

**Proceedings**

**2011 International Conference  
on Digital Image Computing:  
Techniques and Applications  
DICTA 2011**

**6-8 December 2011  
Noosa, Queensland, Australia**



## DICTA 2011: Conference Sponsors



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**Department of Defence**  
Defence Science and  
Technology Organisation



# **Message from the General Chair**

## **DICTA 2011**

At DICTA 2009 in Melbourne, Andrew Mehnert, Paul Jackway and I decided that it was probably “our turn” to organise DICTA in 2011. As regular attendees of DICTA since its inception we thought it important to give something back to the Australian Pattern Recognition Society (APRS) and the imaging community in Australia. At that point in time we had little idea of the mountain of tasks that lay ahead of us, but we received much advice and support from previous DICTA organisers, such as Hao Shi and Jian Zhang. We also decided early on that we wanted a great venue that would attract a quality pool of delegates from around Australia and overseas. After much research and debate, we finally settled on the Sheraton Noosa Resort and Spa: a great hotel in a great location. Over time, the organising committee lost Andrew Mehnert due to his move to Chalmers University of Technology in Sweden, but in his place we welcomed the skills, experience and enthusiasm of Yaniv Gal and Olivier Salvado. Together, this core team has worked tirelessly to ensure that everything associated with DICTA 2011 runs as smoothly as possible.

Organising a large event such as DICTA would be impossible without the assistance and support of many people. I would like to acknowledge the continued support of our sponsors, without whom we would not be able to attract such high calibre keynote speakers. In particular, Nick Redding from the Commonwealth Defence Science and Technology Organisation (DSTO), Stephen Hardy from Canon Information Systems Research Australia (CiSRA), Nick Barnes from National ICT Australia (NICTA) and both CSIRO Mathematics, Informatics and Statistics and the CSIRO ICT Centre.

I would also like to acknowledge the support of the Queensland section of the IEEE whose support was instrumental in gaining IEEE technical sponsorship; Brian Lovell for, as always, smoothing the process of gaining technical sponsorship with the IAPR; The University of Queensland (UQ), and Kimberley Nunes in particular, for their financial and administrative support; Patrick Kellenberger, the lead CPS production editor of the IEEE Computer Society for his professional editorial service to the proceedings; and also the staff and student volunteers from UQ and the APRS for making the DICTA 2011 conference a successful event.

I would like to thank the technical committee and the area chairs for their hard work and professionalism in overseeing the review process. In addition, I would like to thank all the reviewers for their valuable time and wise judgment.

Finally, I would like to thank all of the attendees for their continued support of DICTA and I wish everyone an enjoyable time at DICTA 2011 in Noosa Heads.

**Andrew Bradley**  
General Chair, DICTA 2011

# **Message from the Program Chair**

## **DICTA 2011**

The Australian Pattern Recognition Society (APRS) initiated DICTA in 1991 to provide a forum for researchers in digital image computing and associated fields. Over the years, DICTA has grown into an annual event featuring distinguished keynote speakers from around the world and a substantial international presence. DICTA 2011 is the thirteenth conference in this series and firmly asserts the modern international flavour and high standards of recent DICTA conferences.

The keynote speakers for DICTA 2011 are:

- Bob Duin from Delft University of Technology;
- Yi Ma from Microsoft Research Asia;
- David Hawkes from University College London; and
- Arun Ross from West Virginia University.

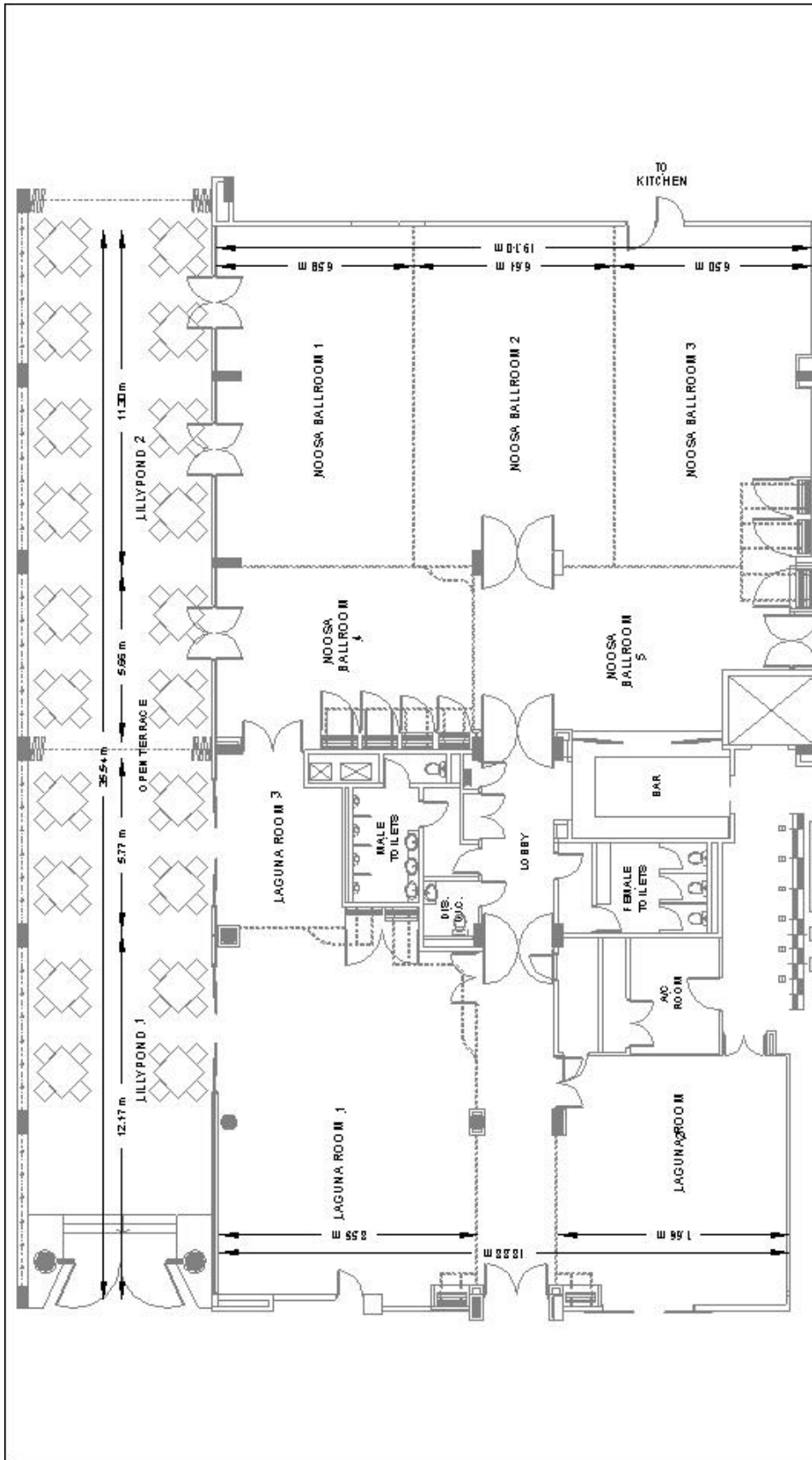
Together, these world-leading researchers represent a diverse sample of modern directions within digital image computing, including multimedia information processing, computer vision, medical imaging and biometrics. Keynote presentations serve to provide up-to-date overviews of important fields to inspire and reinvigorate new research.

