

# **2010 25th International Conference of Image and Vision Computing New Zealand**

**(IVCNZ 2010)**

**Queenstown, New Zealand  
8 – 9 November 2010**



**IEEE Catalog Number: CFP1067E-PRT  
ISBN: 978-1-4244-9629-7**

# TABLE OF CONTENTS

<b>Learnt Combination in Object Detector Ensembles</b> .....	1
<i>C. Neugebauer, M. Cameron-Jones, M. Horton</i>	
<b>Focus-Score Weighted Super-Resolution For Uncooperative Iris Recognition At A Distance And On The Move</b> .....	9
<i>K. Nguyen, C. Fookes, S. Sridharan, S. Denman</i>	
<b>Current Work in Multimedia Imaging at UoA’s Tamaki Campus</b> .....	17
<i>R. Klette, J. Ahn, H. Geng, R. Haeusler, S. Herman, W. Khan, S. Manoharan, S. Morales, J. Morris, R. Nicolescu, F. Ren, J. Russell, K. Schauwecker, C. Valente, X. Yang</i>	
<b>Evaluation of Motion Analysis on Synthetic and Real-World Image Sequences</b> .....	33
<i>X. Yang, R. Klette</i>	
<b>Improving Bag-of-Words Model with Spatial Information</b> .....	42
<i>E. Zhang, M. Mayo</i>	
<b>Image Composition with Color Harmonization</b> .....	50
<i>Z. Tang, Z. Miao, Y. Wan</i>	
<b>Blind Reverse CFA Demosaicking for the Reduction of Colour Artifacts from Demosaicked Images</b> .....	58
<i>J. Li, S. Randhawa</i>	
<b>Geometric Calibration of a Camera-Projector 3D Imaging System</b> .....	66
<i>T. Li, H. Zhang, J. Geng</i>	
<b>Particle Swarm Optimisation Based AdaBoost for Facial Expression Classification of Still Images</b> .....	74
<i>L. Macri, W. Browne, M. Zhang</i>	
<b>GrowMatting: A GPU-based Real-time Interactive Method for Image Matting</b> .....	82
<i>J. Zhu, G. Lu, D. Zhang</i>	
<b>Evaluation of the Effectiveness of Head Tracking for View and Avatar Control in Virtual Environments</b> .....	90
<i>S. Marks, J. Windsor, B. Wunsche</i>	
<b>Emotion Recognition from Color Facial Images Based on Multilinear Image Analysis and Log-Gabor Filters</b> .....	98
<i>S. Lajevardi, Z. Hussain</i>	
<b>Computer-Assisted Segmentation of Brain Tumor Lesions from Multi-sequence Magnetic Resonance Imaging Using the Mumford-Shah Model</b> .....	104
<i>J. Zoghbi, M. Mamede, M. Jackowski</i>	
<b>The Gradient - A Powerful and Robust Cost Function for Stereo Matching</b> .....	110
<i>S. Hermann, T. Vaudrey</i>	
<b>A New Easy Calibration Algorithm For Para-Catadioptric Cameras</b> .....	118
<i>F. Duan, R. Liu, M. Zhou</i>	
<b>Calibration of Stereo Fish-Eye Camera for Driver Assistance Systems</b> .....	124
<i>J. Ahn</i>	
<b>An Error Bounded Tangent Estimator For Digital Curves</b> .....	132
<i>D. Prasad, M. Leung</i>	
<b>An Optical Testbench and Atmospheric Turbulence Emulator for Astronomical Image Restoration</b> .....	139
<i>S. Weddell, J. Howe</i>	
<b>An Improved Retrieval Performance with Hybrid Shape Descriptor and Feature Matching</b> .....	145
<i>F. Anuar, M. Fauzi, S. Mansor</i>	
<b>Improving Edge Detection Using Particle Swarm Optimisation</b> .....	152
<i>M. Setayesh, M. Zhang, M. Johnston</i>	
<b>Depth from Dynamic (de)Focused Projection</b> .....	160
<i>I. Lertrusdachakul, Y. Fougerolle, O. Laligant</i>	
<b>Chain Coding Streamed Images through Crack Run-Length Encoding</b> .....	168
<i>D. Bailey</i>	
<b>A Cubic Polynomial Model for Fisheye Camera</b> .....	174
<i>H. Zhu, X. Yin</i>	
<b>Motion Estimation and Reconstruction of Piecewise Planar Scenes from Two Views</b> .....	181
<i>S. Mosaddegh, D. Fofi, P. Vasseur</i>	
<b>Multiple Kernel Gaussian Process Classification for Generic 3D Object Recognition</b> .....	188
<i>E. Rodner, D. Hegazy, J. Denzler</i>	
<b>An Ellipse Detection Method for Real Images</b> .....	196
<i>D. Prasad, M. Leung</i>	

