

Professional experience

- 2017– **Senior researcher**, *Centre for Digital Music, Queen Mary University of London*.
“Structured machine listening for soundscapes with multiple birds” fellowship project (EPSRC-funded, 60 months). Developing innovative methods to automatically extract information about birds from recorded audio. Supervising three PhD students (plus others as 2nd-supervisor). Leading an international machine-learning evaluation campaign.
- 2014–2017 **EPSRC research fellow**, *Centre for Digital Music, Queen Mary University of London*.
“Structured machine listening for soundscapes with multiple birds” (as above)
- 2012–2014 **Postdoctoral research assistant**, *Centre for Digital Music, Queen Mary University of London*.
“Machine listening using sparse representations” project (EPSRC-funded, 24 months, PI: Mark Plumbley). Researched the automatic analysis of audio content, focusing on environmental sound, birdsong and sound archives. Co-organised international IEEE machine listening contest “DCASE”.
- 2010–2012 **Postdoctoral research assistant**, *Centre for Digital Music, Queen Mary University of London*.
“Musicology for the Masses” project (EPSRC-funded, 18 months, PI: Simon Dixon). Conducted an ethnographic study in two secondary schools; published three conference papers and one journal paper; improved Sonic Visualiser software (C++/Qt programming, Linux and Mac); created online chord analysis system (PHP/JavaScript).
- 2010 **Postdoctoral research assistant**, *Centre for Digital Music, Queen Mary University of London*.
Investigated automatic birdsong classification (C4DM Platform Grant, 3 months, PI: Mark Plumbley).

Education

- 2006–2010 **PhD**, *Centre for Digital Music, Queen Mary University of London (QMUL)*.
Supervisor: Mark Plumbley. Funded by EPSRC Doctoral Training Account. Viva date 30th July 2010.
Title: “Making music through real-time voice timbre analysis: machine learning and timbral control”.
- 2002–2005 **Postgraduate Certificate**, *University College London (UCL)*, Learning Technologies Research.
- 1997–2000 **1st class BA hons.**, *University of Cambridge*, Natural Sciences (History and Philosophy of Science).

Publications (selected)

- D. Stowell, E. Benetos, and L. F. Gill, “On-bird sound recordings: Automatic acoustic recognition of activities and contexts,” *IEEE/ACM Trans. on Audio Speech and Language Processing*, vol.25(6), p. 1193-1206, 2017.
- D. Stowell, L.F. Gill and D. Clayton, “Detailed temporal structure of communication networks in groups of songbirds,” *Journal of the Royal Society Interface*, vol.13(119), 2016.
- D. Stowell and D. Clayton, “Acoustic event detection for multiple overlapping similar sources,” *Proceedings of IEEE WASPAA*, 2015.
- D. Stowell, D. Giannoulis, E. Benetos, M. Lagrange and M. D. Plumbley, “Detection and Classification of Audio Scenes and Events,” *IEEE Transactions on Multimedia*, vol.17(10), p. 1733-1746, 2015.
—*The #1 most-viewed paper in this journal, in both 2016 and 2017*
- D. Stowell and M. D. Plumbley, “Automatic large-scale classification of bird sounds is strongly improved by unsupervised feature learning,” *PeerJ*, vol. 2, p. e488, 2014.
- D. Stowell and M. D. Plumbley, “Large-scale analysis of frequency modulation in birdsong databases,” *Methods in Ecology and Evolution*, 2014.
- D. Stowell and M. D. Plumbley, “Segregating event streams and noise with a Markov renewal process model,” *Journal of Machine Learning Research*, vol. 14, pp. 1891–1916, Jul 2013.
- D. Stowell and S. Dixon, “Integration of informal music technologies in secondary school music lessons,” *British Journal of Music Education*, pp. 1–21, Aug 2013.
- D. Stowell and M. D. Plumbley, “Learning timbre analogies from unlabelled data by multivariate tree regression,” *Journal of New Music Research*, vo. 40, pp. 325–336, 2011.
- D. Stowell and M. D. Plumbley, “Fast multidimensional entropy estimation by k-d partitioning,” *IEEE Signal Processing Letters*, vol. 16, pp. 537–540, Jun 2009.
- D. Stowell, A. Robertson, N. Bryan-Kinns, and M. D. Plumbley, “Evaluation of live human-computer music-making: quantitative and qualitative approaches,” *Int Journal of Human-Computer Studies*, vol. 67, pp. 960–975, 2009.

Note: for latest research pre-prints please see http://arxiv.org/a/stowell_d_1

PhD students

Primary PhD supervisor for:

- 2015– Pablo Alvarado Duran, “Physically/Musically Inspired Probabilistic Models for Audio Content Analysis”
 - 2015– Veronica Morfi, “Machine transcription of wildlife bird sound scenes”
 - 2016– Will Wilkinson, “Probabilistic inference and synthesis of the latent behaviour in sound”
- Member of progression evaluation team for 2 further students.
External examiner for one PhD thesis Feb 2019 (University of Copenhagen, Denmark).