Contributed papers serve to provide detailed reports of specific projects to inform the community of researchers, solicit guidance and share solutions. Each 6-page paper submitted to DICTA 2011 was reviewed by at least two independent review panel members using a double blind system. DICTA 2011 had almost 200 papers submitted for review. From these, the committee accepted 114 papers, representing an acceptance rate of 57%. The organising committee then selected 42 papers for oral and 72 for poster presentation. All accepted papers are published in the proceedings and will appear in IEEE Xplore upon completion of the conference.

I would like to thank the technical committee and the area chairs for their hard work in overseeing the review process. In addition I wish to thank all the reviewers for their time and judgment.

**Paul Jackway**  
Program Chair, DICTA 2011

**Murk Bottema**  
President, Australian Pattern Recognition Society



## DICTA 2011: Program at a Glance

Day	Session Title	Start Time	Type	Location	Chair
Tuesday	Opening	9:00:00 AM	Oral	Ballroom	A. Bradley
Tuesday	Keynote 1	9:30:00 AM	Oral	Ballroom	S. Crozier
Tuesday	Tea	10:30:00 AM	Break	Lilly Pond	
Tuesday	Biomedical & E-Health 1	11:00:00 AM	Oral	Ballroom	O. Salvado
Tuesday	Lunch	12:30:00 PM	Break	Lilly Pond	
Tuesday	Computer Vision 1	2:00:00 PM	Oral	Ballroom	P. Jackway
Tuesday	Tea	3:30:00 PM	Break	Lilly Pond	
Tuesday	Computer Vision 2	4:00:00 PM	Oral	Ballroom	G. West
Tuesday	ISBI Meeting	5:30:00 PM	Admin	Laguna 1	O. Salvado
Wednesday	Keynote 2	9:00:00 AM	Oral	Ballroom	A. Bradley
Wednesday	Tea	10:15:00 AM	Break	Lilly Pond	
Wednesday	Pattern Recognition	10:45:00 AM	Oral	Ballroom	M. Bottema
Wednesday	Biomedical & E-Health 2	10:45:00 AM	Poster	Lilly Pond	A. Maeder
Wednesday	Lunch	12:15:00 PM	Break	Lilly Pond	
Wednesday	Keynote 3	1:45:00 PM	Oral	Ballroom	J. Zhang
Wednesday	Tea	2:45:00 PM	Break	Lilly Pond	
Wednesday	Image Processing 1	3:15:00 PM	Oral	Ballroom	R. Butler
Wednesday	Remote Sensing 1	3:15:00 PM	Poster	Lilly Pond	N. Redding
Wednesday	APRS Meeting	4:45:00 PM	Admin	Laguna 1	M. Bottema
Wednesday	Banquet	7:00:00 PM	Break	Ballroom	
Thursday	Keynote 4	9:00:00 AM	Oral	Ballroom	B. Lovell
Thursday	Tea	10:15:00 AM	Break	Lilly Pond	
Thursday	Pattern Recognition	10:45:00 AM	Oral	Ballroom	Y. Gal
Thursday	Computer Vision 3	10:45:00 AM	Poster	Lilly Pond	P. Vallotton
Thursday	Lunch	12:15:00 PM	Break	Lilly Pond	
Thursday	Surveillance	1:45:00 PM	Oral	Ballroom	T. Landgrebe
Thursday	Image Processing 2	1:45:00 PM	Poster	Lilly Pond	T. Adriaansen
Thursday	Tea	3:15:00 PM	Break	Lilly Pond	
Thursday	Close	3:45:00 PM			

# DICTA 2011: Notes to Presenters

## Oral Presentations

1. At least 15 minutes prior to your session:
  - a. Please introduce yourself to the session Chair and
  - b. Upload your presentation to the speaker's computer;
2. The session chair will introduce all speakers by name;
3. Oral presentations are limited to 12 minutes presentation plus 3 minutes for questions;
4. Please wear a lapel microphone as the room is quite large;
5. If necessary please repeat questions asked for the benefit of the audience;
6. All "no shows" will be noted and papers removed from the proceedings.

## Poster Presentations

1. Please put your poster on the nominated poster board before 9am on the day of your presentation:
  - a. Poster boards will be pre-labelled with your paper ID and name;
  - b. Velcro dots and pins available from the session chair and the registration desk;
2. At least 15 minutes prior to your session please introduce yourself to the session Chair;
3. Remove your poster from the poster board by 5pm on the day of your presentation;
4. All "no shows" will be noted and papers removed from the proceedings.

## Conference Dinner Schedule

- 7pm: Welcome drinks;
  - Note: with the exclusion of the speaker's table please sit where you feel most comfortable. Please inform your server of your pre-arranged dietary requirements.
- 7.30pm: First course served;
- 8pm: Award of conference prizes by APRS, DSTO and CiSRA
  - Introduced by Paul Jackway (CSIRO);
- 8.30pm: Main course served;
- 9pm: After dinner speaker Stephen Rose (University of Queensland)
  - Introduced by Olivier Salvado (CSIRO);
- 9.30pm: Desert served;
- 10.30pm: Conference Dinner concludes.



## DICTA 2011: Technical Program

### Tuesday 6<sup>th</sup> December

#### Session: Keynote 1, "Intelligent Imaging for Diagnosis and Guiding Interventions," David Hawkes (University College London)

This talk describes recent progress on the integration of compact representations of learnt shape, computational anatomy, learnt motion, the biomechanics of tissue deformation and multi-scale analysis into diagnostic imaging and image guided interventions. Our core technology and starting point is establishing spatial correspondence with image registration. This work has inspired a new approach to the use and development of imaging technology. The conventional medical imaging paradigm is to acquire the best image that scanning technology can provide, given the constraints of patient workflow, and then as a separate process to interpret or analyse the image data for diagnosis or to guide an intervention. A more logical alternative is to optimise image data collection and information processing given the diagnostic state of the patient to be determined, or the therapeutic procedure to be undertaken. Our approach to the development of this paradigm is illustrated with applications in neuroscience and the detection and treatment of cancers in the breast, lung, liver, colon and prostate.

