

Professor Martin Russell

 BSc, PhD, FIMA, CMath, MIEEE

Professor of Information Engineering

[School of Electronic, Electrical and Computer Engineering \(/schools/eece/index.aspx\)](/schools/eece/index.aspx)

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About

Martin Russell is Professor of Information Engineering in the School of Electronic, Electrical and Computer Engineering. He joined the University of Birmingham in 1998 and was Head of School from 2006 until 2009. His research interests are in speech and language technology and the integration of speech with other modalities, for example gaze and gesture. He has published over 100 research papers in these areas.

Qualifications

- PhD Mathematics, 1981
- BSc Mathematics, 1977

Biography

Martin Russell graduated from Hull University with a BSc (1977) and PhD (1981), both in mathematics. In 1980 he joined the newly formed Automatic Speech Recognition research group at the Royal Signals and Radar Establishment (RSRE Malvern). Later this became the DERA Speech Research Unit (SRU), the main government funded speech technology laboratory in the UK. He joined the School of Electronic and Electrical Engineering at the University of Birmingham in 1998. Martin's research is in the area of speech and language technology, and in particular speech, speaker and language recognition. He is particularly interested in the developments of new formalisms for speech pattern modelling, speech technologies for education and children, and the role of regional accents in speech and language technology. Martin's research has been funded by EPSRC, the EU, UK Government and Industry, and the US Government.

Teaching

Teaching Programmes

- EE1J2 Mathematics for Applied Computing
- EE2J2 Intermediate Mathematics for Applied Computing
- EE3J2 Data Mining
- EE3F1 Multimodal Interaction

Postgraduate supervision

Current PhD supervision includes:

- Abualsoud Hanani – Language, accent and social group identifications from speech
- Gheida Shahour – Recognition of individuals, topic of conversation and culture from 3D motion data
- Saeid Safavi – Automatic speaker recognition
- Nick Roach – The use of accelerometers to compensate for occlusion in 3D body motion tracking

Research

RESEARCH THEMES

I am interested in all aspects of speech and language science and technology, but particularly automatic speech, speaker, language recognition. I believe that an important challenge is to build computationally useful models of speech and language that capture its structure and regularities, and at the same time understand the underlying mechanisms that give rise to variability. I'm also interested in the integration of speech with other modalities, such as gaze and gesture.

RESEARCH ACTIVITY

My current research activities are split between basic research into speech technology, and research into the integration of speech with other modalities, such as gaze and gesture. In speech and language technology, my group is currently working on language, accent and speaker recognition, where our goal is to develop computational models of accented speech and children's speech that can be used, for example, for rapid adaptation of speech recognition systems. In addition we have a long-standing interest in the development of novel frameworks for speech pattern modelling, and in the application of speech and language technologies in education. In the area of multimodal interaction we are applying techniques from speech and language technology to the analysis of gaze and 3D human body motion, and investigating how these modalities can best be integrated with speech.

Other activities

- Fellow of the Institute of Mathematics and its Applications (IMA)
- Member of the IEEE
- Member of ISCA (International Speech Communication Association)
- Secretary of the ISCA Special Interest Group SLaTE (Speech and Language Technologies in Education)
- Member of the IEEE Speech and Language Technical Committee

- Member of the Scientific Committee for WOCCI (Workshop on Child Computer Interaction)
- Member of the editorial boards of Computer Speech and Language and Natural Language Engineering.

Publications

Hanani, A, Russell, M. J. and Carey, M., Speech-Based Identification of Social Groups in a Single Accent of British English by Humans and Computers, Proc. IEEE Int. Conf. Acoustics Speech and Sig. Proc. 2011.

Hanani, A. Carey, M. and Russell, M. J., Improved Language Recognition using Mixture Components Statistics, Proc. Interspeech 2010, Tokyo, Japan

Cooke, N. J. and Russell, M. J., "Gaze-contingent automatic speech recognition", IET Signal Proc., 2, (4), pp 369-380, December 2008

Russell, M. J., D'Arcy, S. M. and Li, Q, The effects of bandwidth reduction on human and computer recognition of children's speech, IEEE Signal Processing Letters, Vol. 14, Number 12, pp 1044-1046, December 2007

Russell, M. J., Zheng, X. and Jackson, P. J. B., Modelling speech signals using formant frequencies as an intermediate representation, IET Signal Proc., 1, (1), pp 43-50, March 2007.