<b>Phase Correlation Using Shear Average For Image Registration .....</b>	<b>204</b>
<i>J. Stowers, M. Hayes, A. Bainbridge-Smith</i>	
<b>Cancelable PalmCode Generated from Randomized Gabor Filters for Palmprint Protection.....</b>	<b>210</b>
<i>L. Leng, J. Zhang, M. Khan, X. Bi, M. Ji</i>	
<b>An Improved Kernel-based Fuzzy C-means Algorithm with Spatial Information for Brain MR Image Segmentation.....</b>	<b>216</b>
<i>R. Xu, J. Ohya</i>	
<b>A Hierarchical Shape Tree for Shape Classification .....</b>	<b>223</b>
<i>Y. Li, J. Zhu, F. Li</i>	
<b>A New Frame for Exemplar-based Shape Clustering.....</b>	<b>229</b>
<i>Y. Li, J. Zhu, F. Li</i>	
<b>Animated Panorama from a Panning Video Sequence.....</b>	<b>235</b>
<i>F. Huang, K. Yang, Z. Wei, A. Tsai, J. Tsai</i>	
<b>Improved Marker-Controlled Watershed Segmentation with Local Boundary Priors.....</b>	<b>243</b>
<i>D. Wang, P. Vallotton</i>	
<b>Adaptive Multi-cue Fusion for Visual Target Tracking Based on Uncertainly Measure .....</b>	<b>249</b>
<i>X. Gu, H. Wang, L. Wang, C. Pan</i>	
<b>An Accurate Harmony Search Based Algorithm for the Blind Deconvolution of Binary Images .....</b>	<b>257</b>
<i>J. Fourie, R. Green, S. Mills</i>	
<b>SVMs and Data Dependent Distance Metric .....</b>	<b>265</b>
<i>N. Zaidi, D. Squire</i>	
<b>Towards Benchmarking of Real-World Stereo Data.....</b>	<b>272</b>
<i>R. Haeusler, S. Morales, S. Hermann, R. Klette</i>	
<b>Shark Detection using Optical Image Data from a Mobile Aerial Platform.....</b>	<b>278</b>
<i>S. Gururatsakul, D. Gibbins, D. Kearney, I. Lee</i>	
<b>Estimation Of A Rotationally Symmetric Mirror Shape From A Frontal Image Of The Mirror .....</b>	<b>286</b>
<i>J. Fujiki, Y. Usami, H. Hino, S. Akaho, N. Murata</i>	
<b>A Probabilistic Approach To Antenna Location For Large Radio Telescopes .....</b>	<b>292</b>
<i>J. Chen, V. Elser, R. Millane</i>	
<b>Non-Rigid Object Tracking with Elastic Structure of Local Patches and Hierarchical Sampling .....</b>	<b>298</b>
<i>K. Yi, S. Kim, H. Jeong, S. Oh, J. Choi</i>	
<b>Learning of Face Components in Coherent and Disturbed Constellations.....</b>	<b>306</b>
<i>M. Stommel, O. Herzog</i>	
<b>Enhanced Image Saliency Model Based On Blur Identification.....</b>	<b>314</b>
<i>R. Khan, H. Konik, E. Dinet</i>	
<b>Robust Optical Flow for Driver Assistance .....</b>	<b>321</b>
<i>J. Xu, H. Chen, W. Ding, C. Zhao, J. Morris</i>	
<b>Estimation of the Head Pose Based on Monocular Images .....</b>	<b>328</b>
<i>Y. Yari, P. Cavalcanti, J. Scharcanski</i>	
<b>Concatenated Edge and Co-occurrence Feature Extracted from Curvelet Transform for Human Detection.....</b>	<b>335</b>
<i>H. Han, Y. Fan, L. Jiao, Z. Chen</i>	
<b>Real-Time Stereo Vision on the VisionServer Framework for Robot Guidance.....</b>	<b>343</b>
<i>A. Woodward, D. Berry, J. Dunning</i>	
<b>3D Face Reconstruction from Images under Arbitrary Illumination using Support Vector Regression.....</b>	<b>351</b>
<i>A. Mian</i>	
<b>Product Pattern-Based Camera Calibration for Microrobotics .....</b>	<b>359</b>
<i>R. Pieters, P. Jonker, H. Nijmeijer</i>	
<b>Dance Motion Analysis by Correlation Matrix Between Pose Sequences.....</b>	<b>365</b>
<i>R. Yamane, T. Shakunaga</i>	
<b>Combining Online Feature Selection with Adaptive Shape Estimation.....</b>	<b>371</b>
<i>A. Gatt, S. Wong, D. Kearney</i>	
<b>A Target-adapted Geometric Calibration Method for Camera-projector System.....</b>	<b>379</b>
<i>H. Chien, C. Chen</i>	
<b>Binary Tree-Based Precision-Keeping Clustering for Very Fast Japanese Character Recognition.....</b>	<b>387</b>
<i>Y. Sobu, H. Goto, H. Aso</i>	
<b>Accurate Visual Word Construction using a Supervised Approach .....</b>	<b>393</b>
<i>B. Fernando, E. Fromont, D. Muselet, M. Sebban</i>	
<b>Pigmented Skin Lesion Segmentation on Macroscopic Images .....</b>	<b>400</b>
<i>P. Cavalcanti, Y. Yari, J. Scharcanski</i>	
<b>A Hybrid Image Representation for Indoor Scene Classification.....</b>	<b>407</b>
<i>Z. Niu, Y. Zhou, K. Shi</i>	

