



## Medical Image Understanding and Analysis 2005

University of Bristol, 19-20 July

## FINAL PROGRAMME

### Tuesday 19<sup>th</sup> July

8.30 Registration and Coffee

9.00 Welcome

9.15 **Invited talk 1 – Prof. Nicholas Ayache - INRIA**  
*Computational Anatomy and Computational Physiology for Medical Image Analysis*

#### Oral session: Classification (Chair: Dr. Jim Graham – University of Manchester)

10.00 Regional Cerebral Cortical Thickness Estimation using MRI.  
Scott, Thacker, University of Manchester

10.15 Enhancing feature extraction from colon microscopy images using colourspace rotation.  
Shuttleworth, Todman, Bennett, Naguib, Newman, Coventry University

10.30 Local environment analysis to aid microaneurysm detection.  
Fleming, Goatman, Philip, Olson, Sharp, University of Aberdeen

10.45 Detecting Abnormalities in Tympanic Membrane Images.  
Xie, Mirmehdi, Maw, Hall, University of Bristol

11.00 Coffee break

#### Oral session: MR Developments (Chair: Prof. Andrew Todd-Pokropek – UCL)

11.30 Multi-dimensional MR Image Segmentation with Gradient Analysis.  
Thacker, University of Manchester

11.45 Radial Long Axis Registration for the Correction of High Resolution Cardiac MR Images.  
Noble, Boubertakh, Razavi, Hill, University College London

12.00 Effect of Oxygen Inhalation on T1 relaxation time in Skeletal Muscle.  
McGrath, Naish, Beatty, Jackson, Waterton, Taylor, Parker, University of Manchester

12.15 Segmentation of breast MR using parametric mapping: An inverse problem approach.  
Ketsetzis, Brady, University of Oxford

12.30 Lunch and Posters (session A)

14.15 **Invited talk 2 – Dr. John Waterton, AstraZeneca PLC**  
*What does the drug developer need from medical imaging? Challenges for image analysis*

#### Oral session: Segmentation I (Chair: Dr. Dan Reuckert – Imperial College)

15.00 Segmenting Tibia and Femur from Knee X-ray Images.  
Seise, McKenna, Ricketts, Wigderowitz, University of Dundee

15.15 Using colour distributions to discriminate tissues in Wireless Capsule Endoscopy images.  
Berens, Mackiewicz, Fisher, Bell, University of East Anglia

15.30 Measuring Indicators of Osteoporosis from Dental Panoramic Radiographs: Preliminary Results.  
Farnell, Graham, Devlin, Horner, University of Manchester

15.45 Robust Active Shape Models.  
Abi Nahed, Jolly, Yang, Imperial College

16.00 Coffee break

#### Oral session: Ultrasound + Terahertz Imaging (Chair: Prof. Alison Noble, University of Oxford)

16.30 Speckle Classification for Sensorless Freehand 3D Ultrasound.  
Hassenpflug, Prager, Treece, Gee, University of Cambridge

16.45 Automatic mammary duct detection in 3D ultrasound.  
Gooding, Mellor, Shipley, Broadbent, Goddard, Royal United Hospital Bath

17.00 Sensorless Freehand 3D Ultrasound for Non-monotonic and Intersecting Frames.  
Housden, Gee, Prager, Treece, University of Cambridge

17.15 Evaluation of an explanation for boundary artefacts in terahertz pulsed image using tooth slices and step wedges.  
Reed, Berry, Foulds, Stringer, Davies, University of Leeds

17.30 Adaptive Multiscale Ultrasound Compounding using Phase Information.  
Grau, Noble, University of Oxford

19.00 Drink Reception followed by Conference Dinner (Wills Dining Hall)

### Wednesday 20<sup>th</sup> July

9.00 **Invited talk 3 – Prof. Max Viergever – University of Utrecht**  
*Image registration and fusion for diagnosis and intervention*

#### Oral session: Registration (Chair: Dr. Neil Thacker – University of Manchester)

9.45 Comparing tracer kinetic model-driven registration to time series mean image registration for dynamic contrast enhanced MRI. Buonaccorsi, Roberts, Cheung, Watson, Davies, Jackson, Jayson, Parker, University of Manchester

