

Curriculum Vitae – Professor Andrew David Marshall

Current Post/type of contract: Professor, Cardiff University

School: Cardiff School of Computer Science and Informatics

Date of Birth: 19th November, 1963

Post-School Education:

University of Wales, College of Cardiff - PhD (awarded Jan '90) on
“Automatic Inspection of 3D Objects Using 3D Range Data and Model Based
Matching Techniques”

University of Wales, College of Cardiff - B.Sc. in Mathematics (1st Class
Honours) (1986)

Career:

June 2013– Present, Honorary Professor, School of Anaesthetics, Cardiff
University.

August 2010 – Present: Professor, Cardiff University, Cardiff School of
Computer Science.

Oct 2004 – July 2010: Reader, Cardiff University, Cardiff School of
Computer Science.

Oct 2000 – Sept 2004: Senior Lecturer, Cardiff University, Cardiff School of
Computer Science.

Oct 1989 – Sept 2000: Lecturer, University Of Wales College of Cardiff,
Dept. of Computer Science.

Sept 1986 - Oct 1989 Postgraduate Industrial Sponsorship, British Aerospace
Plc, Sowerby Research Centre

Aug 1982 - Sept 1986 Undergraduate Apprentice, British Aerospace Plc,
Dynamics Group

Professional Body Membership/External Activities

1993-present Member of the Institute of Electrical and Electronic Engineers (IEEE)

1993-present Member of the British Machine Vision Association

2001-2006 Member of the British Machine Vision Association Executive Committee

2002-2006 Secretary of the British Machine Vision Association Executive Committee

Research

Research Interests and Activities

Computer Vision and Image Processing:

3D Computer Vision:

Reverse Engineering

Automated Inspection

Object Recognition:

Model Based Matching

Analysis of high dimensional image feature spaces:

Eigen analysis and Nonlinear Dimension Reduction

Manifold Learning

Dynamic 2D/3D Facial Analysis:

Modelling of Dynamics

Video Realistic Facial Synthesis

Facial Expression Modelling and Analysis

Behaviour Transfer of Dynamics and Expression

Full 3D constitutive modelling of individual's facial structure and dynamics

Computer Graphics, Animation and Dental Applications

Human Motion Analysis

Video Analysis

Multimedia Applications of Computer Vision:

Video Realistic Talking Head

Sound, Audio and Vision

Data and Information Fusion

Biological Applications of Computer Vision

Educational Multimedia Applications

Research Grants and Other Awards

Virtual Avatar, KTP Grant, £150K, Dec 2018- Dec 2020

Seeing the future, EPSRC Grant, £233K, April 2018- April 2020

Deep Learning on Surveillance Video, EPSRC Industrial Case PhD Studentship, £130K, Start Date Oct 2016, Duration 4 Years

Computational modelling and prediction of brain shift to improve surgical navigation,

- EPSRC Industrial Case PhD Studentship, Prof Sam Evans (ENGIN, co-PI) Prof D. Marshall (co-PI) , £120K. Start Date Oct 2015, duration 3.5 Years.
- PSE college COMSC funded PhD studentship (3 Years)
- In collaboration with Renishaw PLC. Cardiff School of Engineering, Cardiff University Brain Imaging Centre (CUBRIC) and Cardiff School of Computer Science and Informatics: each school also supplying a PhD studentship. Setting up a new interdisciplinary research group in Neurosurgical

Engineering.

Detecting deceit in humans through multimodal analysis of human behaviour, Airbus/WG Science Foundation funded PhD studentship, Prof D. Marshall (PI), Prof Simon Moore (DENTL), Prof. Martin Innes (UPSI/SOCSI), £124K, (part of a £1.2M Airbus led project). Start Date: Oct 2015, duration 3.5 Years.

Advanced Medical Imaging and Visualisation Biomedical Research Unit (BRU) (w/ Bangor, Swansea, Aberystwyth, NISCHR, £1.3M Total, ~£350K Cardiff) Start Date: April 2012, End Date April 2015.

Reverse Engineering Solid Models using Mobile Cameras, EPSRC Industrial Case PhD Studentship, Prof D. Marshall (PI) and Prof. Ralph Martin, £90K. Start Date April 2013, duration 3.5 Years.

Enabling Sports Industries using Advanced Video Visualization, I. Griffiths, M. Chen, D. Marshall and A. Morris, Swansea University Grant with a number of company partners, WAG/SERP funded grant. £ 300K Start Date June 2010. Duration: 2 Years.

WIVC: Welsh Institute for Visual Computing, Prof R Martin, Prof N Avis, Dr D Marshall, Dr P Rosin and Dr F C Langbein, Cardiff, Swansea, Aberystwyth and Bangor Universities. WAG funding £5M total (£1M Cardiff). Start Date: January 2009. Duration: 4 Years.

