

# **2010 International Conference on Wavelet Analysis and Pattern Recognition**

**(ICWAPR 2010)**

**Qingdao, China  
11 – 14 July 2010**



**IEEE Catalog Number: CFP1019C-PRT  
ISBN: 978-1-4244-6530-9**

# Contents

## Greetings from the General Chairs and Program Chairs

## Greetings from the Program Committee Chairs

## Organizing Committee

## Program Committee

## List of Reviewers

## Contributed Papers

### Image Processing

|  |    |
|--|----|
| <b>A New Image Denoising Method Based on Bemd and Self-Similar Feature</b><br>Jian-Jia Pan, Yuan-Yan Tang .....  | 1  |
| <b>A New Robust Copyright Protection Scheme for Digital Image Based on Visual Cryptography</b><br>Yi-Bo Xing, Jun-Hui He .....                                   | 6  |
| <b>A Novel Infrared Face Recognition Method in Det Domain</b><br>Zhi-Hua Xie, Guo-Dong Liu, Shi-Qian Wu, Zhi-Jun Fang, Gan Yun .....                             | 12 |
| <b>A Public Key Watermarking Based on Hyper-Chaotic Cellular Neural Network</b><br>Li-Zong Li, Tie-Gang Gao, Qiao-Lun Gu, Qun-Ting Yang .....                    | 17 |
| <b>An Adaptive Fusion Method Based on Regional Feature for Alos Image</b><br>Xiao-Yan Wang, Yong Liu, Zhi-Yong Jiang .....                                       | 23 |
| <b>An Algorithm Based on Rough-Set Theory for Color Image Segmentation</b><br>Ming-Xin Zhang, Cai_Yun Zhao, Zhao-Wei Shang, Hua Li, Jin-Long Zheng .....         | 28 |
| <b>An Efficient Casts Recognition Algorithm in Urinary Sediment Images</b><br>Xue-Qin Yang, Bin Fang, Jun-Feng Xiong .....                                       | 33 |
| <b>An Improved Mean Shift Tracking Algorithm Based on Color and Texture Feature</b><br>Xiang Zhang, Yuan-Ming Dai, Zhang-Wei Chen, Huai-Xiang Zhang .....        | 38 |
| <b>Baseline Detection and Matching to Vision-Based Navigation of Agricultural Robot</b><br>Cui-Jun Zhao, Guo-Quan Jiang .....                                    | 44 |
| <b>Contourlet-1.3 Texture Image Retrieval System</b><br>Xin-Wu Chen, Guang-Li Yu, Jun-Bin Gong .....   | 49 |
| <b>Design and Implement of High Resolution Still Image Compression and Storage System</b><br>Zhe Chen, Zong-Tao Duan , Zhao-Yun Sun , Jian Tao , Liang Yao ..... | 55 |
| <b>Foreground/Background Difference Saliency Via Information Maximization for Moving Target Detection</b><br>Zhi-Lin Ni, Jian-Huang Lai, Xian Wu .....           | 60 |

|  |     |
|--|-----|
| <b>Fracture Identification of X-Ray Image</b>  |     |
| Jian Liang, Bao-Chang Pan, Yong-Hui Huang, Xiao-Yan Fan .....  | 67  |
| <b>Generic Ring Fourier Descriptors for Shape Description</b>  |     |
| Jian-Wei Yang, Xiang-Jun Zhao, Ru-Shi Lan .....  | 74  |
| <b>Image Denoising Using Multi-Scale Thresholds Method in the Wavelet Domain</b>                               |     |
| Ming Tian, Hao Wen, Long Zhou, Xinge You .....   | 79  |
| <b>Infrared Face Recognition Based on Radiative Energy and Sub-Block Dct in Wavelet Domain</b>                 |     |
| Xiao-Wei Liu, Zhi-Hua Xie, Cui-Qun He, Guo-Dong Liu .....  | 84  |
| <b>Location of 2-Dim Code in Image by Corner Detection</b>   |     |
| Ping Wang, Jinyi Hou .....   | 90  |
| <b>Semi-Fragilewatermarking Algorithm Based on Texture Segmentation</b>  |     |
| Sheng-Bing Che, Han Gao, Jin-Kai Luo .....   | 95  |
| <b>The Research and Realization of Vehicle License Plate Character Segmentation and Recognition Technology</b> |     |
| Jian-Xia Wang, Wan-Zhen Zhou, Jing-Fu Xue, Xin-Xin Liu .....   | 101 |
| <b>Urban Remote Image Fusion Based on Multi-Characteristics</b>  |     |
| Xu-Hong Yang, Gang Liu, Fu-Zhen Huang .....  | 105 |