#### Session: Oral 1, Biomedical and e-health applications – Paper 1

82	"An Automatic Image Based Single Dilution Method for End Point Titre Quantitation of Antinuclear Antibodies Tests using HEp-2 Cells"	Arnold Wiliem (National ICT Australia (NICTA)); Peter Hobson (Sullivan Nicolaidis Pathology); Rodney Minchin (School of Biomedical Sciences, University of Queensland); Brian Lovell (NICTA and University of Queensland);
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#### Session: Oral 1, Biomedical and e-health applications – Paper 2

108	"Automatic Segmentation of the Prostate in 3D Magnetic Resonance Images using Case Specific Deformable Models"	Shekhar Chandra (CSIRO); Jason Dowling (CSIRO); Kaikai Shen (csiro); Josien Pluim (University Medical Center Utrecht, The Netherlands); Peter Greer (Calvary Mater Newcastle Hospital and University of Newcastle); Olivier Salvado (CSIRO); Jurgen Fripp (CSIRO);
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#### Session: Oral 1, Biomedical and e-health applications – Paper 3

145	"Surface-base Approach using a Multi-Scale EM-ICP Registration for Statistical Population Analysis "	Vincent Doré (CSIRO); Jurgen Fripp (CSIRO); Pierrick Bourgeat (CSIRO ICT Centre); Kaikai Shen (csiro); Oscar Acosta (university of Rennes 1); Olivier Salvado (CSIRO);
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#### Session: Oral 1, Biomedical and e-health applications – Paper 4

148	"Automated 3D Segmentation of Vertebral Bodies and Intervertebral Discs from MRI"	Aleš Neubert (CSIRO); Jurgen Fripp (CSIRO); Kaikai Shen (csiro); Olivier Salvado (CSIRO); Raphael Schwarz;Lars Lauer;Craig Engstrom (UQ); Stuart Crozier;
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#### Session: Oral 1, Biomedical and e-health applications – Paper 5

151	"Automated MR Hip Bone Segmentation"	Ying Xia (CSIRO); Shekhar Chandra (CSIRO); Olivier Salvado (CSIRO); Jurgen Fripp (CSIRO); Stuart Crozier;Craig Engstrom (UQ); Raphael Schwarz;Lars Lauer;
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#### Session: Oral 1, Biomedical and e-health applications – Paper 6

178	"A Non-linear Diffeomorphic Framework for Prostate Multimodal Registration"	Jhimli Mitra (Université de Bourgogne); Robert Martí (Université de Bourgogne); Xavier Lladó (University of Girona); Arnau Oiver (University of Girona); Zoltan Kato (University of Szeged); Joan Vilanova (Girona Magnetic Reosnance Center); Fabrice Meriaudeau;
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Session: Oral 2, Computer vision – Paper 1

19	“A Novel Illumination-Invariant Loss for Monocular 3D Pose Estimation”	Srimal Jayawardena (Australian National University); Marcus Hutter (Australian National University); Nathan Brewer (Australian National University);
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Session: Oral 2, Computer vision – Paper 2

21	“Robust Image Registration via Cepstral Analysis”	Ruben Gonzalez (Griffith University);
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Session: Oral 2, Computer vision – Paper 3

24	“3D Model Assisted Image Segmentation”	Srimal Jayawardena (Australian National University); Di Yang (Australian National University); Marcus Hutter (Australian National University);
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Session: Oral 2, Computer vision – Paper 4

71	“Specularity Removal from Imaging Spectroscopy Data via Entropy Minimisation”	Lin Gu (ANU and NICTA); Antonio Robles-Kelly (NICTA);
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Session: Oral 2, Computer vision – Paper 5

101	“Analysis on Tree Structure Selection for MRF Inference in Low-level Vision”	JUN SUN (ANU and NICTA); Hongdong Li (ANU);
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Session: Oral 2, Computer vision – Paper 6

104	“Fast Kernel Sparse Representation”	Hanxi Li (NICTA); Yongsheng Gao (Griffith University); JUN SUN (ANU and NICTA);
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Session: Oral 3, Computer vision – Paper 1

107	"Phase-Based Disparity Estimation Using Dual-Tree Complex Wavelet and Adaptive Structured Light"	Qiang Li (UNSW@ADFA); Moyuresh Biswas (UNSW@ADFA); Michael Frater (Australian Defence Force Academy); M R Pickering;
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Session: Oral 3, Computer vision – Paper 2

116	"Superpixels, Occlusion and Stereo Matching"	Yuhang Zhang (The Australian National Uni); Richard Hartley (Australian National University); John Mashford (CSIRO); Stewart Burn (CSIRO);
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Session: Oral 3, Computer vision – Paper 3

117	"Optical-Flow Perspective Invariant Registration"	Adrian Clark (University of Canterbury); Richard Green (University of Canterbury);
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Session: Oral 3, Computer vision – Paper 4

124	"Simultaneous Multi-class Pixel Labeling over Coherent Image Sets"	Stephen Gould; Paul Rivera (Australian National University);
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Session: Oral 3, Computer vision – Paper 5

132	"Activity Modelling in Crowded Environments: A Soft-Decision Approach"	Jingxin Xu (QUT); Simon Denman (QUT); Sridha Sridharan (Queensland University of Technology); Clinton Fookes (Queensland University of Technology);
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Session: Oral 3, Computer vision – Paper 6

164	"Line Drawing Interpretation Using Belief Propagation"	Yansheng Ming (Australian National University); Hongdong Li (ANU); JUN SUN (ANU and NICTA);
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## Wednesday 7<sup>th</sup> December

### Session: Keynote 2, “The Dissimilarity Representation for Structural Pattern Recognition,” Bob Duin (Delft University of Technology)

The patterns in collections of real world objects are often not based on a limited set of isolated properties such as features. Instead, the totality of their appearance constitutes the basis of the human recognition of patterns. Structural pattern recognition aims to find explicit procedures that mimic the learning and classification made by human experts in well-defined and restricted areas of application. This is often done by defining dissimilarity measures between objects and measuring them between training examples and new objects to be recognized. The dissimilarity representation offers the possibility to apply the tools developed in machine learning and statistical pattern recognition to learn from structural object representations such as graphs and strings. These procedures are also applicable to the recognition of histograms, spectra, images and time sequences taking into account the connectivity of samples (bins, wavelengths, pixels or time samples). An additional property of this representation is that it can easily include out-of-training-set observations, making it an ideal tool for context dependent recognition. The topic of dissimilarity representation is related to the field of non-Mercer kernels in machine learning but it covers a wider set of classifiers and applications. Recently much progress has been made in this area and many interesting applications have been studied in medical diagnosis, seismic and hyperspectral imaging, chemometrics and computer vision. This presentation offers an introduction to this field and includes a number of real world applications.