The validity of computerised facial models to simulate facial movement and surgical intervention, Dr David Marshall and Prof Stephen Richmond, Cardiff School of Dentistry funded PhD Value: £51K, Start Date January 2007. Duration: 3 Years

2D and 3D retinal image fusion for detection and diagnosis of eye diseases, Dr David Marshall, Dr Paul Rosin and Dr James Morgan (OPTOM), Cardiff University Richard Whipp PhD Studentship, Value: £51K, Start Date October 2006. Duration: 3 Years

An expressive speech driven 3D talking head, Cardiff School of Computer Science funded PhD Value: £51K, Start Date October 2006. Duration: 3 Years

Watermarking geometric models, Dr F Langbein and Dr D Marshall, Auckland University funded contract, Value £80K, Start Date 01/11/04 Duration 3 years

Filtering and processing irregular meshes with uncertainties, EPSRC Grant, Principal Investigator: Dr P Rosin, Co-investigators: Prof RR Martin Dr F Langbein, Dr D Marshall with Dr NC Mitchell (EARTH), Start Date: Sept. 2005, Duration: 3 Years, Value: £261K

Multi-model blind source separation algorithm, EPSRC Grant, Principal Investigator: Prof J Chambers (ENGIN), Co-investigators: Dr Y Hicks & Dr S Sanei (ENGIN) and Dr D Marshall (COMSC). Start Date: May 2005, Duration: 3 Years, Value: £279K

The clinical validation of a new mathematical tool to diagnose and classify normal, pathological and TKR knee function, EPSRC Grant, Principal Investigator: Dr Cathy Holt (ENGIN), Co-investigators: Dr Malcolm Beynon (CARBS) and, Start Date: April 2005, Duration: 3 Years, Value: £115K

Reverse Engineering of Reliefs, EPSRC Grant, Principal Investigator: Prof. Ralph Martin, Co-investigators: Dr. Paul Rosin, Dr. Frank Langbein and Dr David Marshall. Start Date December 2004, Duration 3 Years. Value: £200K.

PhD Studentship and sponsorship of personal research: Optimising Sensor Networks, EADS Ltd., Principal Investigator: Dr. David Marshall Start Date: November 2004, Duration: 5 Years. Value: £100K.

Communication Research Centre, Industrial Sponsorship, General Dynamics Ltd., Principal Investigators: Prof. Ken Lever (ENGIN), Dr. John Patrick (PSYCH) and Dr. David Marshall, April 2004 – April 2009, Value: £100K.

Communication Research Centre, SRIF II Grant, Principal Investigators: Prof. Ken Lever (ENGIN), Dr. John Patrick (PSYCH) and Dr. David Marshall, April 2004 – April 2006, Value: £946K

Characterisation, Modelling and Mitigation of Impairments produced by Radio Channels, Sensors and Communication Equipment for Data Fusion Defence Technology Centre Grant (1 Postdoc RA, 1 PhD), Joint Project Department of Computer Science/School of Engineering Principal Investigators: Dr David Marshall/Prof Ken Lever. Start date October 2003, 4 Year Grant. Value: £275K

Statistical Data Fusion of Battlefield Data, Defence Technology Centre Grant (1 Postdoc RA) , Principal Investigator: Dr. David Marshall, Start October 2003, 3 Year Grant. Value: £163K

Low Dimension Hierarchical Subspace Modelling of High Dimensional Multi-Sensor Data, Defence Technology Centre Grant (PhD Studentship), Principal Investigator: Dr David Marshall., Start October 2003, 3 Year Grant. Value: £54K

A Video Realistic Speech Driven Talking Head, Dept. Funded PhD, Principal Investigator: Dr David Marshall, Sept 2001-Sept 2004.

Educational Multimedia CD-ROM/Web Product Development, Teaching Company Scheme Grant (1 TCS Associate), Joint project with BDAG Ltd./ Productive Play Company, Cardiff, Principal Investigator: Dr David Marshall, Sept 2001-Sept 2003, Value: £75K

Development of PC Based Computer Gaming Platforms, Teaching Company Scheme Grant (Two TCS Associates), Joint project with Coinmaster Gaming PLC., Cardiff, Principal Investigator: Dr David Marshall, Sept 2000-Sept 2002, Value: £147K

Virtual Indexing for Taxonomic Information Systems, BBSRC/EPSRC BioInformatics Initiative (1 Postdoc RA), Joint project with Royal Botanic Gardens Edinburgh. Principal Investigator: Dr David Marshall, May 2001 – April 2004. Value: £132K

Beautification of CAD Models. EPSRC Grant (Two RAs: One Postdoc, One PostGrad), Principal Investigator: Prof. Ralph Martin, Co-investigator: Dr. David Marshall, Sept 1999 - Aug 2002, Value: £310K.

Air-to-Air Homing Missile Target Recognition and Tracking using Fused LADAR and FLIR Data, British Aerospace funded PhD Studentship, Principal Investigator: Dr David Marshall, Sept 1999 – Sept 2002, Value: £57K

Extracting 3D Articulated Models of Humans from a Video Sequence, Dept. Funded PhD, Principal Investigator: Dr David Marshall, Sept 1998-Sept 2001.