## Pattern Recognition

|  |     |
|--|-----|
| <b>A Machine Vision Based Crop Rows Detection for Agricultural Robots</b>                    |     |
| Guo-Quan Jiang, Cui-Jun Zhao, Yong-Sheng Si.....   | 114 |
| <b>A Survey of Traffic Sign Recognition</b>  |     |
| Meng-Yin Fu, Yuan-Shui Huang .....   | 119 |
| <b>Automatic Inspection System for Defects Classification of Stretch Knitted Fabrics</b>     |     |
| Te-Li Su, Hua-Wei Chen, Gui-Bing Hong, Chih-Ming Ma.....                                     | 125 |
| <b>Crowd Foreground Detection and Density Estimation Based on Moment</b>                     |     |
| Wei Li, Xiao-Juan Wu, Koichi Matsumoto, Hua-An Zhao.....                                     | 130 |
| <b>Gait Recognition Using Sparse Representation</b>  |     |
| Yan Ma .....   | 136 |
| <b>Gear Fault Diagnosis Based on Svm</b>   |     |
| Shang-Jun Ma, Geng Liu, Yongqiang Xu.....  | 140 |
| <b>Image Analysis Based on an Improved Bidimensional Empirical Mode Decomposition Method</b> |     |
| Dan Zhang, Jian-Jia Pan, Yuan-Yan Tang.....  | 144 |
| <b>Image Match Using Distribution of Colorful Sift</b>                                       |     |
| Zeng-Shun Zhao, Qing-Ji Tian, Ji-Zhen Wang, Jian-Ming Zhou.....                              | 150 |
| <b>Image Retrieval Based on Improved Hierarchical Clustering Algorithm</b>                   |     |
| Cai-Yun Zhao, Bian-Xia Shi, Ming-Xin Zhang, Zhao-Wei Shang.....                              | 154 |
| <b>Kernel Subspace Lda with Convolution Kernel Function for Face Recognition</b>             |     |
| Wen-Sheng Chen, Pong C Yuen, Zhen Ji.....  | 158 |
| <b>Multi-Resolution Local Binary Patterns for Image Classification</b>                       |     |
| Peng Liang, Shao-Fa Li, Jiang-Wei Qin .....  | 164 |
| <b>Multiscale Gaussian Markov Random Fields for Writer Identification</b>                    |     |
| Liang-Shuo Ning, Long Zhou, Xinge You, Liang Du, Zhengyu He.....                             | 170 |
| <b>Orthogonal Sparsity Preserving Projections for Feature Extraction</b>                     |     |
| Chao Lan, Xiao-Yuan Jing, Qian Liu, Shi-Qiang Gao, Yong-Fang Yao .....                       | 176 |
| <b>Random Sampling LDA Incorporating Feature Selection for Face Recognition</b>              |     |
| Ming Yang, Jian-Wu Wan, Gen-Lin Ji.....  | 180 |
| <b>Rotation Invariant Feature Extraction by Combining Denoising with Zernike Moments</b>     |     |
| G. Y. Chen, W. F. Xie.....   | 186 |

|  |     |
|--|-----|
| <b>SMT Solder Paste Deposit Inspection Based on 3D PMP and 2D Image Features Fusion</b>                        |     |
| Bing Luo, Li-Yun Zhang .....   | 190 |
| <b>Sparsity-Regularized Support Vector Machine with Stationary Mixing Input Sequence</b>                       |     |
| Yi Ding, Yi Tang.....  | 195 |
| <b>Unsupervised Classification of Forest from Polarimetric Interferometric Sar Data Using Fuzzy Clustering</b> |     |
| Huan-Min Luo, Er-Xue Chen, Xiao-Wen Li, Jian Cheng , Min Li.....   | 201 |

