

Contents

Face

| | |
|---|----|
| Adaptive Quotient Image with 3D Generic Elastic Models for Pose and Illumination Invariant Face Recognition | 3 |
| <i>Zhongjun Wu and Weihong Deng</i> | |
| Low Rank Analysis of Eye Image Sequence – A Novel Basis for Face Liveness Detection | 11 |
| <i>Chengyan Lin, Yuwu Lu, Jian Wu, and Yong Xu</i> | |
| Non-negative Compatible Kernel Construction for Face Recognition | 19 |
| <i>Yang Zhao, Wensheng Chen, Binbin Pan, and Bo Chen</i> | |
| 3D Face Recognition Using Local Features Matching on Sphere Depth Representation. | 27 |
| <i>Hanchao Wang, Zhichun Mu, Hui Zeng, and Mingming Huang</i> | |
| Face Recognition Using Local PCA Filters. | 35 |
| <i>Yida Wang, Shasha Li, Jiani Hu, and Weihong Deng</i> | |
| Block Statistical Feature-based Face Verification on Second Generation Identity Card | 43 |
| <i>Hegui Zhu, Yang Wang, Xiuping Mao, and Xiangde Zhang</i> | |
| Towards Practical Face Recognition: A Local Binary Pattern Non Frontal Faces Filtering Approach | 51 |
| <i>Yikui Zhai, Xiaolin Wang, Junying Gan, and Ying Xu</i> | |
| Metric Learning Based False Positives Filtering for Face Detection | 60 |
| <i>Nanghai Zhang, Jiajie Han, Jiani Hu, and Weihong Deng</i> | |
| Face Recognition via Compact Fisher Vector | 68 |
| <i>Hongjun Wang and Weihong Deng</i> | |
| Nonlinear Metric Learning with Deep Convolutional Neural Network for Face Verification | 78 |
| <i>Rongbing Huang, Fangnian Lang, and Changming Shu</i> | |
| Locally Collaborative Representation in Similar Subspace for Face Recognition | 88 |
| <i>Riqiang Gao, Wenming Yang, Xiang Sun, Hong Li, and Qingmin Liao</i> | |

| | |
|---|-----|
| A DCNN and SDM Based Face Alignment Algorithm. | 96 |
| <i>Qingsong Tang, Qinqin Zhang, Xiaomeng Zhang, Zhenlin Cai, and Xiangde Zhang</i> | |
| Robust Face Detection Based on Enhanced Local Sensitive Support Vector Machine | 103 |
| <i>Xiaohong Li, Qinqin Tao, Jingjing Zhao, Yiming Mao, and Shu Zhan</i> | |
| An Efficient Non-negative Matrix Factorization with Its Application to Face Recognition. | 112 |
| <i>Yugao Li, Wensheng Chen, Binbin Pan, Yang Zhao, and Bo Chen</i> | |
| Patch-based Sparse Dictionary Representation for Face Recognition with Single Sample per Person | 120 |
| <i>Jianquan Gu, Le Liu, and Haifeng Hu</i> | |
| Non-negative Sparsity Preserving Projections Algorithm Based Face Recognition | 127 |
| <i>Yuan Li and Zhiyan Li</i> | |
| WLD-TOP Based Algorithm against Face Spoofing Attacks. | 135 |
| <i>Ling Mei, Dakun Yang, Zhanxiang Feng, and Jianhuang Lai</i> | |
| Heterogeneous Face Recognition Based on Super Resolution Reconstruction by Adaptive Multi-dictionary Learning. | 143 |
| <i>Jingjing Zhao, Yiming Mao, Qi Fang, Zhicheng Liang, Fumeng Yang, and Shu Zhan</i> | |
| 3D Face Recognition Fusing Spherical Depth Map and Spherical Texture Map. | 151 |
| <i>Shuai Liu, Zhichun Mu, and Hongbo Huang</i> | |
| Privacy Preserving Face Identification in the Cloud through Sparse Representation | 160 |
| <i>Xin Jin, Yan Liu, Xiaodong Li, Geng Zhao, Yingya Chen, and Kui Guo</i> | |
| Infrared Face Recognition Based on ODP of Local Binary Patterns. | 168 |
| <i>Zhihua Xie and Ying Xiong</i> | |
| Image Classification Based on Discriminative Dictionary Pair Learning | 176 |
| <i>Shuai Yuan, Huicheng Zheng, and Dajun Lin</i> | |
| Weber Local Gradient Pattern (WLGP) Method for Face Recognition | 186 |
| <i>Shanshan Fang, Jucheng Yang, Na Liu, and Yarui Chen</i> | |
| Multi-task Attribute Joint Feature Learning. | 193 |
| <i>Lu Chang, Yuchun Fang, and Xiaoda Jiang</i> | |

| | |
|--|-----|
| Person-specific Face Spoofing Detection for Replay Attack Based on Gaze Estimation | 201 |
| <i>Lijun Cai, Lei Huang, and Changping Liu</i> | |