IMCASM - Intelligent Multi-Camera Surveillance and Monitoring, EPSRC funded, PhD, Joint project with City University, London. Principal Investigator Dr. Paul Rosin, Co-investigator Dr David Marshall

3D Tracking of Guided Missile Imagery, External PhD Studentship funded by British Aerospace. Principal Investigator: Dr David Marshall, Oct 1999 - Oct 2005 Value: £3K

Reverse Engineering of Computer Aided Design Models from 3D Range Data (RECCAD), EU Grant (COPERNICUS), Principal Investigator: Prof. Ralph Martin, Co-investigator: Dr. David Marshall, Sept 1995 – April 1999, Value 250 K ECU

Object Recognition for Aimpoint Refinement of Homing Missile Systems, British Aerospace funded PhD Studentship, Principal Investigator: Dr David Marshall, Sept 1993- Oct 1996 Value: £ 50K.

Academic Prizes:

Best Paper in Conference Nomination (Top 5 Paper Special Session Presentation)/
Best Student Paper of Conference Award (PhD Student: L. Benedikt), IEEE Second International Conference on Biometrics: Theory, Applications and Systems, 2008

Best Paper Award, Irish Machine Vision Conference 2004.

Best Demonstration Paper Award , British Machine Conference 2001.

Outstanding Paper Award, EDMEDIA – World Conference on Educational Multimedia and Hypermedia, 1999.

Outstanding Paper Award, EDMEDIA – World Conference on Educational Multimedia and Hypermedia, 1996.

Outstanding Paper Award, EDMEDIA – World Conference on Educational Multimedia and Hypermedia, 1995.

Research Supervision:

Completed PhD Students:

Huw Parry, PhD Title: *Object Recognition for Aimpoint Refinement of Homing Missile Systems*, PhD Awarded: 1998

Richard Roberts, PhD Title: *Viewpoint Selection for 3D Machine Vision Tasks*, PhD Awarded 2000.

Frank Langbein, PhD: *Beautification of Reverse Engineered Geometric Models*, PhD Awarded: June 2003 (Co-supervisor with Prof. Ralph Martin)

Yulia Hicks, PhD Title: *Extracting 3D Articulated Models of Humans from a Video Sequence*, PhD Awarded December 2004

Gavin Powell, PhD Title: *Air-to-Air Homing Missile Target Recognition and Tracking using Fused LADAR and FLIR Data*, PhD Awarded February 2004.

Darren Cosker, PhD Title: *A Video Realistic Speech Driven Talking Head*, Dept. Funded PhD, PhD awarded: April 2005.

Maggie Zheng, *Modelling, Tracking and Generating Human Interaction Behaviours in Video* – Joint Supervision, School of Engineering funded. PhD Awarded Feb 2009

Darren Radford, *Characterisation, Modelling and Mitigation of Impairments produced by Radio Channels, Sensors and Communication Equipment for Data Fusion* Data Information Fusion Defence Technology Centre Grant, PhD awarded: June 2009

Oksana Samko, *Low Dimension Hierarchical Subspace Modelling of High Dimensional Multi-Sensor Data*, Data Information Fusion Defence Technology Centre Grant. PhD awarded: June 2009

Lanthao Benedikt, *Using 3d Facial Motions For Biometric Identification*, School funded PhD. PhD awarded: August 2009

Phil Legg, *Multi-modal Retinal Imaging: Improving accuracy and efficiency of image registration using Mutual Information* – Year 4, Joint Schools of Optometry and Computer Science (Richard Whipp Studentship). PhD awarded: March 2010

Kirill Sidirov, *Validity Of Computerised Cephalofacial Models To Simulate Facial Movement And Surgical Intervention* – Year 3, Joint Schools of Dentistry and Computer Science (Dentistry funded). PhD awarded: February 2011

Matthew Roberts, *Optimising Sensor Networks for Data Fusion* – Year 5 (Industry Funded). PhD awarded: July 2011

Vedran Kadjić, *Segmentation of OCT Eye Data* – Year 4, Joint Schools of Optometry

and Computer Science (Optometry Funded). PhD awarded: August 2011

Hashmat Popat, *The use of three-dimensional motion analysis to quantify functional facial change following orthognathic surgery*, Year 3, Joint Schools of Dentistry and Computer Science, Second Supervisor (School of Dentistry Staff). PhD awarded: August 2012

Victoria Smy, *The effects of task complexity on performance in constraint satisfaction design*, Joint Schools of Psychology, Computer Science and Engineering Funded. One of two joint (HFTC/CRC) funded PhDs. PhD awarded: April 2013

Greg Parker, *The identification and segmentation of facial soft tissues derived from Magnetic Resonance Imaging (MRI) – Year 2*, Joint Schools of Dentistry, Computer Science and Psychology (CUBRIC) funded PhD. PhD awarded: December 2013

Ala Ali, *The influence of breathing disorders on face shape: a three-dimensional study*, Joint Schools of Dentistry and Computer Science (Dentistry funded), Second Supervisor, PhD awarded: December 2013