## Signal Processing

|   |     |
|---|-----|
| <b>Applying an Improved Neural Network to Impulse Noise Removal</b>   |     |
| Chao Deng, Hong-Min Liu, Zhi-Heng Wang .....  | 207 |
| <b>Constructing Section Profile Curve of Turbine Blade</b>  |     |
| Yuan-Peng Liu, Song Zhao, Xiao-Yan Dong.....  | 211 |
| <b>Detection of the Vortex Signal in Vibration Environment and Signal Processing Based on EMD Decompositions</b>                |     |
| Hong-Jun Sun, Jian Liu, Lei Chi, Tao Zhang .....  | 216 |
| <b>Ground Deformation Detection along Beijing-Tianjin Intercity Railway Using Advanced Network Multi-Baseline Dinsar</b>        |     |
| Hong Zhang, Li Tao, Chao Wang, Yi-Xian Tang .....   | 222 |
| <b>Implement of Electromagnetic Pulse Effects Evaluation of Radar System Function Module</b>                                    |     |
| Wan-Zhen Zhou, Jian-Xia Wang, Xin-Xin Liu, Jing-Fu Xue .....  | 227 |
| <b>Mann and Ishikawa Iterative Schemes for Fixed Points of Strongly Relatively Nonexpansive Mappings and their Applications</b> |     |
| Wei Li, Rui-Lin Tan.....  | 232 |
| <b>Multi-Dimensional Time Series-Based Application Server Aging Model</b>   |     |
| Wen-Bin Xu , Yong Qi, Di Hou.....   | 238 |
| <b>MWD Drilling Mud Signal De-Noiseing and Signal Extraction Research Based on the Pulse-Code Information</b>                   |     |
| Wen-Yuan Chen, Bin Fang, Yi Wang.....   | 244 |
| <b>The Effect of Defect Depth on Reflection Coefficient of Ultrasonic Guided Waves in Steel Pipes</b>                           |     |
| Feng-Bin Tian, Yang Jiao, Guang-Hai Li, Guang-Kai Sun, Yu-Bo Zhao.....  | 250 |
| <b>The Real-Time GPR Signals Preprocessing Algorithm Based on LWT in High Scan Rate</b>   |     |
| Gan Lu, Zhou Long.....  | 255 |

## Wavelets and Applications

|  |     |
|--|-----|
| <b>A Multiwavelet Based Digital Watermarking Algorithm Using Texture Measures</b>  |     |
| Xiong-Bo Zheng, Xiao-Wei Zhang.....  | 260 |
| <b>A New Algorithm for Infrared Image Restoration Based on Multi-Scale Morphological Wavelet and Hopfield Neural Network</b> |     |
| Jian-Hui Tan, Bao-Chang Pan, Jian Liang, Yong-Hui Huang, Xiao-Yan Fan .....  | 266 |
| <b>A New Wavelet Packet Transform Fast Algorithm with Dilation Factor 3/2</b>  |     |
| Yan Li, Hui-Guang Li, Xiao-Li Li, Xiang Gao Yang Ou.....   | 271 |
| <b>A Study of General Orthogonal Four-Element Wavelet Packet Bases</b>   |     |
| Qing-Jiang Chen, Xiang-Hai Li, Jian-Wei Yang .....   | 277 |
| <b>A Study of Transient-Based Protection Using Wavelet Energy Entropy for Power System EHV Transmission Line</b>             |     |
| Ming-Yu Yang, Yu-Kun Yang .....  | 283 |
| <b>A Study on a Class of Two-Direction Orthogonal Wavelets on Compact Lie Groups</b>   |     |
| Bao-Qin Wang, Gang Wang, Li-Xia Yuan .....   | 289 |
| <b>Characterizations of Tight Frame Wavelets with Special Dilation Matrices</b>  |     |
| Feng-Juan Zhu, Yong-Dong Huang .....   | 294 |