10.00 Non-rigid Registration for Colorectal Cancer MR Images.  
Bond, Brady, University of Oxford

10.15 Rigidity Adaptable Registration of Biological Images.  
Pittiot, Guimond, Mirada Solutions Ltd

10.30 Extraction and Registration of Neonatal Cerebral Vasculature for Preterm and Term Infants.  
Xue, Malamateniou, Counsell, Rutherford, Rueckert, Hajnal, Imperial College London

10.45 Coffee break

#### Oral session: Segmentation II (Chair: Dr. Stephen Mckenna – University of Dundee)

11.00 Deriving a Hierarchical Representation of Lung Disease using Re-Sampling.  
Carrivick, Prabhu, University of Bristol

11.15 Automatic 3D Segmentation of Liver Tissue from CT Datasets.  
Evans, Lambrou, Linney, Todd-Pokropek, University College London

11.30 Evaluating Atlas Segmentation of Multiple Structures Using Generalised Measures of Region Overlap.  
Crum, Camara-Rey, Rueckert, Jenkinson, Hill, University College London

### Wednesday 20<sup>th</sup> July Cont.

- 11.45 PCA-based filtering for hypothesis testing on hippocampus shape differences between schizophrenics and normals.  
Olmos, Bossa, Styner, Aragon Institute of Engineering Research
- 12.00 Fast PABIC-EM bias field correction algorithm: Application to breast MR.  
Ketsetzis, Brady, University of Oxford

### 12.15 Lunch and Posters (session B)

- 14.00 **Invited talk 4 – Prof. Francis Duck, Royal United Hospital, Bath**  
*Ultrasound in medicine: the challenge of acoustic imaging*

### Oral session: Neurological Image Analysis (Chair: Dr. Ela Claridge – University of Birmingham)

- 14.45 A level set driven by MR features of focal cortical dysplasia for lesion segmentation.  
Colliot, Mansi, Bernasconi, Naessens, Klironomos, Bernasconi, McGill University
- 15.00 Partial volume segmentation of MR images using non-parametric mixture model.  
Joshi, Brady, University of Oxford
- 15.15 Trends in Brain Volume Change with Normal Ageing.  
Bromiley, Thacker, Jackson, University of Manchester
- 15.30 A method of automatically calculating hippocampal atrophy rates.  
Barnes, Boyes, Lewis, Schott, Frost, Scahill, Fox, University College London

### 15.45 Coffee break

### Oral session: Towards Clinical Applications (Chair: Dr. Reyer Zwiggelaar, University of Wales)

- 16.00 Eccentricity Error Correction for Automated Estimation of Polyethylene Wear after Total Hip Arthroplasty.  
Kerrigan, McKenna, Ricketts, Wigderowitz, University of Dundee
- 16.15 Estimation of Tissue Elasticity Parameters Using a Similarity Based Approach.  
Li, Cui, Kadour, Noble, University of Oxford
- 16.30 The analysis of fluorescence microscopy images for FRET detection.  
Claridge, Powner, Wakelam, University of Birmingham
- 16.45 A Simulation Scheme to Access the Effect of Respiratory Motion on PET Images.  
Vyas, Schleyer, Blackall, Batchelor, Hill, Marsden, King's College Hospital NHS Trust

### 17.00 Close

### Posters – Session A (Tuesday 19<sup>th</sup> July)

- Rapid, easy and reliable calibration for freehand 3D ultrasound.  
Hsu, Prager, Gee, Treece, University of Cambridge
- Automated measurement of generalised retinal vessel narrowing.  
Goatman, Fleming, Olson, Sharp, University of Aberdeen
- Interpreting Clinical Content in a Large-Scale Histological Image Database.  
Chen, Tang, Wells, University of Surrey
- Segmentation of the Pulmonary Arteries: Using a Topological Model of the Vessels.  
Sebbe, Gosselin, Coche, Macq, Faculté Polytechnique de Mons (FPMs)
- Performance evaluation and optimisation of lossless image compression algorithms applied to medical infrared images.  
Starosolski, Schaefer, Zhu, University of Derby
- A Bayesian Similarity Function for Segmentation using Anatomical, Shape-Based Models.  
Jenkinson, Behrens, Woolrich, Crum, Hill, Smith, University of Oxford