### Session: Oral 4, Pattern Recognition – Paper 1

202	“Comparing Visual Data Fusion Techniques using FIR and Visible Light Sensors to Improve Pedestrian Detection”	Jan Thomanek (IAV GmbH); Holger Lietz (Chemnitz University); Marc Ritter (Chemnitz University of Tech.); Gerd Wanielik (Chemnitz University);
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### Session: Oral 4, Pattern Recognition – Paper 2

16	“Scene Classification Using Candidate Classes Selection with Particle Filter and Criterion Mining for Final Decision with AdaBoost ”	Kazuhiro Hotta (Meijo University);
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### Session: Oral 4, Pattern Recognition – Paper 3

77	“Visual Voice Activity Detection Using Frontal Versus Profile Views”	Rajitha Navarathna (QUT); David Dean (SAIVT Lab); Sridha Sridharan (Queensland University of Technology); Clinton Fookes (Queensland University of Technology); Patrick Lucey (Disney Research, USA);
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### Session: Oral 4, Pattern Recognition – Paper 4

130	“Evaluating Automatic Road Detection Across a Large Aerial Imagery Collection”	Felix Guo (QUT); David Dean (SAIVT Lab); Simon Denman (QUT); Clinton Fookes (Queensland University of Technology); Sridha Sridharan (Queensland University of Technology);
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### Session: Oral 4, Pattern Recognition – Paper 5

99	“An Efficient Face Recognition System Using DWT-ICA features ”	Annis Fathima (MIT, Anna University); Vaidehi VijayKumar (MIT, Anna University);
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### Session: Oral 4, Pattern Recognition – Paper 6

195	“3D Model-based Semantic Labeling of 2D Objects”	Raluca Diana Petre (TELECOM SudParis); Titus Zaharia (TELECOM SudParis);
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**Session: Poster 1, Biomedical and e-health applications – Paper 1**

52	“Colour texture analysis for classifying the tear film lipid layer: a comparative study”	Beatriz Remeseiro (Universidade da Coruña); Lucía Ramos (Universidade da Coruña); Marta Penas (Universidade da Coruña); Enrique Martínez (Universidade da Coruña); Manuel G. Penedo (Universidade da Coruña); Antonio Mosquera (Universidade de Santiago de Compostela);
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**Session: Poster 1, Biomedical and e-health applications – Paper 2**

76	“Variational Bayes Inference Based Segmentation of Heterogeneous Lymphoma Volumes in Dual-Modality PET-CT images”	Jiyong Wang (The University of Sydney); Yong Xia (the University of Sydney); Jiabin Wang (the University of Sydney); David Feng (The University of Sydney );
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**Session: Poster 1, Biomedical and e-health applications – Paper 3**

86	“Precision Assessment of B-mode Ultrasound for Non-Invasive Motion Analysis of Knee Joints”	M A Masum (UNSW@ADFA); A J Lambert (UNSW@ADFA); M R Pickering; J M Scarvell (The Trauma and Orthopaedic Research Unit, The Canberra Hospital.); P N Smith (The Trauma and Orthopaedic Research Unit, The Canberra Hospital.);
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**Session: Poster 1, Biomedical and e-health applications – Paper 4**

95	“A Comparison Study of Ellipsoid Fitting for Pose Normalization of Hippocampal Shapes”	Luping Zhou (CSIRO); Olivier Salvado (CSIRO);
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**Session: Poster 1, Biomedical and e-health applications – Paper 5**

127	“Automatic analysis of the patient's conscious responses to the emission of auditory stimuli during the performance of an audiometry”	Alba Fernandez (University of A Coruña); Marcos Ortega (University of A Coruña); Manuel G. Penedo (Universidade da Coruña); Brais Cancela (University of A Coruña); Luz Gigirey (University of Santiago de Compostela); Covadonga Vazquez (University of Santiago de Compostela);
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**Session: Poster 1, Biomedical and e-health applications – Paper 6**

128	“Lossless Compression of segmented CT Medical Images according to the Hounsfield scale”	Denis Špelič (UM FER1); Domen Mongus; Borut Žalik;
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**Session: Poster 1, Biomedical and e-health applications – Paper 7**

129	“A Rapid Procedure for Spectral Similarity Matching of Heteronuclear Single Quantum Coherence Spectra”	Zhengyi Yang (The University of Queensland); Viktor Vegh (The University of Queensland); David Reutens; Gregory Pierens;
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**Session: Poster 1, Biomedical and e-health applications – Paper 8**

135	“Qualitative and quantitative analysis of six image fusion methods and their application to medical imaging”	Seyyed Adel Fazel (The University of Queensland); Yaniv Gal (University of Queensland); Zhengyi Yang (The University of Queensland); Viktor Vegh (The University of Queensland);
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**Session: Poster 1, Biomedical and e-health applications – Paper 9**

140	"A study on static image derived input function in non-invasively construction parametric image for functional imaging"	XIAN SHI (University of sydney); Lingfeng Wen;Weidong Cai;dagan Feng;
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**Session: Poster 1, Biomedical and e-health applications – Paper 10**

153	"Automatic Brain Tumour Segmentation In 18 F-FDOPA PET using PET/MRI Fusion"	Amir Fazlollahi (CSIRO); Pierrick Bourgeat (CSIRO ICT Centre); Paul Thomas;Stephen Rose;Stuart Crozier;Yaniv Gal (University of Queensland); Zeike Taylor;Craig Winter;Alan Coultard;David MacFarlane;Nicholas Dowson;Fabrice Meriaudeau;
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**Session: Poster 1, Biomedical and e-health applications – Paper 11**

169	"Differential Evolution based Variational Bayes Inference for Brain PET-CT Image Segmentation"	Jiabin Wang (University of Sydney); Yong Xia (the University of Sydney); Dagan Feng (University of Sydney);
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**Session: Poster 1, Biomedical and e-health applications – Paper 12**

176	"Segmentation of Acne Vulgaris Lesions"	ROSHASLINIE RAMLI (UNIVERSITI TEKNOLOGI PETRONAS);
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**Session: Poster 1, Biomedical and e-health applications – Paper 13**