Ioannis Kaloskampis, *Improving problem solving and decision making in design engineering with the use of psychological techniques and scanpath models of eye fixations – Year 2*, Joint Schools of Engineering, Computer Science and Psychology Funded . One of two joint (HFTC/CRC) funded PhDs. PhD awarded: January 2014

Arshed Toma, *Characterization of normal facial features and their association with genes*, Joint Schools of Dentistry and Computer Science (Dentistry funded), Second Supervisor. PhD awarded: March 2014

Jason Vandeventer, *3D Conversational Analysis*, School Funded Studentship. PhD awarded: August 2015

Hawraa Abbas, *Modelling Conversational 3-Dimensional Faces*, Iraqi Funded PhD Student (joint with Yulia Hicks ENGIN), Awarded April 2018

Khtam Mula Guam Al-Meyah, *Modeling Facial Dynamics Change as People Age*, Iraqi Funded PhD Student, Awarded: Dec 2018

Zafi Shah, *Social Signal Processing for support of People with Impairments*, PSE College International PhD Student funded. Awarded: Dec 2018.

Kaelon Lloyd, *Surveillance Video Event Analysis*, School Funded PhD Studentship, Awarded: Dec 2018.

William White, *Sample based Musical Instrument Transcription*, Self Funded MPhil (CI, Kirill Sidorov PI) Awarded: Jan 2019

Samia Abbas, *Modelling Talking Human Faces in 3D*, Iraqi Funded PhD Student (joint with Yulia Hicks ENGIN), Awarded: June 2019

Current PhD Students:

Year 2:

Harrison Taylor, *Explainable Deep Learning For Situational Understanding Problems*

Ethan Dickson, *Speech-Driven Digital Avatar Synthesis*

Year 3:

Julien Schroeter, *Sports Video Analysis: Modelling And Detecting Complex Events In Sports Video*

Dominik Krzeminski, *Optimal Decoding Of Spatiotemporal Patterns In Magnetoencephalography*

Year 4:

Tom Hartley, *Deep Learning on Surveillance Video, iCase funded Phd Studentship,*

Stefano Zappala, *Computational modelling and prediction of brain shift to improve surgical navigation, COMSC/PSE College funded PhD*

David Humphreys, *Compressive Grammars for Analysis of Symbolic Music and Sound, Cardiff University Match-funded Endowment PhD Studentship (CI, Kirill Sidorov PI)*

Jospeh Redfern, *Detecting deceit in humans through multimodal analysis of human behaviour, Airbus/WG Foundation funded PhD*

Nick Bennion, *Computational modelling and prediction of brain shift to improve surgical navigation, iCase funded Phd Studentship (Co-PI w/ Prof Sam Evans ENGIN)*

Matt Potts, *Computational modelling and prediction of brain shift to improve surgical navigation, ENGIN funded PhD (CI w/ Prof Sam Evans ENGIN)*

External Examining PhD/MPhil Duties:

Dept. Electrical and Computer Engineering, Khalifa University of Science, Technology and Research, UAE. PhD Student: Sohailah Al Yammahi, Thesis Title: Body Parts Detection and Tracking from Stationary Video Feeds for Crowd Emotion Identification and Visualization. Supervisor: Dr. Andrzej Sluzek, Apr. 2018

School of Health and Wellbeing, Sheffield Hallam University, PhD Student: David Higham. Thesis Title: Extracting Field Hockey Player Coordinates using a Single

Wide-Angle Camera. Supervisor: Simon Goodwill. Nov. 2017

University of Otago, New Zealand. PhD Student: Maria Igorevna Mikhisor
Thesis Title: 3D face tracking using stereo cameras with whole body view.
Supervisor: Dr. Geoff Wyvill, Sept. 2017.

School of Electronic Engineering and Computer Science, Queen Mary University of London, PhD student: Hanxiao Wang, Thesis Title: Minimising Human Annotation for Scalable Person Re-Identification. Supervisor: Prof. Shaogang Gong, June 2017

School of Computer Science, University of Birmingham. PhD Student: Vladislav Kramarev. Thesis Title: 3D Compositional Hierarchies for Object Categorisation. Supervisor: Professor Jeremy Wyatt. June 2017

School of Computer Science, Swansea University, PhD Student: Jinjing Deng, PhD: Thesis Title: Adaptive Learning for Segmentation and Detection Supervisor: Dr. Xianghua Xie, June 2017

School of Computer Science, University of Bath. PhD Student: Rui Tang
Thesis Title: Versatile Multidimensional Pattern Analysis for Automated Facial Modeling and Architecture Parsing. Supervisor: Prof. Darren Cosker, Sept. 2016

School of Informatics, Edinburgh University, PhD Student: Steven McDonagh,
Thesis Title: Building Models from Multiple Point Sets with Kernel Density Estimation, Supervisor: Prof Bob Fisher, May 2015.