Academic activities

- conferences Special session lead organiser, *EUSIPCO 2017* (“Bird audio signal processing”), Greece.
Special session lead organiser, *IBAC 2017* (“Machine learning methods in bioacoustics”), India.
Lead organiser, *Listening in the Wild 2015* (£3,050 budget: one-day research workshop).
Lead organiser, *Listening in the Wild 2013* (£3,604 budget: one-day research workshop).
Lead organiser, *SuperCollider Symposium 2012* (£18,000 budget: talks, workshops, concerts, exhibition).
Session chair, *AES Audio for Games 2009*.
- invited talks
 - Beijing University of Posts and Telecommunications (invited foreign expert), China, October 2017
 - Lund University Cognitive Science, Sweden, August 2017
 - University of Sussex (Humanising Algorithmic Listening workshop), Brighton, UK, April 2017
 - Dagstuhl Seminar (one-week workshop), Germany, October 2016
 - Centre for Research into Ecological & Environmental Modelling, St. Andrews, June 2015
 - Cambridge Computer Laboratory, Cambridge, March 2015
 - Cambridge Machine Learning Group, Cambridge, March 2015
 - British Trust for Ornithology, Thetford, February 2015

(Plus further invited talks prior to 2015)
- grant reviewing
 - Bundesministerium für Bildung und Forschung (Germany) funding panel, Sept 2017
 - Université Aix-Marseille (France) funding panel, July 2017
 - Linz Institute of Technology (Austria) funding panel, October 2016
- journal reviewing Over 50 peer reviews for globally leading journals including:
 - Artificial Intelligence Review
 - Bioacoustics
 - Ecological Informatics
 - IEEE Signal Processing Letters
 - IEEE Journal of Selected Topics in Signal Processing
 - IEEE Transactions in Audio Speech and Language Processing
 - IEEE Transactions on Multimedia
 - Journal of the Acoustical Society of America
 - Journal of New Music Research
 - Methods in Ecology and Evolution
 - Neural Computation
 - Plos Biology
 - Plos One
 - Speech Communication
- conference reviewing Over 100 peer reviews for international conferences including:
 - NIPS (Neural Information Processing Systems) 2017
 - MLSP (Machine Learning and Signal Processing) 2017
 - ICASSP (IEEE Int Conf Acoustics Speech and Signal Processing) 2017
 - ISMIR (Int Conf Music Information Retrieval) 2011–2015
 - EUSIPCO (European Signal Processing Conf) 2015
 - WASPAA (IEEE Int Workshop Acoustics Speech and Audio Analysis) 2015
- other reviewing
 - Textbook, Bentham Press, “Comparative Bioacoustic Methods”, March 2016
- teaching Undergraduate / postgraduate teaching at QMUL:
 - 2013 Supervisor, MEng project “Hocus Focus: source separation mobile app”
 - 2011 Supervisor, MSc project “Sound design by genetic algorithms”
 - 2009–2011 Guest lecturer, MSc Digital Music
 - 2007–2010 Teaching assistant, ELE207 (Web Site Design and Authoring Tools)

Funding secured

£547,644 of research funding. The funding sources include the UK EPSRC research council, the PRS Foundation for Music, the Royal Academy of Engineering.

Awards and prizes

- 2016 **Finalist**, *Digital Innovation*, Guardian Higher Education Awards 2016.
- 2015 **Winner**, ‘Involve’ award, QMUL Engagement and Enterprise Awards 2015.

- 2014 **Winner**, *Reproducibility-enabling work*, AES53 Reproducible Research Awards 2014.
- 2013 **Joint winner**, *Conference paper*, SoundSoftware Reproducible Research Awards 2013.
- 2013 **Honourable mention**, *Conference submission*, SoundSoftware Reproducible Research Awards 2013.
- 2009 **Winner**, *Best PhD Poster*, Research Open Day, QMUL School of Elec Eng & Comp Sci (£50 prize).
- 2008 **Winner**, *IET Best Presentation in Research Group*, QMUL Elec Eng open day (£50 prize).

Public engagement activities (selected)

- Mar 2017 BBC Radio 4: *The Today Programme* live interview about bird song and automatic recognition
- Mar 2016 BBC Radio 4: *Costing The Earth* feature interview about Warblr and sound recognition
- Aug 2015 BBC Radio 4: featured on *The World Tonight*
- Jun 2014 BBC News website, “Software can decode bird songs”
- Jun 2014 Science magazine news, “Computer becomes a bird enthusiast”
- Apr 2012 BBC Technology News: Web video feature (over 250,000 views)
- Mar 2012 BBC World Service: Radio live interview and demo, *Click*
- Feb 2012 Discovery Channel Canada: featured on *Daily Planet*
- Jul 2011 QMUL: conducted Computer Science Taster Day session, “Dismantling dubstep”
- Jun 2010 Reuters News: TV interview, “Devuvuzelator reduces horn’s noise”
- Jun 2010 Cheltenham Science Festival *Discover Zone*, demonstrations of beatbox analysis and Sonic Visualiser
Plus many previous activities at venues such as the Science Museum, Cheltenham Science Festival, music festivals, schools.

Languages

- English Native
- BSL **Level 2 British Sign Language**, CACDP, 2009, conversational level.
- Icelandic **Level 2**, UCL Language Centre, 2005, basic level.
- French **GCSE grade A**, 1996, conversational level.
- German **GCSE grade A**, 1996, conversational level.