186	"Statistical Shape and Probability Prior Model for Automatic Prostate Segmentation"	Soumya Ghose (University of Bourgogne); Arnau Oiver (University of Girona); Robert Martí (Université de Bourgogne); Xavier Lladó (University of Girona); Jordi Freixenet (University of Girona); Joan Vilanova (Girona Magnetic Resonance Center); Fabrice Meriaudeau;
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**Session: Poster 1, Biomedical and e-health applications – Paper 14**

187	"Novel Convex Active Contour Model Using Local and Global Information"	Quang Tung THIEU (University paris 13); Marie LUONG (University Paris 13); Jean-Marie ROCCHISANI (Hopital Avicenne-Medecine Nucleaire, Bobigny, France); Emmanuel VIENNET (University Paris 13, Villetaneuse, France); Dat TRAN (Sciences and Engineering, University of Canberra, ACT 2601, Australia);
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**Session: Poster 1, Biomedical and e-health applications – Paper 15**

84	"Clustered Nuclei Splitting Using Curvature Information"	Chao Zhang (UNSW@ADFA); Changming Sun (CSIRO); Tuan Pham (UNSW@ADFA);
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**Session: Poster 1, Biomedical and e-health applications – Paper 16**

159	"Classification of hand-written digits using chordigrams"	Geoff Bull (Charles Sturt University);
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### Session: Keynote 3, “TILT: For Transform Invariant Low-rank Structures in Images,” Yi Ma (Microsoft Research Asia)

In this talk, we will introduce a fundamental computational tool, namely TILT, for extracting rich low-rank structures in images and videos, respectively. TILT utilizes the same transformed Robust PCA model for the visual data:  $Dt = A + E$ , and exploit modern high-dimensional convex optimization to extract the low-rank structures  $A$  from the visual data  $D$ , despite image domain transformation  $t$  and sparse corruptions  $E$ . We will show how this seemingly simple tool can help unleash tremendous information in images and videos that we used to struggle to get. We believe these new tools will bring disruptive changes to many challenging tasks in computer vision and image processing, including feature extraction, image correspondence or alignment, camera calibration 3D reconstruction and object recognition.

#### Session: Oral 5, Image coding and processing – Paper 1

30	“Model-Based Video Coding Using Colour and Depth Cameras”	David Sandberg (Linköping University); Per-Erik Forsen (Linköping University); Jens Ogniewski (Linköping University);
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#### Session: Oral 5, Image coding and processing – Paper 2

66	“Real-Time Photo Sensor Dead Pixel Detection for Embedded Devices”	Chao-Yi Cho (ITRI); Wen-Shan Wang (ITRI); Tse-Min Chen (ITRI); Chun-Nan Liu (ITRI);
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#### Session: Oral 5, Image coding and processing – Paper 3

110	“Efficient Video Coding Considering a Video as a 3D Data Cube”	Manoranjan Paul (Charles Sturt University); Weisi Lin (Nanyang Technological University);
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#### Session: Oral 5, Image coding and processing – Paper 4

112	“A Novel Image Compressive Sensing Method Based on Complex Measurements”	Nandini Ramesh Kumar (University of Southern Queensl);
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#### Session: Oral 5, Image coding and processing – Paper 5

158	“Parallel Algorithms for Spatially-Variant and Label-Set Morphology”	Richard Beare (Monash University); Paul Jackway (CSIRO);
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#### Session: Oral 5, Image coding and processing – Paper 6

201	“A contour-based approach to image compression”	Gabriel Scarmana (USQ);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 1**

90	“Automatic Estimation of Nearshore Wave Height from Video Timestacks”	Yaniv Gal (University of Queensland); Matthew Browne (CoastalCOMS Pty Ltd); Christopher Lane (CoastalCOMs Pty Ltd);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 2**

111	“Automatic Reconstruction of Building Roofs Using LIDAR and Multispectral Imagery”	Mohammad Awrangjeb (The University of Melbourne ); Chunsun Zhang;Clive Fraser;
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 3**

119	“Classifying Airborne Particles”	Kapila Pahalawatta (University of Canterbury); Richard Green (University of Canterbury);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 4**

32	“The Implementation of Multimedia Decoder Framework for Android on PAC Duo Platform”	Chun-Shian Tsai (ITRI); Hsuan-Liang Chen (ITRI);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 5**

38	“Video Stream Processing On A High Performance Reconfigurable Architecture”	Tao Li (XiAn Univ of Posts and Telecom);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 6**

183	“A spatio-temporal knowledge-discovery platform for Earth-Science data”	Thomas Landgrebe (USYD); Dietmar Muller (The University of Sydney);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 7**

33	“Fingerprints as spatial graphs: nodes and edges”	Stephen Davis (RMIT University); Arathi Arakala (RMIT University); Kathy Horadam (RMIT University); Jason Jeffers (RMIT University);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 8**

65	“BUILDING A STATISTICAL AU SPACE FOR FACIAL EXPRESSION RECOGNITION IN 3D”	Xi Zhao (University of Houston); Emmanuel Dellandrea;liming Chen;jianhua Zou;
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 9**

105	“Intrinsic Image based Moving Object Cast Shadow Removal in Image Sequences”	Pankaj Kumar (University of South Australia);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 10**

136	“Structural Image Classification with Graph Neural Networks”	Alyssa Quek (University of Sydney); Zhiyong Wang (University of Sydney ); Jian Zhang (NICTA); Dagan Feng (University of Sydney);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 11**

137	“On the Use of the Chi-squared Distance for the Structured Learning of Graph Embeddings”	Haifeng Zhao;Antonio Robles-Kelly (NICTA); Jun Zhou (NICTA);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 12**

53	“Real Time High-Sensitivity Imaging for Home Surveillance System by Using Combined Long/Short Exposure”	Satoshi Sato (Panasonic Co.,Ltd.); Yusuke Okada (Panasonic Co.,Ltd.); Takeo Azuma (Panasonic Co.,Ltd.);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 13**

100	“A Real Time Surveillance System using Wired and Wireless Sensor Networks by Multi-Algorithmic approach”	Annis Fathima (MIT, Anna University); Vaidehi VijayKumar (MIT, Anna University);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 14**

102	“Blob Motion Statistics for Pedestrian Detection”	Paulo Borges (CSIRO);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 15**

106	“Detection versus False Alarm Characterisation of a Vision-Based Airborne Dim-Target Collision Detection System”	John Lai (QUT); Jason Ford (Queensland University of Technology); Luis Mejias Alvarez (ARCAA - QUT); Peter O’Shea (Queensland University of Technology); Rodney Walker (Queensland University of Technology);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 16**

