# Table of Contents

Incremental Learning with Soft-Biometric Features for People Re-identification in Multi-Camera Environment .......................................................... 1

Daniela Moctezuma, Cristina Conde, Isaac Martín de Diego and Enrique Cabello

Performance Analysis of Three Microscope Slide Scanning Techniques ........................................... 8

Yilun Fan, Yaniv Gal and Andrew P. Bradley

Robust Ring Detection in Phase Correlation Surfaces ......................................................................... 14

Ruben Gonzalez

Parallel Implementation of Geodesic Distance Transform with Application in Superpixel Segmentation .............................................................................................. 19

Tuan Q. Pham

1-Point Rigid Motion Estimation and Segmentation with a RGB-D Camera ....................................... 27

Samunda Perera and Nick Barnes

Pose Priors for Aerial Image Registration .......................................................................................... 35

Aaron Marburg, Michael P. Hayes and Andrew Bainbridge-Smith

Automated Image Segmentation and Analysis of Rock Piles in an Open-Pit Mine .......................... 43

Matthew J. Thurley

3D Registration in Dark Environments Using RGB-D Cameras ......................................................... 51

Khalid Yousif, Alireza Bab-Hadiashar and Reza Hoseinnezhad

Taxonomy of File Fragments Using Gray-Level Co-Occurrence Matrices ................................. 59

P. P. Pullaperuma and A. T. Dharmaratne

Efficient Digital FFT Convolution with Boundary Kernel Renormalisation ..................................... 66

Christopher J. Jackett, Robert Ollington and Jenny L. Lovell

Building Roof Plane Extraction from LIDAR Data ........................................................................... 72

Mohammad Awrangjeb and Guojun Lu

Reconstructing Polarisation Components from Unpolarised Images .............................................. 80

Lin Gu, Cong Phuoc Huynh and Antonio Robles-Kelly
Pose Estimation of Ad-Hoc Mobile Camera Networks ................................................................. 88
Zsolt Sánta and Zoltan Kato

Biologically Significant Facial Landmarks: How Significant Are They for Gender Classification? ............................................................................................................. 96
Syed Zulqarnain Gilani, Faisal Shafait and Ajmal Mian

Person Re-Identification Using Group Information ........................................................................ 104
Alina Bialkowski, Patrick Lucey and Xinyu Wei and Sridha Sridharan

Automated Classification of Bone and Air Volumes for Hybrid PET-MRI Brain Imaging ........ 110
Sze-Liang Stanley Chan, Rosalind L. Jeffree, Michael Fay, Stuart Crozier, Zhengyi Yang, Yaniv Gal and Paul Thomas

Image Matting for Sparse User Input by Iterative Refinement .......................................................... 118
Stephen Tierney, Geoff Bull and Junbin Gao

Ad Hoc Radiometric Calibration of a Thermal-Infrared Camera ..................................................... 125
Stephen Vidas and Peyman Moghadam

Large-Scale Analysis of Formations in Soccer .................................................................................. 133
Xinyu Wei, Long Sha, Patrick Lucey and Stuart Morgan and Sridha Sridharan

Accelerating the Divisive Information-Theoretic Clustering of Visual Words ............................. 141
Jianjia Zhang, Lei Wang, Lingqiao Liu, Luping Zhou and Wanqing Li

Lq Averaging for Symmetric Positive-Definite Matrices ............................................................... 149
Khurrum Aftab and Richard Hartley

A Performance Review of Recent Corner Detectors ........................................................................ 157
Mohammad Awrangjeb and Guojun Lu

Robust 3D Multi-Modal Registration of MRI Volumes Using the Sum of Conditional Variance .............................................................................................................. 165
Nargis Aktar, Md. Jahangir Alam, Andrew J. Lambert and Mark R. Pickering

Application of Detection and Recognition Algorithms to Persistent Wide Area Surveillance ........................................................................................................... 170
Shannon Fehlmann, David M. Booth, Pranam Janney, Carmine Pontecorvo, Peter Aquilina, Tony Scoleri, Nicholas J. Redding and Robert Christie