Department of Computer Science, Bristol University, PhD Student: Jack Greenhalgh,
Thesis Title: Driver Assistance Using Automated Symbol and Text Recognition,
Supervisor: Prof. Majid Mirmehdi, Dec 2014

Department of Computer Science, Aberystwyth University, MPhil Student:
Muhammad Ismail Mohmand, Thesis Title: A Review of Audio-Visual Emotion Recognition, Supervisor: Dr. Bernie Tiddeman, Nov 2014

Department of Engineering, Warwick University, PhD Student: Ang Li, Thesis Title: 3D Computer Vision: Passive Depth from Defocus and Manifold Learning-based Human Activity Recognition, Supervisor: Dr Richard Staunton, Oct 2014.

Centre for Vision, Speech and Signal Processing, University of Surrey, PhD student: William Koppen, Thesis Title: Learning 3D face shape features from local coherence, Supervisor: Prof Josef Kittler, Oct 2014.

Department of Computer Science, Exeter University, MRes Student: Quentin Robert Jeanmichel Lambert, Thesis Title: A Tunable Measure of 3D Compactness, Supervisor: Dr Jovisha Zunic. April 2014.

School of Electrical Engineering, Southampton University. Phd Student: Gunawan Ariyanto. Thesis Title: *Model-Based 3D Gait Biometrics*. Supervisor: Prof. Mark Nixon. Jan 2013.

School of Computer Science, York University. Phd Student: Oswald Aldrian
Thesis title: Inverse Rendering of Faces with a 3D Morphable Model. Supervisor: Dr Will Smith. Dec 2012.

Robert Gordon University, Aberdeen, PhD Student: Guofu Xiang. Supervisor: Patrick Holt. Thesis Title: *Automatic 3D facial modelling and tracking with deformable models.* Nov. 2012.

School of Computer Science, University of Bristol, Phd Student: Siyuan Fang.
Supervisor: Dr Neill Campbell, Thesis Title: *Visualization of Long Scenes from Dense Image Sequences.* June 2012.

School of Informatics, Edinburgh University, PhD Student: He Wang, Supervisor: Taku Kamura, Thesis Title: *Control of Objects with a High Degree of Freedom,* Date: Apr. 2012

Centre for Vision, Speech and Signal Processing, University of Surrey. Phd Student: Maria Consuelo Ruiz. Supervisor: Prof. John Illingworth. Thesis title: *Automatic Face Landmarking in 3D.* Date May 2011.

School of Engineering Sciences, University of Oxford. DPhil Student: Stuart Golodetz. Supervisor: Dr Stephen Cameron. Thesis title: *Zippering and Unzipping: The Use of Image Partition Forests in the Analysis of Abdominal CT Scans.* Date: April 2011

School of Computer Science, Bristol University. Master of Science Student: Thomas Banwell. Supervisor: Dr. Andrew Calway. Thesis title: *Combining Absolute Positioning and Vision for Scalable Localisation and Mapping.* Date: Jan 2011

School of Computer Studies, University of East Anglia. Supervisor: Dr Barry-John Thobald. PhD Student: : Mary Habib. Thesis title: *Semi-Automatic Construction of Dense Shape and Appearance Models.* Date: Nov. 2010

Department of Engineering, Australian National University. PhD Student: David Ferarri. PhD Supervisors: Prof. Mick Cardew-Hall, Prof. Geoff West and Prof. Bernie Rolfe. Thesis Title: *Free-form Geometric Feature Recognition for Knowledge Management.* Date: July 2009

School of Informatics, Edinburgh University. PhD Student: Timothy Lukins. PhD Supervisor: Prof. Bob Fisher. Thesis Title: *Qualifying 4D deformable surfaces by registered differential features.* Date: Sept. 2008

School of Electrical and Electronic Engineering, Bristol University. PhD Student: John Lewis, PhD Supervisors: Prof. Dave Bull and Prof. Nishan Canagarajah. Thesis Title: *A region-based approach to image and video fusion.* April 2008

School of Computer Science, Swansea University, MPhil Student: Daniel Hubball. MPhil Supervisors: Prof. Min Chen and Dr. Phil Grant. Thesis Title: *Exploring The Relationship Between Faces and Ageing in Image-Based Age Transformation* Date: Feb. 2008

School of Engineering and Physical Science & School of Mathematics and Computer Science, Heriot-Watt University, PhD Student: Jennifer Pfeiffer, PhD Supervisors: Dr Mike Chanter and Dr. Judith Bell, PhD Thesis Title: *Directional Compensation for Sidescan Sonar Images*, Date: August 2003.

School of Computing, University of Glamorgan, PhD Student: Geneen Stubbs, PhD Supervisor: Mr. Mike Watkins, PhD Thesis Title: *Multimedia Computer Based Learning Modelling*, Date: June 2001.

Dept. of Engineering Sciences, University of Oxford, D.Phil. Student: Alastair Gaskell, D.Phil., Supervisor: Dr. Penny Probert-Smith, D.Phil. Thesis Title: *Sensor Management for Mobile Robots using Bayesian Belief Networks*, Date: June 1995.