Fingerprint and Palmprint

| | |
|--|-----|
| Palmprint Feature Extraction Method Based on Rotation-invariance. | 215 |
| <i>Jinghui Feng, He Wang, Yang Li, and Fu Liu</i> | |
| CPGF: Core Point Detection from Global Feature for Fingerprint | 224 |
| <i>Dejian Li, Xishun Yue, Qiuxia Wu, and Wenxiong Kang</i> | |
| Fingerprint Liveness Detection Based on Pore Analysis | 233 |
| <i>Mengya Lu, Zhiqiang Chen, and Weiguo Sheng</i> | |
| A DCNN Based Fingerprint Liveness Detection Algorithm with Voting Strategy | 241 |
| <i>Chenggang Wang, Ke Li, Zhihong Wu, and Qijun Zhao</i> | |
| Slap Fingerprint Recognition for HD Mobile Phones | 250 |
| <i>Yongliang Zhang, Hongtao Wu, Congmin Huang, Jinlei Yang, and Xiaoli Jiang</i> | |
| A Palmprint Recognition Algorithm Based on GIDBC. | 258 |
| <i>Mengqi Jia, Weibo Wei, Danfeng Hong, and Gang Wang</i> | |
| Structural Feature Measurement Using Fast VO Model for Blurred Palmprint Recognition | 266 |
| <i>Gang Wang, Weibo Wei, Zhenkuan Pan, Danfeng Hong, and Mengqi Jia</i> | |
| Palmprint Liveness Detection by Combining Binarized Statistical Image Features and Image Quality Assessment. | 275 |
| <i>Xiaoming Li, Wei Bu, and Xiangqian Wu</i> | |

Vein Biometrics

| | |
|--|-----|
| Study of Heterogeneous Dorsal Hand Vein Recognition Based on Multi-device. | 287 |
| <i>Yiding Wang and Linlin Xu</i> | |
| Finger Vein Recognition Based on Local Opposite Directional Pattern. | 297 |
| <i>Ying Xie, Jucheng Yang, Xi Zhao, and Xiaoli Zhang</i> | |
| Finger Vein Recognition Based on Cycle Gradient Operator. | 305 |
| <i>Song Dong, Jucheng Yang, Xi Zhao, and Xiaoli Zhang</i> | |

| | |
|---|-----|
| Hand-dorsa Vein Recognition Based on Improved Partition Local Binary Patterns | 312 |
| <i>Kefeng Li, Guangyuan Zhang, Yiding Wang, Peng Wang, and Cui Ni</i> | |
| Research on Finger Vein Recognition Based on NSST | 321 |
| <i>Kejun Wang, Xianglei Xing, and Xiaofei Yang</i> | |
| A New Finger Vein Recognition Method Based on Hyperspherical Granular Computing | 331 |
| <i>Zhiyuan Liu, Guimin Jia, Yihua Shi, and Jinfeng Yang</i> | |
| Iris and Ocular Biometrics | |
| An Iris Recognition Method Based on Annule-energy Feature | 341 |
| <i>Guang Huo, Yuanning Liu, Xiaodong Zhu, Chun Huang, Fei He, Si Gao, Hongxing Dong, Lijiao Yu, and Xia Yang</i> | |
| An Efficient Iris Recognition Method Based on Restricted Boltzmann Machine. | 349 |
| <i>Guang Huo, Yuanning Liu, Xiaodong Zhu, and Jianfeng Wu</i> | |
| Iris Cracks Detection Method Based on Minimum Local Gray Value and Dilating Window of Regional Mean Gray Value. | 357 |
| <i>Bo Zhang and Weiqi Yuan</i> | |
| Extraction of Texture Primitive of the Iris Intestinal Loop | 365 |
| <i>Jing Huang and Weiqi Yuan</i> | |
| Texture Enhancement of Iris Images Acquired under Natural Light | 373 |
| <i>Boyan Hou, Yuqing He, Mengmeng Liang, and Xue Wang</i> | |
| Behavioral Biometrics | |
| Facial Expression Recognition Based on Multiple Base Shapes. | 383 |
| <i>Lijun Cai, Lei Huang, and Changping Liu</i> | |
| A Novel Speech Emotion Recognition Method via Transfer PCA and Sparse Coding | 393 |
| <i>Peng Song, Wenming Zheng, Jingjing Liu, Jing Li, and Xinran Zhang</i> | |
| Sparse Facial Expression Recognition Algorithm Based on Integrated Gabor Feature. | 401 |
| <i>Yang Liu, Lei Ren, and Hong Shao</i> | |
| Robust Gait Recognition Based on Collaborative Representation with External Variant Dictionary. | 409 |
| <i>Wanjiang Xu, Can Luo, Aiming Ji, and Canyan Zhu</i> | |