Semi-Binary Based Video Features for Activity Representation ...................................................... 178
Sabanadesan Umakanthan, Simon Denman, Clinton Fookes and Sridha Sridharan
Context Curves for Classification of Lung Nodule Images ................................................................. 185
Fan Zhang, Yang Song, Weidong Cai, Yun Zhou, Shimin Shan and Dagan Feng

A Pedestrian Multiple Hypothesis Tracker Fusing Head and Body Detections .............................. 192
Jamie Sherrah, Branko Ristic and Dmitri Kamenetsky

Swimmer Localization from a Moving Camera .................................................................................. 200
Long Sha, Patrick Lucey, Stuart Morgan and Dave Pease and Sridha Sridharan

Region-Based Anomaly Localisation in Crowded Scenes via Trajectory Analysis and Path Prediction ........................................................................................................................ 208
Teng Zhang, Arnold Wiliem and Brian C. Lovell

Object Cut as Minimum Ratio Cycle in a Superpixel Boundary Graph ........................................... 215
Gao Zhu, Yansheng Ming and Hongdong Li

Predicting Shot Locations in Tennis Using Spatiotemporal Data .................................................... 221
Xinyu Wei, Patrick Lucey, Stuart Morgan and Sridha Sridharan

Facial Expression Recognition Based on Weighted All Parts Accumulation and Optimal Expression-Specific Parts Accumulation .............................................................................................. 229
Humayra Binte Ali and David M. W. Powers

Detection of Structural Similarity for Multimodal Microscopic Image Registration ........................... 236
Guohua Lv, Shyh Wei Teng, Guojun Lu and Martin Lackmann

Interactive Estimation of Light Source Position and Reflectance of Real Objects for Mixed-Reality Application .................................................................................................................... 244
Masahide Kobayashi, Yoshitsugu Manabe and Noriko Yata

Chaining Convolution and Correlation in Practice: A Case Study in Visual Tracking ......................... 252
Dale A. Ward, Ivan Lee, David A. Kearney and Sebastien C. Wong

Closed-Loop Deep Vision .......................................................................................................................... 260
Gustavo Carneiro, Zhibin Liao and Tat-Jun Chin

Robust Data Modelling Using Thin Plate Splines ................................................................................ 268
Ruwan B. Tennakoon, Alireza Bab-Hadiashar, David Suter and Zhenwei Cao
A Novel Representation of Bioacoustic Events for Content-Based Search in Field Audio Data .................................................................................................................................................... 276
Xueyan Dong, Michael Towsey, Jinglan Zhang, Jasmine Banks and Paul Roe

Utilizing Least Significant Bit-Planes of RONI Pixels for Medical Image Watermarking ........................................ 282
Hussain Nyeem, Wageeh Boles and Colin Boyd

Spatial False Discovery Rate Control for Magnetic Resonance Imaging Studies .................... 290

On the Effect of Human Body Parts in Large Scale Human Behaviour Recognition............... 298
O. V. Ramana Murthy, Ibrahim Radwan, Abhinav Dhall and Roland Goecke

Biometric Security Application for Person Authentication Using Retinal Vessel Feature ................................................................. 306
Akter Hussain, Alauddin Bhuiyan, Ajmal Mian and Kotagiri Ramamohanarao

A 3D-2D Image Registration Algorithm for Kinematic Analysis of the Knee after Total Knee Arthroplasty (TKA) ............................................................................................................................................ 314
Mafruha Mowin Hossain, Abdullah A. Muhit, Mark R. Pickering, Jennie Scarvell and Paul Smith

Accuracy Improvement of Melanosome Tracking by Error Correction ................................. 320
Toshiaki Okabe and Kazuhiro Hotta

Pathological Gait Detection of Parkinson’s Disease Using Sparse Representation .................. 328
Yuyao Zhang, Philip O. Ogunbona, Wanqing Li, Bridget Munro and Gordon G. Wallace

Using Depth to Extend Randomised Hough Forests for Object Detection and Localisation ................................................................. 336
Richard Palmer, Geoff West and Tele Tan

Kernel Partial Least Squares Based Hierarchical Building Change Detection Using High Resolution Aerial Images and Lidar Data ...................................................................................................... 344
Kaibin Zong, Arcot Sowmya and John Trinder