Publications:

Books:

1992:

Computer Vision, Models and Inspection

A. D. Marshall and R. R. Martin
World Scientific, Singapore.

2002:

Proceedings of the British Machine Vision Conference 2002, Vols. I and II, Editors:
Dr David Marshall and Dr. Paul Rosin, BMVA Press.

Papers and Reports:

2019

What's in a Smile? Initial Analyses of Dynamic Changes in Facial Shape and Appearance

D.J.J. Farnell, A.I. Zhurov, S. Richmond, D. Marshall, P.L. Rosin, K. Al-Meyah, P. Pirttiniemi, R. Lähdesmäki, *Journal of Imaging*, vol. 5, no. 1, 2019.

2018

Automated Screening for Bipolar Disorder from Audio/Visual Modalities

Z Syed, K. Sidorov and D Marshall

AVEC 2018 - 8th Audio/Visual Emotion Challenge and Workshop, ACM Multimedia 2018 conference, 22-26 October, Seoul, Korea

Computational Paralinguistics: Automatic Assessment of Emotions, Mood and Behavioural State from Acoustics of Speech Z Syed, J. Schroeter, K Sidorov, D Marshall

The INTERSPEECH 2018 Computational Paralinguistics Challenge (ComParE): Atypical & Self-Assessed Affect, Crying & Heart Beats 2, INTERSPEECH 2018,

3-Step Speaker Identification Approach in Degraded Conditions

S. Boujnah, X. Sun, D. Marshall, P.L. Rosin, M.L. Ammari

Int. Multi-Conf. on Systems, Signals and Devices, pp. 1100-1103, 2018.

A 3D morphometric perspective for facial gender analysis and classification using geodesic path curvature features

H. Abbas, Y. Hicks, D. Marshall, A. Zhurov and S. Richmond

Computational Visual Media 4 (1) , pp. 17-32.

2017

Psychomotor cues for depression screening, Depression Severity Prediction Based on Biomarkers of Psychomotor Retardation

Z. Shah, K. Sidorov and D. Marshall
AVEC '17: Proceedings of the 7th Annual Workshop on Audio/Visual Emotion
Challenge, October 2017

Psychomotor cues for depression screening
Z. Shah, K. Sidorov and D. Marshall
22nd International Conference on Digital Signal Processing (DSP), August 2017

4D Analysis of Facial Ageing Using Dynamic Features

K. Al-Meyah, D. Marshall and P.L. Rosin
Procedia Computer Science, vol. 112, pp. 790-799, 2017.

An Open-data, Agent-based Model of Alcohol Related Crime

J. Redfern, K. Sidorov, P.L. Rosin, S.C. Moore, P. Corcoran and D. Marshall
Int. Conf. Advanced Video and Signal Based Surveillance, 2017.

*Detecting Violent and Abnormal Crowd activity using Temporal Analysis of Grey
Level Co-occurrence Matrix (GLCM) Based Texture Measures*

K. Lloyd, P.L. Rosin, D. Marshall, S.C. Moore
Machine Vision and Applications, vol. 28, no. 3, pp. 361-371, 2017.

High-speed video generation with an event camera

H. Liu, F Zhang, D Marshall, L Shi and S. Hu
The Visual Computer, Volume 33, Issue 6–8, pp 749–759,
Development of a Computational Model to Aid Prediction of Neurosurgical Brain
Shift

N. J. Bennion, M. Potts, A. D. Marshall, S. Anderson, S. L. Evans,
Computer Methods in Biomechanics and Biomedical Engineering

2016

Violent Behaviour Detection using Local Trajectory Response

K. Lloyd, P.L. Rosin, D. Marshall, S.C. Moore
Int. Conf on Imaging for Crime Detection and Prevention, Madrid, November 23-25th
2016.

Speech-driven Facial Animation Using Manifold Relevance Determination

S. Albasri, Y. Hicks and D. Marshall
ECCV/ACM MM 2016 workshop on *Computer Vision for Audio-Visual Media*, Oct
2016.

*Development of a Physical Brain-Skull Model for the Study of Neurosurgical Brain
Shift*

M. Potts, N. J. Bennion, A.D Marshall, S. Anderson and S. Evans
The 14th International Symposium Computer Methods in Biomechanics and
Biomedical Engineering, Tel Aviv, Israel, 20 - 22 September 2016

Development of a computational model to aid prediction of neurosurgical brain shift

N. J. Bennion, M. Potts, A.D Marshall, S. Anderson and S. Evans
The 14th International Symposium Computer Methods in Biomechanics and
Biomedical Engineering, Tel Aviv, Israel, 20 - 22 September 2016

Automated Registration of Multimodal Optic Disc Images: Clinical Assessment of Alignment Accuracy,
W.S. Ng, P. Legg, V. Avadhanam, K. Aye, S.H.P. Evans, R.V. North, A.D. Marshall,
P.L. Rosin, J.W. Morgan,
Journal of Glaucoma, vol. 25, no. 4, pp. 397-402, 2016.

