Liao HongShu

The Analysis of Effect of Nonlinear Power Amplifier on Beamforming .................................................. 725
Chen Wei, Huiyong Li, and Julan Xie
A New Secure Transmission for Big Data Based on Nested Sampling and Coprime Sampling
Junjie Chen, Qilian Liang, Baoju Zhang, and Xiaorong Wu

Sparse Channel Estimation Using Overcomplete Dictionaries in OFDM Systems
Fei Zhou and Jing Tan

Amplify-and-Forward Relay Networks for Bit-Interleaved Space-Time Codes
Tao He and Susheel Kumar Chanda

Adaptive Modulation Based Relay Selection and Power Allocation in Cooperative OFDM Wireless Networks
Nianlong Jia, Wenjiang Feng, Najashi Bara’u Gafai, and Weiheng Jiang

Concatenated-Code Belief Propagation Decoding for High-Order LDPC Coded Modulations
Haicheng Zhang, Guibin Zhu, and Huiyun Jiang

Joint Detection Algorithm for Spectrum Sensing Over Multipath Time-Variant Flat Fading Channels
Mengwei Sun, Yan Zhang, Long Zhao, Bin Li, and Chenglin Zhao

Empirical Likelihood-Based Channel Estimation with Laplacian Noise
Long Zhao, Qiang Ma, Bin Li, and Chenglin Zhao

Multi-path Channel Estimation Using Empirical Likelihood Algorithm with Non-Gaussian Noise
Pengbiao Wang, Yan Zhang, Long Zhao, Bin Li, and Chenglin Zhao

A Training Sequence Parallel Detection Technology Based on Timeslot Sliding Window
Jian Shi, Jianfeng Huang, and Kaihua Liu

A Method to Evaluate MANET Connectivity Based on Communication Demand and Probability
Xiang Zhang, Qiang Liu, and Zhendian Li

Coexistence Study Based on TD-SCDMA and WCDMA System
Li Li and He Hong

Joint Power and Spectrum Allocation for Relay Stations in Mobile Relay Networks
Xin Wang, Qilian Liang, Baoju Zhang, and Xiaorong Wu

Research on the Channel Estimation Algorithms in MIMO-Channel
Junsheng Zhang, Ruian Liu, and Daxi Liu
A Novel Wideband Dual-Polarized Dipole Antenna .......................... 847
Feiyun Guan, Xianhu Luo, and Xianqi Lin

Direct P-Code Acquisition Based on Wavelet Filtering .................. 853
Qing Xu, YuXiang Gao, and HaiJiang Wang

The Design of RFID Middleware Data Filtering Based on Coal Mine Safety ........................................ 859
Jianglong Zhu, Jun Huang, Dawen He, Yujun Leng, and Shilin Xiao

The Design of the RF Front-End of Reader Based on SAW RFID ...... 869
Fuhai Wu, Jun Huang, Cheng Ma, Yujun Leng, Jing Yang, and Shilin Xiao

Part VIII  Localization and Target Detection

A Scattering Model Based on GTD in Terahertz Band ..................... 879
Yang Yu, Jin Li, and Rui Min

Through Wall Human Detection Using Compressed UWB Radar Data .................................................. 887
Wei Wang, Baoju Zhang, and Jiasong Mu

Scattering Model Based Hybrid TOA/AOA/AOD Localization in NLOS Environment ................................ 893
Zengshan Tian, Ling Yao, Mu Zhou, Fei Zhou, and Li Zhang

The Research of Dynamic Tracking Algorithm Based on Hybrid Positioning System .................................. 903
Chengbiao Fu

Probability Distribution-Aided Indoor Positioning Algorithm Based on Affinity Propagation Clustering ............ 911
Zengshan Tian, Xiaomou Tang, Mu Zhou, and Zuohong Tan

Detecting and Separating Different Moving Styles Targets of the Over-the-Horizon Radar ............................ 921
Cheng Luo, Dingwen Xu, and Zishu He

The Performance Study of Positioning and Tracking in Dynamic Model ................................................... 929
Anhong Tian, Mu Zhou, and Chengbiao Fu

Adapting Traceability System to Origin Positioning System for Agricultural Product from an Electronic Scale Using GPS ........ 935
Jing Xie and Chuanheng Sun

Improved Positioning Algorithm Using the Linear Constraints of Scatterer in Two Base Stations ..................... 945
Zhou Fei and Fan Xin-Yue
An Effective Phase-Based Localization Approach Under Multipath Environments ........................................ 953
Yang Zhao, Kaihua Liu, Yongtao Ma, Liuji Zhou, and Jinlong Wang

Human Action Recognition Using Maximum Temporal Inter-Class Dissimilarity ........................................ 961
Haijun Liu and Lan Li

Single Point Positioning Algorithm of Integrated System Based on Improve Least Squares Algorithm ............................ 971
Anhong Tian, Chengbiao Fu, and Jian Xu

Indoor Localization Technology Based on NLOS Identification and Offset and Improved Particle Filter ........................ 979
Jiaojiao Wang, Yu Zhao, Kaihua Liu, Yongtao Ma, and Xiangxi Zeng