125	“Multi-shape Descriptor Vehicle Classification for Urban Traffic”	ZeZhi Chen (Kingston University);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 17**

141	“Eigen-patch based background subtraction”	Tristrom Cooke (Defence Science and Technology Organisation);
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**Session: Poster 2, Surveillance, defence and industrial applications – Paper 18**

207	“Developing a Digital Image Watermarking Model”	Hussain Nyeem (QUT); Wageeh Boles (Queensland University of Technology); Colin Boyd (Queensland University of Technology);
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## Thursday 8<sup>th</sup> December

### Session: Keynote 4, “Biometrics: The Future Beckons,” Arun Ross (West Virginia University)

Biometrics is the science of establishing human identity based on the physical and behavioral attributes of an individual such as fingerprints, face, iris, voice and signature. The automated process of comparing a pair of biometric signals (such as two iris images) and determining the probability that they belong to the same individual is a fascinating area of research. The pronounced need for large-scale automated human recognition systems has resulted in the incorporation of biometric solutions in border security systems, access control applications, criminal investigations, time-and-attendance technology and national ID cards. Recent research in this field has focused on securing biometric templates, searching for identities in large biometric databases, recognizing people in a nighttime environment, fusing biometric traits and designing faster matching algorithms. This talk will discuss the recent progress made in biometrics and enumerate some of the cutting edge problems being addressed by researchers in this field.

### Session: Oral 6, Statistical and structural pattern recognition – Paper 1

9	“Natural Image Character Recognition Using Oriented Basic Image Features”	Andrew Newell (University College London); Lewis Griffin;
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### Session: Oral 6, Statistical and structural pattern recognition – Paper 2

68	“Improved Symmetric-SIFT for Multi-modal Image Registration”	Md Tanvir Hossain (Monash University); Guohua Lv (Monash University); Shyh Wei Teng (Monash University); Guojun Lu (Monash Uni); Martin Lackmann (Monash University);
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### Session: Oral 6, Statistical and structural pattern recognition – Paper 3

83	“On The Optimality of Sequential Forward Feature Selection Using Class Separability Measure”	Lei WANG (University of Wollongong); Chunhua Shen (University of Adelaide); Richard Hartley (Australian National University);
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### Session: Oral 6, Statistical and structural pattern recognition – Paper 4

131	“Laplacian Margin Distribution Boosting for Learning from Sparsely Labeled Data”	Tao Wang (NICTA, ANU); Xuming He (NICTA, ANU); Nick Barnes (NICTA); Chunhua Shen (University of Adelaide);
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### Session: Oral 6, Statistical and structural pattern recognition – Paper 5

147	“An exploration of feature detector performance in the thermal-infrared modality ”	Stephen Vidas (QUT); Ruan Lakemond; Simon Denman (QUT); Clinton Fookes (Queensland University of Technology); Tim Wark; Sridha Sridharan (Queensland University of Technology);
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### Session: Oral 6, Statistical and structural pattern recognition – Paper 6

29	“Prioritized 3-D Video Transmission over Cooperative MIMO-OFDM Systems”	Omar Salim (Uni. of Southern Queensland ); Wei Xiang (Uni. of Southern Queensland );
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### Session: Poster 3, Computer vision – Paper 1

25	“Action Recognition using Spatio-temporal Distance Classifier Correlation Filter”	Anwaar Haq (Monash Uni); Iqbal Gondal (Monash); Manzur Murshed (Monash);
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### Session: Poster 3, Computer vision – Paper 2

34	“Graph Rigidity for Near-Coplanar Structure from Motion”	Jack Valmadre (CSIRO); Simon Lucey (“ICT Centre, CSIRO”); Sridha Sridharan (Queensland University of Technology);
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### Session: Poster 3, Computer vision – Paper 3

46	“Robust core-point-ROI based fingerprint identification using a sparse classifier”	Alexandru Condurache (University of Luebeck); Alfred Mertins (University of Luebeck);
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### Session: Poster 3, Computer vision – Paper 4

62	“A Simple and Practical Solution to the Rigid Body Motion Segmentation Problem using a RGB-D Camera”	Samunda Perera (Australian National University); Nick Barnes (NICTA);
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### Session: Poster 3, Computer vision – Paper 5

70	“SIFT and SURF Performance Evaluation Against Various Image Deformations on Benchmark Dataset”	Nabeel Khan (Otago University); Brendan McCane (Otago University); Geoff Wyill (Otago University);
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### Session: Poster 3, Computer vision – Paper 6

72	“Ship Detection Using Texture Statistics from Optical Satellite Images”	Gaopan Huang (CASIA); Yanqing Wang; Yushuang Zhang; Yuan Tian;
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### Session: Poster 3, Computer vision – Paper 7

91	“An observation about circular shortest paths”	Pascal Vallotton (CSIRO); Janet Newman (CSIRO); david Lovell (csiro);
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### Session: Poster 3, Computer vision – Paper 8

96	“Stereo Matching Using Sub-segmentation and Robust Higher-order Graph Cut”	Yiran Xie (Australian National University); Nianjun Liu (NICTA); Sheng Liu (Zhejiang University of Technology); Nick Barnes (NICTA);
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### Session: Poster 3, Computer vision – Paper 9

97	“Practical Improvements to Simultaneous Computation of Multi-View Geometry and Radial Lens Distortion”	Ruan Lakemond (Queensland University of Tech); Clinton Fookes (Queensland University of Technology); Sridha Sridharan (Queensland University of Technology);
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### Session: Poster 3, Computer vision – Paper 10

98	“Negative Determinant of Hessian Features”	Ruan Lakemond (Queensland University of Tech); Clinton Fookes (Queensland University of Technology); Sridha Sridharan (Queensland University of Technology);
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### Session: Poster 3, Computer vision – Paper 11

120	“Face Recognition across Pose on Video using Eigen Light-fields”	Moh Wibowo (QUT); Dian Tjondronegoro (QUT);
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### Session: Poster 3, Computer vision – Paper 12

126	"A Multi-Resolution Image Alignment Technique Based on Direct Methods for Pose Estimation of Aerial Vehicles"	Carol Martínez (UPM); Luis Mejias Alvarez (ARCAA - QUT); Pascual Campoy;
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### Session: Poster 3, Computer vision – Paper 13

133	"Unusual Event Detection in Crowded Scenes Using Bags of LBPs in Spatio-temporal Patches"	Jingxin Xu (QUT); Simon Denman (QUT); Clinton Fookes (Queensland University of Technology); Sridha Sridharan (Queensland University of Technology);
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### Session: Poster 3, Computer vision – Paper 14