A Smallest Grammar Approach to the Symbolic Analysis of Music
Kirill Sidorov, Andrew Jones, David Marshall
Book Chapter in *Trends in Music Information Seeking, Behavior, and Retrieval for Creativity*, IGI Global, Spring 2016.

2015

Feature Neighbourhood Mutual Information for multi-modal image registration: An application to eye fundus imaging
P.A. Legg, P.L. Rosin, D. Marshall, J.E. Morgan,
Pattern Recognition, vol. 48, no. 6, pp. 1937-2118, 2015.

4D Cardiff Conversation Database (4D CCDB): A 4D Database of Natural, Dyadic Conversations
J. Vandeventer, A. J. Aubrey, P. L. Rosin, D. Marshall
To Appear: 1st Joint Conference on Facial Analysis, Animation and Auditory-Visual Speech Processing (FAAVSP), 11-13 September, Vienna, Austria, 2015.

Towards 4D Coupled Models of Conversational Facial Expression Interactions
J. Vandeventer, L. Graser, M. Rychlowska, P. L. Rosin, D. Marshall
To Appear: Proceedings of the British Machine Vision Conference (BMVC), Swansea, UK 8-10 September, 2015.

Automatic Classification of Facial Morphology for Medical Applications
Hawraa Abbasa, Yulia Hicks, David Marshall
19th International Conference on Knowledge Based and Intelligent Information and Engineering Systems, 7-9 Sept. 2015, Singapore

Assistive Sports Video Annotation: Modelling and Detecting Complex Events in Sports Video
Aled Owen, David Marshall, Kirill Sidorov, Yulia Hicks, and Rhodri Bown
MathSport International 2015, Loughborough University, 29th June - 1st July 2015

Can Smart Devices Assist In Geometric Model Building?
Richard Milliken, Jim Cordwell, Stephen Anderson, Ralph R. Martin and David Marshall
IEEE Sensors Applications Symposium (SAS), Zadar, Croatia, 13-15 April 2015,

2014

A three-dimensional analysis of the effect of atopy on face shape

Al Ali, S. Richmond, H. Popat, A.M. Toma, R. Playle, T. Pickles, A.I. Zhurov, D. Marshall, P.L. Rosin, J. Henderson
The European Journal of Orthodontics, vol. 36, no. 5, pp. 506-511, 2014.

The influence of asthma on face shape: a three-dimensional study
A.A. Ali, S. Richmond, H. Popat, A.M. Toma, R. Playle, A.I. Zhurov, D. Marshall, P.L. Rosin, J. Henderson
European Journal of Orthodontics, vol. 36, pp. 373-380, 2014.

Simulation of surgical cutting using a progressive cutting scheme and extended finite element method ([PDF](#))
Y. Ding, S. Bordas, P. Rosin and D. Marshall
World Congress on Comput. Mechanics and European Conf. Comput. Mechanics & Fluid Dynamics, 2014.

Music Analysis as a Smallest Grammar Problem
Kirill Sidorov, Andrew Jones and David Marshall
ISMIR 2014: 15th International Society for Music Information Retrieval Conference, Oct 27–31, 2014, Taipei, Taiwan.

μTunes: A Study of Musicality Perception in an Evolutionary Context
Kirill Sidorov Robin Hawkins Andrew Jones David Marshall
ICMCI/SMCI/2014 Joint Conference of 40th International Computer Music Conference (ICMC) with the 11th Sound & Music Computing conference 14–20 September 2014, Athens, Greece.

BRANDI: Bayesian Regularisation of Advanced Neurological Diffusion Imaging
Susan Doshi, Derek Jones, Daniel Barazany, Paul Rosin and David Marshall
Joint Annual Meeting ISMRM-ESMRMB 2014, 10–16 May 2014, Milan, Italy

Non-Invasive Detection of Early Retinal Neuronal Degeneration by Ultrahigh Resolution Optical Coherence Tomography
Debbie Tudor, Vedran Kajic, Sara Rey, Irina Erchova, Boris Považay, Bernd Hofer, Kate A. Powell, David Marshall, Paul L. Rosin, Wolfgang Drexler and James E. Morgan
PLOS One Vol. 9. Issue 4, 2014

Facial Expression Recognition in Dynamic Sequences: an Integrated Approach
H. Fang, N. Mac Parthalain, A.J. Aubrey, G.K.L. Tam, R. Borgo, P.L. Rosin, P.W. Grant, D. Marshall and M. Chen
Pattern Recognition, Vol. 47, No. 3, 1271–1281, 2014.
ISSN 0031-3203.

Virtual Unrolling and Information Recovery From Scanned Scrolled Historical Documents
O. Samko, Y. Lai, D. Marshall, P.L. Rosin,
Pattern Recognition, Vol. 47, No. 1, pp. 248-259, 2014.
ISSN 0031-3203.