| | |
|--|-----|
| Facial Expression Recognition Based on Gabor Feature and SRC | 416 |
| <i>Xiaojun Lu, Lingmei Kong, Mengzhu Liu, and Xiangde Zhang</i> | |
| Feature Fusion of Gradient Direction and LBP for Facial Expression Recognition | 423 |
| <i>Yu Li and Liang Zhang</i> | |
| A Mahalanobis Distance Scoring with KISS Metric Learning Algorithm for Speaker Recognition. | 431 |
| <i>Zhenchun Lei, Jian Luo, Yanhong Wan, and Yingen Yang</i> | |
| Automatic Facial Expression Analysis of Students in Teaching Environments | 439 |
| <i>Chuangao Tang, Pengfei Xu, Zuying Luo, Guoxing Zhao, and Tian Zou</i> | |
| Modified Marginal Fisher Analysis for Gait Image Dimensionality Reduction and Classification. | 448 |
| <i>Shanwen Zhang, Zhen Wang, Jucheng Yang, and Chuanlei Zhang</i> | |
| Gait Recognition Based on Energy Accumulation Images | 456 |
| <i>Chuanlei Zhang, Shanwen Zhang, Jucheng Yang, and Weijun Cheng</i> | |
| Speaker Verification Based on TES-PCA Classifier and SVM plus FCM Clustering | 464 |
| <i>Xing Yujuan, Tan Ping, and Zhang Chengwen</i> | |
| Preliminary Study on Self-contained UBM Construction for Speaker Recognition. | 472 |
| <i>Yingchun Yang and Yongkun Sun</i> | |
| The Comparison of Denoising Methods Based on Air-ground Speech of Civil Aviation. | 480 |
| <i>Zhihui Zhang, Yihua Shi, Guimin Jia, and Jinfeng Yang</i> | |
| Application and System of Biometrics | |
| The K-F Ring Detection Method Based on Image Analysis | 491 |
| <i>Le Chang and Weiqi Yuan</i> | |
| A Panoramic Video System Based on Exposure Adjustment and Non-linear Fusion | 499 |
| <i>Linlin Yang, Dandan Du, Baochang Zhang, and Wankou Yang</i> | |
| Edge Multidirectional Binary Pattern Applies to High Resolution Thermal Infrared Face Database. | 508 |
| <i>Xiaoyuan Zhang, Jucheng Yang, Na Liu, and Jianzheng Liu</i> | |

| | |
|--|-----|
| A Multi-model Biometric Image Acquisition System | 516 |
| <i>Haoxiang Zhang</i> | |

Multi-biometrics and Information Fusion

| | |
|---|-----|
| Significance of Being Unique from Finger Patterns: Exploring Hybrid Near-infrared Finger Vein and Finger Dorsal Patterns in Verifying Human Identities. | 529 |
| <i>Wenming Yang, Wenyang Ji, and Qingmin Liao</i> | |

| | |
|---|-----|
| Parallel Nonlinear Discriminant Feature Extraction for Face and Handwritten Digit Recognition | 536 |
| <i>Qian Liu, Fei Wu, Xiaoyuan Jing, Xiwei Dong, Kun Xu, Xuejing Shi, and Xiaoyu Xi</i> | |

| | |
|---|-----|
| A Novel Feature Fusion Scheme for Human Recognition at a Distance | 544 |
| <i>Xianglei Xing, Kejun Wang, Xiaofei Yang, and Tongchun Du</i> | |

| | |
|--|-----|
| Multimodal Finger-feature Fusion and Recognition Based on Tolerance Granular Space | 553 |
| <i>Ruimei Li, Guimin Jia, Yihua Shi, and Jinfeng Yang</i> | |

| | |
|---|-----|
| A Finger-based Recognition Method with Insensitivity to Pose Invariance . . . | 561 |
| <i>Zhen Zhong, Guimin Jia, Yihua Shi, and Jinfeng Yang</i> | |

| | |
|---|-----|
| Fusion of Face and Iris Biometrics on Mobile Devices Using Near-infrared Images | 569 |
| <i>Qi Zhang, Haiqing Li, Man Zhang, Zhaofeng He, Zhenan Sun, and Tieniu Tan</i> | |