<b>A New Star Identification Algorithm Based on Fuzzy Line Pattern Matching</b> .....	414
<i>S. Sohrabi, A. Shirazi</i>	
<b>Road Sign Detection Method based on Fast HDR Image Generation Technique</b> .....	421
<i>A. Vavilin, K. Deb, T. Kim, K. Jo</i>	
<b>Head Pose Estimation Based on Extended Non-negative Matrix Factorization</b> .....	429
<i>C. Zhan, W. Li, P. Ogunbona</i>	
<b>Real-Time Aerial Image Mosaicing</b> .....	435
<i>T. Botterill, S. Mills, R. Green</i>	
<b>Panoramic Video Stitching in Multi-Camera Surveillance System</b> .....	443
<i>B. He, G. Zhao, Q. Liu</i>	
<b>Retrieval of Guitarist Fingering Information using Computer Vision</b> .....	449
<i>J. Scarr, R. Green</i>	
<b>A Novel, Smart and Fast Searching Method for Star Pattern Recognition using Star Magnitudes</b> .....	456
<i>S. Sohrabi, A. Shirazi</i>	
<b>Featureless 2D-3D Pose Estimation by Minimising an Illumination-Invariant Loss</b> .....	462
<i>S. Jayawardena, M. Hutter, N. Brewer</i>	
<b>Modeling Semantic Context for Key-frame Extraction in Wildlife Video</b> .....	470
<i>S. Yong, J. Deng, M. Purvis</i>	
<b>Detection of Regions of Structural Complexity within Aeromagnetic Data using Image Analysis</b> .....	478
<i>E. Holden, P. Kovesi, M. Dentith, D. Wedge, J. Wong, S. Fu</i>	
<b>A Recursive Algorithm for Calculating the Relative Convex Hull</b> .....	486
<i>G. Klette</i>	
<b>Image Registration using Modified Local Ternary Pattern</b> .....	493
<i>R. Sadat, S. Teng, G. Lu</i>	
<b>UACI: Uncertain Associative Classifier for Object Class Identification in Images</b> .....	501
<i>L. Manikonda, A. Mangalampalli, V. Pudi</i>	
<b>Video Face Matching using Subset Selection and Clustering of Probabilistic Multi-Region Histograms</b> .....	509
<i>S. Mau, S. Chen, C. Sanderson, B. Lovell</i>	
<b>Visualising 3D Porous Media Uid Interaction Using X-Ray CT Data And Smooth Particles Hydrodynamics Modelling</b> .....	517
<i>A. Gastelum, P. Delmas, M. Lefrancq, C. Duwig, J. Marquez, B. Prado, G. Gimel'farb, P. Charrier</i>	
<b>Stereo Disparity Calculation in Real-World Scenes with Informative Image Partitioning</b> .....	525
<i>N. Brewer, N. Liu, L. Wang</i>	
<b>Computer Vision and Image Processing at the University of Waikato</b> .....	533