2013

Improving accuracy and efficiency of mutual information for multi-modal retinal image registration using adaptive probability density estimation

P A Legg, P L Rosin, D Marshall, J E Morgan

Computerized Medical Imaging and Graphics, Volume 37, No. 7–8 (October–December 2013), pp 597-606

ISSN 0895-6111

Determining normal and abnormal lip shapes at border positions for use as a longitudinal surgical outcome measure

H. Popat, A.I. Zhurov, S. Richmond, D. Marshall and P.L. Rosin

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1990

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A.D. Marshall,

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Teaching

Current Teaching Responsibilities:

CM3106 Multimedia: BSc Computer Science, Year 3. 20 Credit Module. *Module Leader*

CM2104 Scientific Computing: BSc Computer Science, Year 2 10 Credit Module. *Module Leader*

CM3203 Final Year Project, Project Supervisor

CMT400 MSc Project, Project Supervisor

Previous Teaching Responsibilities:

Basic Computer Science (BSc Computer Science Year 1)

Pascal Programming (BSc Computer Science Year 1)

Lisp (BSc Computer Science Year 2, MSc Computing, MSc AI)

C programming (BSc Computer Science Year 2, MSc Computing, MSc AI)

Computer Graphics (BSc Computer Science Year 2, MSc Computing)

X Window Programming (BSc Computer Science Year 2)

Artificial Intelligence (BSc Computer Science Year 2 + 3)

Computer Vision and Image Processing (MSc Computing, MSc AI)

Internet Computing (CM0133), BSc Computer Science, Year 1.

First Year Programming Project (CM0113), BSc Computer Science, Year 1.

Human Computer Interaction (CM0233), BSc Computer Science, Year 2.

Multimedia Systems (CMP632), MSc in Information Systems Engineering.

CM2202 Scientific Computing with MATLAB: BSc Computer Science, Year 2. 20

CM2204 Advanced Programming: BSc Computer Science, Year 2

CMT520 Java Programming: MSc Computing,

CM2301 System Design and Group Project , BSc Computer Science, Year 2, Project Supervisor (Client)

CM2104 Computational Mathematics: BSc Computer Science, Year 2.

Other Teaching related activities:

Nuffield Undergraduate Student Bursaries – For many years, each year I apply for and receive this bursary for Undergraduates to undertake research projects over the summer vacation

International Association for the Exchange of Students for Technical Experience (IAESTE) Student supervision – Since 2005, I have taken on average of 4 International students per year to do 3 month placements working on research related projects.

Nuffield Schools and Colleges Science Bursaries – Since 2007, I have taken on an average of 3 sixth form/college students on research related work experience projects each Summer.

Teaching Outside University:

1999–2005: Instructor, FDDI Institute Belgium

Courses delivered on C, C++, X Window Programming, and Perl Programming.

Courses delivered for FDDI in-house, NATO Programming Centre, Tongeren, Belgium and Siemens Plc, Belgium.

Appointments as External Examiner:

2018-present: Nottingham Trent University, External Examiner for BSc (Hons) Software Engineering , BSc (Hons) Computer Science , BSc (Hons) Computer Science (Games Technology) , MComp Computer Science.

2013-2018, University of Surrey, BSc Computer Science.

2007–2012, University of Edinburgh, MSc in Informatics, Artificial Intelligence Modules.

2002–2006 University Glamorgan, BSc Computer Science and BSc Computer Systems

2002–2006 University of Derby, MSc Computing, e-Commerce, Internet Software Technology, Digital Multimedia.

1997–2002 University of Northumbria, MSc Computing and Systems Engineering

Departmental and University Responsibilities

2013-Present, PSE College Representation University Graduate College (UGC) board

2012-present, CUROP Review Committee

2009-2012, Director of Teaching/Deputy Head of School

2009 – Present: Director of Postgraduate Research

2009 – Present: Member of School Research Committee

2009 – Present: Staff Student Panel Member

2009 – Present : Postgraduate Certificate of University Teaching and Learning (PCUTL) mentor

2008 – Present: Director Human Factors Technology Centre (HFTC)

2004–2008: Deputy Director, Communications Research Centre

2003–2009: Member of Department e-Learning Development Group

1996–2009: Member of Electronic Information (IT) Committee

2001–2009: Member of Cardiff University Learning Forum

2001–2008: Member of Cardiff University Science Forum

1995–2003: Chairman of BSc Course Team,

1995–1999: Secretary of the Department Teaching and Learning Committee,

1999–2003: Chairman of the Department Teaching, Learning and Academic Quality Committee,

2003 – 2006: Member of the Department Teaching, Learning and Academic Quality Committee,

1996–2003: Member of the BSc Degree Modernisation Committee.

1995–2003: Member of Departmental Staff/Student Committee,

1993–2001: Coordinator for University Open Days and Exhibitions,

1991–2000: Member of M.Sc. in Artificial Intelligence departmental Course Team,

1991–2000: Staff representative on M.Sc. in Artificial Intelligence Staff / Student Committee.