ICFSIFT: Improving Collection-Specific CBIR with ICF-Based Local Features .................... 351
Nabeel Mohammed and David McG. Squire

An Improved Restoration Method for Non-Uniformly Warped Images Using Optical Flow Technique ............................................................................................................................................... 359
Kalyan Kumar Halder, Murat Tahtali and Sreenatha G. Anavatti
Learning Discriminative Local Patterns with Unrestricted Structure for Face Recognition ................................................................. 365
Douglas Brown, Yongsheng Gao and Jun Zhou

Robust Video Based Iris Segmentation System in Less Constrained Environments .................. 372
Nitin K. Mahadeo, Andrew P. Paplinski and Sid Ray

Automated Selection of Optimal Frames in NIR Iris Videos........................................................ 380
Nitin K. Mahadeo, Andrew P. Paplinski and Sid Ray

Particle Detection and Classification in Photoelectric Smoke Detectors Using Image Histogram Features .................................................. 388
Kapila K. Pahalawatta and Richard Green

Quality Based Frame Selection for Face Clustering in News Video ........................................ 396
Kaneswara Anantharajah, Simon Denman, Dian Tjondronegoro, Sridha Sridharan, Clinton Fookes and Xufeng Guo

An Evaluation of Different Features and Learning Models for Anomalous Event Detection ........................................................................................................ 404
Hajananth Nallaivarothayan, David Ryan, Simon Denman, Sridha Sridharan and Clinton Fookes

Soil Biochar Quantification via Hyperspectral Unmixing ................................................................. 412
Lei Tong, Jun Zhou, Chengyuan Xu, Yuntao Qian and Yongsheng Gao

Automatic Segmentation of Molecular Pathology Images Using a Robust Mixture Model with Markov Random Fields ......................................................... 420
Shu-Kay Ng and Alfred K. Lam

Sub-Millimeter Crack Detection in Casted Steel Using Color Photometric Stereo .................... 428
Anders Landström, Matthew J. Thurley and Håkan Jonsson

Adaptive Morphological Filtering of Incomplete Data ................................................................. 435
Anders Landström, Matthew J. Thurley and Håkan Jonsson

Robust Visual Vocabulary Tracking Using Hierarchical Model Fusion ................................. 442
Behzad Bozorgtabar and Roland Goecke

Automated Segmentation of Prostate MR Images Using Prior Knowledge Enhanced Random Walker ......................................................................................... 450
Ang Li, Changyang Li, Xiuying Wang, Stefan Eberl, David Dagan Feng and Michael Fulham
Sparse Variation Pattern for Texture Classification .......................................................... 457
Mohammad Tavakolian, Farshid Hajati, Ajmal S. Mian and Soheila Gheisari

Combining Multiple Manifold-Valued Descriptors for Improved Object Recognition ........ 463
Sadeep Jayasumana, Richard Hartley, Mathieu Salzmann, Hongdong Li and Mehrtash Harandi

Sketch-Based Image Retrieval by Size-Adaptive and Noise-Robust Feature Description .......................................................... 469
Houssem Chatbri, Keisuke Kameyama and Paul Kwan

Point Correspondence Validation under Unknown Radial Distortion ................................ 477
William X. Liu, Tat-Jun Chin, Gustavo Carneiro and David Suter

Using Super-Resolution Methods to Solve a Novel Multi-Sinusoidal Signal Model ........... 485
Ross Marchant and Paul Jackway

Scale-Less Feature-Spatial Matching .............................................................................. 493
Chao Zhang and Tingzhi Shen

A 3D Polygonal Line Chains Matching Method for Face Recognition ............................... 501
Xun Yu, Yongsheng Gao and Jun Zhou

Undecoded Coefficients Recovery in Distributed Video Coding by Exploiting Spatio-Temporal Correlation: A Linear Programming Approach ............................................. 507
Mortuza Ali and Manzur Murshed

Robust ASL Fingerspelling Recognition Using Local Binary Patterns and Geometric Features .......................................................... 514
C. S. Weerasekera, M. H. Jaward and N. Kamrani