<i>M. Cree, J. Godbaz, R. Larkins, W. Round, L. Streeter, A. Dorrington, R. Kunnemeyer, A. Payne, D. Worsley</i>	
<b>3D Craniofacial Reconstruction using Reference Skull-Face Database</b> .....	548
<i>W. Shui, M. Zhou, Q. Deng, Z. Wu, F. Duan</i>	
<b>Performance Analysis of Multi-resolution Symmetric Dynamic Programming Stereo on GPU</b> .....	555
<i>R. Kalarot, J. Morris, G. Gimel'farb</i>	
<b>A System To Detect Residential Area In Multispectral Satellite Images</b> .....	562
<i>S. Bouraoui, A. Deruyver</i>	
<b>Integrating Statistical and Cognitive Model for Multi-Object Tracking in Realistic Scenarios</b> .....	567
<i>S. Pathan, A. Al-Hamadi, B. Michaelis</i>	
<b>Sketch-Based Robot Programming</b> .....	575
<i>C. Barber, R. Shucksmith, B. MacDonald, B. Wunsche</i>	
<b>Analysis of ICP Variants for the Registration of Partially Overlapping Time-of-Flight Range Images</b> .....	583
<i>R. Larkins, M. Cree, A. Dorrington</i>	
<b>Localized Adaptive Learning of Mixture of Gaussians Models for Background Extraction</b> .....	591
<i>M. Shah, J. Deng, B. Woodford</i>	
<b>Quantifying Preferential Flows In Porous Soils: An Original Imaging And Image Processing Procedure</b> .....	599
<i>P. Delmas, C. Duwig, J. Marquez, B. Prado</i>	
<b>An Efficient Steganography Method based on Reducing Changes</b> .....	605
<i>H. Nabae, K. Faez</i>	
<b>IMU-Aided SURF Feature Matching for Relative Pose Estimation</b> .....	612
<i>D. Wong, M. Hayes, A. Bainbridge-Smith</i>	
<b>Diabetic Retinopathy Detection using Geometrical Techniques related to the underlying Physiology</b> .....	618
<i>C. Hann, M. Narbot, M. MacAskill</i>	
<b>Nano-scale Particle Classification Using Image Histogram Maximum Value Index of Rayleigh Scattered Images</b> .....	626
<i>K. Pahalawatta, R. Green</i>	

<b>Vision-based Autonomous Navigation in Indoor Environments</b> .....	632
<i>C. Zheng, R. Green</i>	
<b>Geolocation on the iPhone by Automatic Street Sign Reading</b> .....	639
<i>J. Oosterman, R. Green</i>	
<b>Evaluation of Real Time Stereo Vision System Using Web Cameras</b> .....	645
<i>D. Sutton, R. Green</i>	
<b>Depth Correction: Methods for Approximating Depth Information in Web Camera Depth Maps</b> .....	655
<i>L. Pettigrew, R. Green</i>	
<b>Author Index</b>	