A Kind of Localization Algorithm Based on Driver Test Data ........ 987
Jian Shi, Jianfeng Huang, and Kaihua Liu

The Research of Satellite Selection Algorithm in Positioning System ........ 997
Anhong Tian, Chengbiao Fu, Dechun Dong, and Siyuan Yang

A Fast Active Contour Tracking Method Based on Gaussian Mixture Model .......................................................... 1005
Yuchen Wang, Xiaofeng Lu, and Mingyao Zhu

Decision Fusion in Target Detection Using UWB Radar Sensor Network .............................................................. 1013
Ishrat Maherin and Qilian Liang

A Target Tracking Algorithm Based on Optical Transfer Function and Normalized Cross Correlation ......................... 1021
Xin Yin, Yaqiu Sun, Shidong Song, and Xueyan Ma

Analysis for Low Cost Inertial Sensors Based Pedestrian Dead Reckoning ............................................................. 1029
Shaochu Wang, Kaihua Liu, Yu Liu, and Xiaokang Sun

A Campus Based Mobility Model for Opportunistic Network .......... 1039
Daru Pan, Jiajia Sun, Xiong Liu, Xuhan Feng, and Wenfeng Pang

GPS Multipath Mitigation Algorithm Using C/A Code Correlation Character ............................................................. 1047
Jie Li, Yuliang Li, and Yingwu Zhou

On-Line Anomaly Detection in Big Data Based on Compressive Sensing ................................................................. 1059
Wei Wang, Dunqiang Lu, Xin Zhou, Baoju Zhang, and Jiasong Mu
Part IX Biological Signal Processing

Using Canonical Correlation Method to Extract SSVEP at One Channel ........................................... 1069
Zhenghua Wu

Research on Target Identification Algorithm in Micromanipulation . . . 1077
Xin Yin, Cuiping Zhang, Shidong Song, Ningning Ma, and Xueyan Ma

An Information Integration Approach for Classifying Coding and Non-Coding Genomic Data ........................................... 1085
Ashis Kumer Biswas, Baoju Zhang, Xiaoyong Wu, and Jean X. Gao

A Unified Probabilistic PLSR Model for Quantitative Analysis of Surface-Enhanced Raman Spectrum (SERS) ........................................... 1095
Shuo Li, Jean Gao, James O. Nyagilo, Digant P. Dave, Baoju Zhang, and Xiao Yong Wu

Part X Sensor and Measuring Network

Performance Evaluation of Multiuser Selection Scheme in HANs of Smart Grid ........................................... 1107
Zhuo Li, Qilian Liang, Baoju Zhang, and Xiaorong Wu

Research of Coal Temperature Early Warning Method Based on Curve Fitting ........................................... 1117
Yujun Leng, Jun Huang, Qiang Wu, Jianglong Zhu, and Shilin Xiao

Continuous Detection Anti-collision Algorithm for EPC Gen2 RFID Systems ........................................... 1127
Zhenpeng Liu, Zhenyang Guan, Kaiyu Shang, Wenlei Chai, and Zhenchao Wang

A Strategy of Network Coding Against Wiretapping Attack Based on Network Segmentation ........................................... 1137
Rong Du, Chenglin Zhao, Shenghong Li, and Jian Li

Research on Time Triggered Ethernet Based on Deterministic Network Calculus ........................................... 1145
Yu Xiang, Xiang Zhang, Zhenwei Li, and Wei Wang

Research on Distance Measurement Based on LQI ........................................... 1159
Yu Xiang, Jin Li, and Wenyong Wang

A 3-D Channel Model for High-Speed Railway Communications in Mountain Scenario ........................................... 1173
Jia Guiyuan, Wu Muqing, Zhao Min, and Zhao Ruojun
Adaptive Control Algorithm Improving the Stability of Micro Force Measurement System .................................................. 1183
Yelong Zheng, Xiaoli Yang, Meirong Zhao, Tao Guan, and Meihua Jiang

QoS Performance Evaluation Methods for High-Speed Railway Mobile Communication .............................................. 1193
Dan Fei, Lei Xiong, and Jianqiang Wu

Design of Infrared Digital Tachometer ........................................... 1203
Jingrui Sun, Mingcheng Liu, Jincheng Wu, and Li Zhou

The SVA-MUSIC Algorithm Based on a Simple Vector Array .......... 1213
Mingtuan Lin, Yiling Guo, Jibin Liu, and Peiguo Liu

Automatic Car Tracing Based on Ultrasonic Distance Measurement . . 1221
Mingcheng Liu, Bin Liang, and Jingrui Sun

Improved Spectrum Sensing Method for Cognitive Radio Based on Time Domain Averaging and Correlation .................. 1229
Shenghong Li and Guoan Bi

Index .................................................................................................................. 1239
The Proceedings of the Second International Conference on Communications, Signal Processing, and Systems
Zhang, B.; Mu, J.; Wang, W.; Liang, Q.; Pi, Y. (Eds.)
2014, XXIV, 1242 p. 588 illus. In 2 volumes, not available separately., Hardcover
ISBN: 978-3-319-00535-5