Other Biometric recognition and Processing

| | |
|---|-----|
| Boosting-like Deep Convolutional Network for Pedestrian Detection | 581 |
| <i>Lei Wang, Baochang Zhang, and Wankou Yang</i> | |

| | |
|--|-----|
| Human Behavior Recognition Based on Velocity Distribution and Temporal Information | 589 |
| <i>Manyi Wang, Yaling Song, Xiuxiang Hu, and Liang Zhang</i> | |

| | |
|--|-----|
| Gesture Detection and Recognition Fused with Multi-feature Based on Kinect | 597 |
| <i>Haifeng Sang and Wei Li</i> | |

| | |
|--|-----|
| An Interactive Method Based on Random Walk for Segmentation of Facial Nerve in NMR Images. | 607 |
| <i>Zewei Zhang, Yue Ma, and Li Guo</i> | |

| | |
|---|-----|
| Learning 3D Compact Binary Descriptor for Human Action Recognition in Video | 615 |
| <i>Dongcheng Huang, Xiang Li, Hongwei Li, and Weishi Zheng</i> | |
| Multi-scale Medical Image Segmentation Based on Salient Region Detection | 624 |
| <i>Yingxue Wu, Xi Zhao, Guiyang Xie, Yangkexin Liang, Wei Wang, and Yue Li</i> | |
| A Method of ECG Identification Based on Weighted Correlation Coefficient | 633 |
| <i>Min Dai, Baowen Zhu, Gang Zheng, and Yisha Wang</i> | |
| Discriminative Feature Fusion with Spectral Method for Human Action Recognition | 641 |
| <i>Xiang Xiao, Le Liu, and Haifeng Hu</i> | |
| DFDnet: Discriminant Face Descriptor Network for Facial Age Estimation. . . . | 649 |
| <i>Ting Liu, Zhen Lei, Jun Wan, and Stan Z. Li</i> | |
| Action Detection Based on Latent Key Frame | 659 |
| <i>Xiaoqiang Li and Qian Yao</i> | |
| A Facial Pose Estimation Algorithm Using Deep Learning. | 669 |
| <i>Xiao xu, Lifang Wu, Ke Wang, Yukun Ma, and Wei Qi</i> | |
| Age Estimation Based on Canonical Correlation Analysis and Extreme Learning Machine | 677 |
| <i>Jie Si, Jun Feng, Qirong Bu, Xiaohu Sun, Xiaowei He, and Shi Qiu</i> | |
| Research on the Intelligent Public Transportation System. | 686 |
| <i>Yingkun Huang, Shaoshu Huang, Changdong Wang, Dekai Kang, and Wenkai Huang</i> | |
| Discriminative Scatter Regularized CCA for Multiview Image Feature Learning and Recognition | 694 |
| <i>Yunhao Yuan, Jinlong Yang, Xiaobo Shen, Chaofeng Li, and Xiaojun Wu</i> | |
| A Novel Supervised CCA Algorithm for Multiview Data Representation and Recognition | 702 |
| <i>Yunhao Yuan, Peng Lu, Zhiyong Xiao, Jianjun Liu, and Xiaojun Wu</i> | |
| Facial Aging Simulation via Tensor Completion | 710 |
| <i>Heng Wang, Di Huang, Yunhong Wang, and Hongyu Yang</i> | |
| Single-image Motion Deblurring Using Charbonnier Term Regularization . . . | 720 |
| <i>Zhaojing Diao, Guodong Wang, and Zhenkuan Pan</i> | |

| | |
|--|-----|
| Using GrCC for Color Image Segmentation Based on the Combination of Color and Texture | 728 |
| <i>Yaqiong Wang, Guimin Jia, Yihua Shi, and Jinfeng Yang</i> | |
| Author index | 737 |

Biometric Recognition

10th Chinese Conference, CCBR 2015, Tianjin, China,

November 13-15, 2015, Proceedings

Yang, J.; Yang, J.; Sun, Z.; Shan, S.; Zheng, W.; Feng, J.
(Eds.)

2015, XVIII, 739 p. 377 illus. in color., Softcover

ISBN: 978-3-319-25416-6