

Proceedings

IMVIP 2007

International Machine Vision and Image Processing Conference

**5-7 September 2007
National University of Ireland Maynooth,
Maynooth, County Kildare, Ireland**



Los Alamitos, California
Washington • Tokyo





IMVIP 2007

International Machine Vision and Image Processing Conference

Table of Contents

Foreword.....	ix
Conference Organizers.....	x

Invited Papers

Recognition Strategies in Machine Vision Applications.....	3
<i>Hiroshi Sako</i>	
Challenges for Autonomous Mobile Robots.....	4
<i>John J. Leonard</i>	

Image/Shape Representation and Recovery

Near-Circular Corner and Edge Detection Operators.....	7
<i>Dermot Kerr, Sonya Coleman, and Bryan Scotney</i>	
Shoeprint Image Retrieval by Topological and Pattern Spectra	15
<i>H. Su, D. Crookes, and A. Bouridane</i>	
A New Approach to Geometrical Feature Assessment for ICP-Based Pose Measurement: Continuum Shape Constraint Analysis	23
<i>D. J. McTavish and G. Okouneva</i>	

2D/3D Scene Analysis and Visualisation

Range Image Feature Extraction with Varying Degrees of Data Irregularity.....	33
<i>Shanmugalingam Suganthan, Sonya Coleman, and Bryan Scotney</i>	
Segmentation of Three-Dimensional Objects from Background in Digital Holograms	41
<i>C. P. Mc Elhinney, J. B. McDonald, Albertina Castro, Yann Frauel, Bahram Javidi, and T. J. Naughton</i>	
A Design Procedure for Gradient Operators on Hexagonal Images.....	47
<i>Bryan Gardiner, Sonya Coleman, and Bryan Scotney</i>	
A Survey of Computer-Based Deformable Models	55
<i>Patricia Moore and Derek Molloy</i>	

Medical and Biomedical Imaging

Incorporating Feature Based Priors into the Geodesic Active Contour Model and Its Application in Biomedical Imagery	67
<i>Huaizhong Zhang, Philip Morrow, Sally McClean, and Kurt Saetzler</i>	
Computerised Skin Lesion Surface Analysis for Pigment Asymmetry Quantification	75
<i>K. M. Clawson, P. J. Morrow, B. W. Scotney, D. J. McKenna, and O. M. Dolan</i>	
Investigation of Methodologies for the Segmentation of Squamous Epithelium from Cervical Histological Virtual Slides	83
<i>Yinhai Wang, Richard Turner, Danny Crookes, Jim Diamond, and Peter Hamilton</i>	
Cell Nuclei Segmentation Combining Multiresolution Analysis, Clustering Methods and Colour Spaces.....	91
<i>Guillermo Palacios and José R. Beltrán</i>	
Fuzzy Logic Based Segmentation of Microcalcification in Breast Using Digital Mammograms Considering Multiresolution	98
<i>Mahua Bhattacharya and Arpita Das</i>	
Mobility Estimation and Analysis in Medical X-Ray Images Using Corners and Faces Contours Detection	106
<i>Mohammed Benjelloun and Saïd Mahmoudi</i>	

Object and Event Recognition

Video Semantic Content Analysis Based on Ontology	117
<i>Liang Bai, Songyang Lao, Gareth J. F. Jones, and Alan F. Smeaton</i>	
Non-linear Approaches for the Classification of Facial Expressions at Varying Degrees of Intensity.....	125
<i>Jane Reilly, John Ghent, and John McDonald</i>	
An Unsupervised Approach for Segmentation and Clustering of Soccer Players.....	133
<i>P. Spagnolo, N. Mosca, M. Nitti, and A. Distantè</i>	

Image Processing

A Nonlinear Contour Preserving Transform for Geometrical Image Compression	143
<i>W. Van Aerschoot, M. Jansen, and A. Bultheel</i>	
Adaptive Pre-filtering Techniques for Colour Image Analysis.....	150
<i>Dana Elena Ilea and Paul F. Whelan</i>	
Watershed Segmentation Using a Multiscale Ramp Edge Merging Strategy	158
<i>Padraig Corcoran and Adam Winstanley</i>	

Applications, Architecture and Systems Integration

Recognition of Unstained Live <i>Drosophila</i> Cells in Microscope Images	169
<i>Marko Tscherepanow, Nickels Jensen, and Franz Kummert</i>	

Self-Defense-Technologies for Automated Teller Machines	177
<i>Hiroshi Sako, Takashi Watanabe, Hiroto Nagayoshi, and Tatsuhiko Kagehiro</i>	
Vehicle Ego-Motion Estimation by Using Pulse-Coupled Neural Network	185
<i>Yanpeng Cao, Peter Cook, and Alasdair Renfrew</i>	
A Simple Computer Vision Method for Automatic Detection of Melanin Spots in Atlantic Salmon Fillets	192
<i>John Reidar Mathiassen, Ekrem Misimi, and Amund Skavhaug</i>	

Posters

Speckle Reduction Using the Discrete Fourier Filtering Technique	201
<i>Jonathan Maycock, Bryan M. Hennelly, John B. McDonald, Yann Frauel, Albertina Castro, Bahram Javidi, and Thomas J. Naughton</i>	
Video Object Motion Segmentation for Intelligent Visual Surveillance	202
<i>M. Jiang and D. Crookes</i>	
A Dynamics Estimation Filter for Pose and Motion Estimation in Orbit	203
<i>D. J. McTavish, G. Okouneva, J. Enright, and R. Schumacher</i>	
Detection of Illegal Dumping from CCTV at Recycling Centres.....	204
<i>Naomi Harte, Andrew Rankin, Gary Baugh, and Anil Kokaram</i>	
MPEG-2 to H.264 Transcoding for DVB-H Applications.....	205
<i>M. Jiang and D. Crookes</i>	
The Improvement of the Background Subtraction and Shadow Detection in Grayscale Video Sequences	206
<i>Yung-Gi Wu and Chung-Ying Tsai</i>	
Adaptive Neural Regularization Assignment for Semi-blind Biomedical Image Restoration	207
<i>Binaghi E., Gallo I., Guidali A., Raspanti M., and Salvini G.</i>	
Eye-Tracking for Efficient Database Labelling: Applications to Automatic Analysis of Colonoscopy Video	208
<i>Fernando Vilarino and Gerard Lacey</i>	
Classification of Human Poses Using a Vision Based Technique.....	209
<i>Dan Kelly, Paolo Olivo, Charles Markham, John McDonald, Brian Caulfield, and Diarmuid Fitzgerald</i>	
A New Manifold Representation for Visual Speech Recognition	210
<i>Dahai Yu, Ovidiu Ghita, Alistair Sutherland, and Paul F. Whelan</i>	
Statistical Analysis of Ground Truth in Human Labeled Data	211
<i>Jiang Zhou, Fernando Vilarino, Lacey Gerard, and Li Xuchun</i>	
Model-Based Edge Tracking for Segmentation of Low Contrast Images.....	212
<i>Christopher Hudry, Jonathan Campbell, and John Slater</i>	

Synchronised Encoding of GPS NMEA Messages onto High Definition Video Streams..... 213
P. Lewis, A. Winstanley, and T. McCarthy

Author Index 215