|   |     |
|---|-----|
| <b>Comparison of Cwt with Dwt for Detecting Qrs Complex on Wearable Ecg Recorder</b>  |     |
| Uk-Jin Yoon, In-Seop Hwang, Yeon-Sik Noh, In-Cheol Chung, Hyung-Ro Yoon .....   | 300 |
| <b>Construction of Symmetric Orthogonal Multiwavelets with Multiplicity 2</b>   |     |
| Cheng-Lin Liu, Xiao-Xia Feng, Zhong-Peng Yang .....   | 304 |
| <b>Construction of Symmetric Orthonormal Multiwavelets</b>  |     |
| Hong-Yan Li, Ping Zhao .....  | 309 |
| <b>Face Recognition under Varying Illumination Based on Dual-Tree Complex Wavelet Transform</b>   |     |
| Lin Jiang .....   | 314 |
| <b>Injector Waveform Analysis and Engine Fault Diagnosis Based on Frequency Space Subdivision in Wavelet Transform</b>                            |     |
| Shu-Xia Jiang , Yuan-Yuan Liu .....   | 318 |
| <b>Modulated Wavelet Basis</b>  |     |
| Lalit K. Jiwani, S.D Joshi, G. S. Visweswaran .....   | 324 |
| <b>Multiwavelet on the Interval with Arbitrary Integer Dilation Factor</b>  |     |
| Yong-Dong Huang, Ying-Min Zhao .....  | 329 |
| <b>Necessary Condition for The Multiwavelet Frames in Two Dimension</b>   |     |
| Guo-Chang Wu, Rui Zhang .....   | 335 |
| <b>Non-Stationary Signal Classification Using the Undecimated Wavelet Packet Transform</b>  |     |
| Marthinus C. Du Plessis, Jan C. Olivier .....   | 340 |
| <b>Parasitic Decrease Wavelet Transform and Its Application on Denoising</b>  |     |
| Zhong Zhang, Noriho Saiki, Hiroshi Toda, Takashi Imamura, Tetsuo Miyake .....   | 345 |
| <b>Research on Electrocardiogram Signal Noise Reduction Based on Wavelet Multi-Resolution Analysis</b>  |     |
| Wei-Wei Zhang, Min Li, Ji-Yin Zhao .....  | 351 |
| <b>Solution of Wave-Equation Using Multiresolution Multiwavelet Basis Function</b>  |     |
| Hideo Sekino, Takumi Okamoto, Shinji Hamada .....   | 355 |
| <b>Some Properties on G-Frames</b>  |     |
| Gang Wang, Bao-Qin Wang, Li-Xia Yuan, Ya-Ling Wang .....  | 359 |
| <b>The General Perfect Translation Invariance Theorem and its Application to an Orthogonal Complex Wavelet Basis on the Classical Hardy Space</b> |     |
| Hiroshi Toda, Zhong Zhang, Takashi Imamura .....  | 364 |
| <b>The Reproducing Kernel Hilbert Space Based on Wavelet Transform</b>  |     |
| Cai-Xia Deng, Shuai Li, Zuo-Xian Fu .....   | 370 |
| <b>Two-Dimensional Periodic Discrete Wavelets Bases</b>   |     |
| Zhi Shi, Bao-Yu Peng .....  | 375 |
| <b>Visualization of Multi-Channel Vital Data at Engine Idling Based on Wavelet Analysis</b>   |     |
| Toru Yamamoto, Seiichi Shin .....   | 381 |

## Wavelets in Monitoring, Diagnosis and Prognosis of Engineering Systems

|  |     |
|--|-----|
| <b>A Hybrid Diagnostic Method Based on Wigner-Ville Distribution and Wavelet Packet Transform</b>                  |     |
| Wei Tian, Ruqiang Yan, Robert X. Gao .....   | 386 |
| <b>An Adaptive Filter Based on Wavelet Transform and Affine Projection Algorithm</b>                               |     |
| Wei-Wei Wu, Yan-Song Wang, Jue-Cheng Zhang .....   | 392 |
| <b>Extraction of Vibration Feature Using Purpose Designed Wavelets for Heart Diagnosis</b>                         |     |
| B. Tovar, W. J. Wang, J. N Torry .....   | 398 |
| <b>Fault Diagnosis of Gearbox Based on Matching Pursuit</b>  |     |
| Zhi-Peng Feng, Jin Zhang, Ru-Jiang Hao, Ming J. Zuo, Fu-Lei Chu .....  | 405 |
| <b>Gearbox Fault Feature Detection Based on Adaptive Parameter Identification with Morlet Wavelet</b>              |     |
| Shi-Bin Wang, Zhong-Kui Zhu, An-Zhu Wang .....   | 409 |
| <b>Hybrid Intelligent Fault Diagnosis Based on Adaptive Lifting Wavelet and Multi-Class Support Vector Machine</b> |     |
| Zhong-Jie Shen, Xue-Feng Cheng, Zheng-Jia He .....   | 415 |

|  |     |
|--|-----|
| <b>Research on Aeroengine Rub-Impact Fault Analysis Based on Wavelet Transform and the Local Binary Patterns</b> |     |
| Ya-Hui Wu, Jing-Feng Xue, Da-Zhi Zhang, Xin-Liang Li .....   | 421 |
| <b>Wavelet Analysis in Transient Based Protection for Power System High Voltage Transmission Line</b>            |     |
| Ming-Chao Xia, Yi-Zhuang Huang .....   | 427 |
| <b>'Cwj qt 'kpf gz</b>   |     |