- A Comparison of Tissue Type Labelings of Direct Classification and Segmentation Propagation Techniques for MR Brain Images.  
Ren, Sneller, Rueckert, Hajnal, Hill, University College London
- Analysis of Variability of Cardiac MRI Data.  
Silver, Hill, Kastanis, University College London
- A knowledge base for segmentation of concave anatomical structures in medical images  
Prest, Phillips, Cleland, Nikitin, Langton, University of Hull
- A Complexity Analysis for Normal Cerebral Blood and CSF Flow.  
Kim, Bromiley, Thacker, University of Manchester
- Effect of increasing registration flexibility for conical breast ultrasound datasets.  
Shipley, Shipley, Duck, Thomas, Royal United Hospital Bath
- Identifying Tissue Types in MR Images of the Prostate.  
Allen, Graham, Hamlett, Hutchinson, University of Manchester
- Assessing the Quality of Mesh-Warping in Normal and Abnormal Neuroanatomy.  
Camara-Rey, Crum, Schnabel, Lewis, Schweiger, Hill, Fox, University College London
- X-Ray based Machine vision system for Robotic Assisted Orthopaedic Surgery.  
Junejo, Bouazza-Marouf, Kerr, Taylor, Loughborough University
- Measuring Agreement between Fuzzy Membership Labelling Images.  
Ren, Hill, Hajnal, Rueckert, University College London
- Revisiting MDL Principle Based Statistical Shape Modeling.  
Jiang, Xie, Tsui, Chinese University of Hong Kong

### Posters – Session B (Wednesday 20<sup>th</sup> July)

- Skin Pattern Analysis for Lesion Classification Using Skin Line Intensity.  
Liu, She, North East Wales Institute
- Motion and Noise Detection for Adaptive Spatio-Temporal Filtering of Medical X-Ray Image Sequences.  
Hensel, Wiesner, Kuhrmann, Pralow, Grigat, Technical University Hamburg
- The Use of Grey-level Profiles for Detection of Extracapsular Extension of Prostate Cancer from MRI.  
Zhu, Williams, Fisher, Zwiggelaar, University of East Anglia
- Ultrasound Point-Spread Function Estimation using Higher Order Statistics.  
Marianski, Prager, Gee, Treece, University of Cambridge
- Estimation of partial volume mixtures with a confidence measure combining intensity and gradient magnitude information.  
Chiverton, Wells, University of Surrey
- A vision based reverse engineering approach to surface digitizing in restorative dentistry.  
Alemzadeh, Zhang, University of Bristol
- MR measurement of thickness changes in the articular cartilage of the hip due to weight-bearing.  
Naish, Xanthopoulos, Hutchinson, Waterton, Taylor, University of Manchester
- The effects of noise in the automated detection of lung disease from thoracic CT scans.  
Malone, Law, Prabhu, Campbell, University of Bristol
- A Border Irregularity Measure Using Hidden Markov Models as a Malignant Melanoma Predictor.  
Aribisala, Claridge, University of Birmingham
- A New 3D Segmentation Methodology for Lumbar Vertebral Bodies for the Measurement of BMD and Geometry.  
Mastmeyer, Engelke, Kalender, University of Erlangen
- Mammographic Density Classification Based on Statistical Grey-level Histogram Modelling.  
Zwiggelaar, Muhimmah, Denton, University of Wales
- Improving optic disk location in fundus camera images by plausible detection.  
Azegrouz, Trucco, Heriot Watt University
- Design of a multihole collimator gamma camera model for use in Monte Carlo simulation.  
Saripan, Wells, Petrou, Alnafe, Guy, University of Surrey
- Voxel-Based Classification of White Matter Fibre Complexity in Diffusion MRI.  
Nedjati-Gilani, Alexander, University College London
- Multi-channel multiple-source optic disk detection.  
Mazo, Trucco, Heriot Watt University
- Propagating labels on brain MR images based on non-rigid registration: an evaluation.  
Heckemann, Hajnal, Rueckert, Hill, Hammers, Imperial College

The Medical Image Understanding and Analysis Conference 2005 is organised and hosted by the University of Bristol.  
MIUA Conference Chair: Dr Majid Mirmehdi, Conference Secretary: Miss Sophie Benoit