144	"Automated 3D Segmentation and Analysis of Cotton Plants"	Anthony Paproki (AEHRC); xavier Sirault (CSIRO, Plant Industry); Scott Berry (CSIRO, Plant Industry); Olivier Salvado (CSIRO); Robert Furbank (CSIRO, Plant Industry); Jurgen Fripp (CSIRO);
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### Session: Poster 3, Computer vision – Paper 15

150	"Fast RANSAC hypothesis generation for essential matrix estimation"	Tom Botterill (University of Canterbury); Steven Mills; Richard Green (University of Canterbury);
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### Session: Poster 3, Computer vision – Paper 16

156	"Compressive Sensing for Gait Recognition"	Sabesan Sivapalan (QUT); Rajib Rana (QUT); Daniel Chen (QUT); Simon Denman (QUT); Sridha Sridharan (Queensland University of Technology); Clinton Fookes (Queensland University of Technology);
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### Session: Poster 3, Computer vision – Paper 17

160	"On the Recovery of Shape and Reflectance from a Single Multispectral Image"	Sejuti Rahman (Australian National University);
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### Session: Poster 3, Computer vision – Paper 18

162	"Online tracking of people through a camera network"	Jamie Sherrah (DSTO ); Dmitri Kamenetsky (DSTO ); Bob Whatmough (Defence Science and Technology Organisation); Nicholas Redding (DSTO);
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### Session: Poster 3, Computer vision – Paper 19

197	"Obstacle Detection Using Dynamic Particle-Based Occupancy Grids"	Radu Danescu (TUCN);
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### Session: Poster 3, Computer vision – Paper 20

211	"Non-Overlapping Multi-Camera Detection and Tracking of Vehicles in Tunnel Surveillance"	Jorge Nino (Universiteit Gent);
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### Session: Oral 7, Surveillance, defence and industrial applications – Paper 1

41	"PIL-EYE: Integrated System for Sustainable Development of Intelligent Visual Surveillance Algorithms"	Hyung Jin Chang (Seoul National University); Kwang Yi (Seoul National University); Shimin Yin (Seoul National University); Soo Wan Kim (Seoul National University); Young Min Baek (The University of Tokyo); Ho Seok Ahn (Korea Institute of Industrial Technology); Jin Young Choi (Seoul National University);
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**Session: Oral 7, Surveillance, defence and industrial applications – Paper 2**

79	“Scene Invariant Crowd Counting”	David Ryan (QUT); Simon Denman (QUT); Sridha Sridharan (Queensland University of Technology); Clinton Fookes (Queensland University of Technology);
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**Session: Oral 7, Surveillance, defence and industrial applications – Paper 3**

92	“Visual Maritime Attention Using Multiple Low-Level Features and Naive Bayes Classification”	Thomas Albrecht (Curtin University); Geoff West (Curtin University ); Tele Tan (Curtin University); Thanh Ly (Defence Science and Technology Organisation);
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**Session: Oral 7, Surveillance, defence and industrial applications – Paper 4**

103	“Analysis of Brightness Transfer Function for Matching Targets Across Networked Cameras”	Pankaj Kumar (University of South Australia); Kutluyil Dogancay (University of South Australia);
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**Session: Oral 7, Surveillance, defence and industrial applications – Paper 5**

121	“Contextual Action Recognition in Multi-sensor Nighttime Video Sequences”	Anwaar Haq (Monash Uni); Iqbal Gondal (Monash); Manzur Murshed;
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**Session: Oral 7, Surveillance, defence and industrial applications – Paper 6**

123	“Probabilistic Approach with Three Hierarchies of Motion Estimation for Video Stabilization”	Kimin Yun (Seoul National Univ.); Soo Wan Kim (Seoul National University); Jin Young Choi (Seoul National University);
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**Session: Poster 4, Image coding and processing – Paper 1**

81	“Width Distributions for Shape Description”	Xiaozheng Zhang (National ICT Australia); Yongsheng Gao (Griffith University);
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**Session: Poster 4, Image coding and processing – Paper 2**

122	“Scale and Rotation Invariant Gabor Features for Texture Retrieval”	MD HAFIZUR RAHMAN (UNSW@ADFA); M R Pickering; Michael Frater (Australian Defence Force Academy);
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**Session: Poster 4, Image coding and processing – Paper 3**

171	“Blind Video Tamper Detection Based on Fusion of Source Features”	Julian Goodwin (AxionWeb R & D Pty. Ltd.); Matthew White (AxionWeb R & D Pty Ltd.);
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**Session: Poster 4, Image coding and processing – Paper 4**

10	“Image Matting via Local Tangent Space Alignment”	Junbin Gao (Charles Sturt University);
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**Session: Poster 4, Image coding and processing – Paper 5**

12	“Evaluation of Texture and Geometry For Dimensional Facial Expression Recognition”	Ligang Zhang (Queensland University of Techn); Dian Tjondronegoro (Queensland University of Technology); Vinod Chandran (Queensland University of Technology);
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**Session: Poster 4, Image coding and processing – Paper 6**

40	“Near-perfect correlation functions based on zero-sum digital projections for constructing robust watermarks”	Imants Svalbe (Monash University);
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**Session: Poster 4, Image coding and processing – Paper 7**

56	“Comparison Study of Two Energy Minimization Based Image Segmentation Methods”	Huimin Yu (CSIRO); Dadong Wang (CSIRO);
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**Session: Poster 4, Image coding and processing – Paper 8**

80	“An Accurate Hand Segmentation Approach Using A Structure Based Shape Localization”	Jose Saavedra (University of Chile); Violeta Chang (University of Chile); Benjamin Bustos (University of Chile);
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**Session: Poster 4, Image coding and processing – Paper 9**

88	“Efficient Block Mode Decision and Prediction Mode Selection For Intra Prediction in H.264/AVC High Profile”	Taeho Kim (Hanyang University); Ung Hwang; Jechang Jeong (University of Hanyang);
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**Session: Poster 4, Image coding and processing – Paper 10**

93	“Leaf Image Classification with Shape Context and SIFT Descriptors”	Zhiyong Wang (University of Sydney ); Bin Lu (University of Sydney); Zheru Chi (Hong Kong Polytechnic University); Dagan Feng (University of Sydney);
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**Session: Poster 4, Image coding and processing – Paper 11**

114	“Fast Intra Mode Decision Algorithm using the Sum of Absolute Transformed Differences”	Joohyeok Kim (Hanyang University); Jechang Jeong (University of Hanyang);
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Session: Poster 4, Image coding and processing – Paper 12

138	“Generalised Hilbert Transforms for the Estimation of Growth Direction in Coral Cores”	Ross Marchant (James Cook University); Paul Jackway (CSIRO);
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Session: Poster 4, Image coding and processing – Paper 13

149	“Adaptive Order Spline Interpolation for Edge-Preserving CFA Demosaicking”	Sherry Randhawa (Flinders University); Jim S Li (Flinders University);
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Session: Poster 4, Image coding and processing – Paper 14

166	“Off-line Signature Identification Using Background and Foreground Information”	Srikanta Pal (Griffith University); Alireza Alaei (University of Mysore); Umapada Pal (Indian Statistical Institute); Michael Blumenstein (Griffith University);
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Session: Poster 4, Image coding and processing – Paper 15

167	“Document Capturing Method with a Camera using Robust Feature Points Detection”	Woong Hee Kim (Technical University of Berlin); Jongwoon Hwang; Thomas Sikora (Technische Universitat Berlin);
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Session: Poster 4, Image coding and processing – Paper 16

193	“Fast block matching algorithm for constrained one-bit transform-based motion estimation using binomial distribution”	HANJIN PARK (HANYANG UNIVERSITY); CHANGRYOUL CHOI (HANYANG UNIV); Jechang Jeong (University of Hanyang);
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Session: Poster 4, Image coding and processing – Paper 17

210	“Cooperative Relay Selection Based UEP Scheme for 3D Video Transmission over Rayleigh Fading Channel”	Khalid Alajel (USQ); ibrahim sileh (USQ);
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## DICTA 2011: List of Conference Delegates

Given Name	Family Name	Organisation
Abdulaziz	Alanazi	Australian National University
Thomas	Albrecht	Curtin University
Mohammad	Awrangjeb	The University of Melbourne
Richard	Beare	Monash Univeristy/Murdoch Childrens Research Institute
Moyuresh	Biswas	University of New South Wales, ADFA
Wageeh	Boles	Queensland University of Technology
Paulo	Borges	CSIRO
Murk	Bottema	Flinders University
Tom	Botterill	University of Canterbury
GEOFFREY	BULL	Charles Sturt University
Weidong	Cai	The University of Sydney
Amy	Chan	CSIRO
Zezhi	Chen	Kingston University
Chao-Yi	Cho	
Alexandru Paul	Condurache	University of Luebeck
Stuart	Crozier	UQ
Radu Gabriel	Danescu	Technical University of Cluj-Napoca
David	Dean	QUT
Clinton	Fookes	Queensland University of Technology
Junbin	Gao	Charles Sturt University
Yongsheng	Gao	Griffith University & NICTA-QRL
SOUMYA	GHOSE	LABORATOIRE LE2I
Ruben	Gonzalez	Griffith University
Stephen	Gould	ANU
Richard	Green	University of Canterbury
Lin	Gu	NICTA
Kathy	Horadam	RMIT University
Md. Tanvir	Hossain	Monash University
Kazuhiro	Hotta	Meijo University
Gaopan	Huang	Institute of Automation, Chinese Academy of Sciences
Cong	Huynh	NICTA
Paul	Jackway	CSIRO Mathematics, Informatics and Statistics
Srimal	Jayawardena	Australian National University
Zoltan	Kato	University of Szeged
Nabeel	KHAN	University of Otago
Woong Hee	Kim	KIST Europe
Joohyeok	Kim	Department of Electronics and Computer Engineering
Taeho	Kim	Department of Electronics and Computer Engineering
soo wan	kim	
Pankaj	Kumar	University of South Australia
John	Lai	Queensland University of Technology



Ruan	Lakemond	Queensland University of Technology
Thomas	Landgrebe	The University of Sydney
Qiang	Li	UNSW@ADFA
Hongdong	Li	The Australian National University
Tao	Li	XiAn University of Posts and Telecom
Simon	Lucey	CSIRO ICT Centre
Aamir	Malik	Universiti Teknologi Petronas
Ross	Marchant	JCU / CSIRO
Md. Abdulah	Masum	SEIT-UNSW@ADFA
Luis	Mejias Alvarez	Queensland University of Technology
jhimli	mitra	
Domen	Mongus	University of Maribor, FERl
Juan	Nieto	University of Sydney
Jorge	Nino Castaneda	Ghent University
Srikanta	Pal	Griffith University
HANJIN	PARK	HANYNAG University
Manoranjan	Paul	Charles Sturt University
Manuel	Penedo	University of Coruña
Samunda	Perera	National ICT Australia
Raluca Diana	Petre	Telecom SudParis
Mark	Pickering	UNSW
Sejuti	Rahman	NICTA
Md. Hafizur	Rahman	SEIT - UNSW@ADFA
MANISH	RAJ	IP AUSTRALIA
Nandini	Ramesh Kumar	University of Southern Queensland
Sharmil	Randhawa	Flinders University
Sivalogeswaran	Ratnasingam	NICTA
NICHOLAS	REDDING	DSTO
Marc	Ritter	Chemnitz University of Technology
Paul	Rivera	ANU
Antonio	Robles-Kelly	NICTA
Luis	Romero-Ortega	NICTA
Jose Manuel	Saavedra	University of Chile
Omar	Salim	University of Southern Queensland
David	Sandberg	
Satoshi	Sato	Panasonic Co.,Ltd.
Gabriel	Scarmana	University of Southern Queensland
Ibrahim	Sileh	University of Southern Queensland
Sabesan	Sivapalan	QUT
Ahmed	Sohaib	NICTA
Denis	Špeli&#269;	UM FERl
Changming	Sun	CSIRO
Imants	SVALBE	School of Physics
Chun-Shian	Tsai	Industrial Technology Research Institute(ITRI)

Anwaar	ulhaq	Monash University
Pascal	Vallotton	CSIRO
Jack	Valmadre	CSIRO
Vaidehi	Vijaykumar	Madras Institute of Technology, Anna University
Dadong	Wang	CSIRO
Tao	Wang	NICTA
Zhiyong	Wang	The University of Sydney
Lei	Wang	University of Wollongong
Geoff	West	Curtin University
Moh Edi	Wibowo	Queensland University of Technology
Arnold	Wiliem	NICTA, Queensland Research Laboratory
Simon	Williams	Flinders University
Yong	Xia	The University of Sydney
Jingxin	Xu	Queensland University of Technology
Kimin	Yun	Seoul National University
Yuhang	Zhang	The Australian National University
Chao	Zhang	University of NSW
Ligang	Zhang	Queensland University of Technology
Jun	Zhou	Australian National University