

Resume

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Positions

- ◇ **Research Fellow (Apr. 2012-present)**
College of Engineering and Computer Science, The Australian National University, Canberra, Australia
- ◇ **OCE Postdoctoral Fellowship (Feb. 2010-Mar. 2012)**
CSIRO Process Science and Engineering Division, Lucas Heights Science and Technology Centre, NSW, Australia

Education

- ◇ **PhD in Electrical Engineering**, The Australian National University, Canberra, Australia.
Thesis: “*Measurement and modelling of Head-Related Transfer Function for spatial audio synthesis*”, 2010.
- ◇ **ME in Electrical Engineering**, First-Class Honours (GPA: 86.4/100), The Australian National University, Canberra, Australia.
Thesis: “*Space-frequency channel characterization of ultra-wideband wireless communications*”, 2005.
- ◇ **BE in Telecommunication Engineering**, First-Class Honours (GPA: 89.7/100), Xidian University, Xi'an, China, 2003.

Highlights

- ◇ **Seven-year research experience** in audio and acoustic signal processing.
- ◇ **27 Peer-reviewed Publications** (including 9 published journal articles and 16 international conference papers)+ 2 submitted journal papers.
- ◇ **Lecture and HDR Student Supervisor**, College of Engineering and Computer Science, ANU, 2012-present.

Research Interests

General: Arrayl Signal Processing, Spatial Audio and Acoustic Signal Processing

Detailed: Active Noise Cancellation, Spatial Audio, Source Localization and Separation, HRTF (Head-Related Transfer Function) Measurement and Modelling

Awards, Grants and Scholarships

- ◇ **ARC DP Grant**, 2014-2016, “*Active Sound Control and Noise Reduction over Space*”, Chife Investigaor with Prof. Thushara D. Abhayapala and Prof. Walter Kellermann.
- ◇ **Travel Grant**, ANU Early Career Researcher Travel Grant to attend 2013 IEEE WASPAA (New Paltz, USA), Oct. 2013.
- ◇ **2008 IEEE ICASSP Student Travel Grant**, 2008 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), “*Iterative extrapolation algorithm for data reconstruction over sphere*”, awarded the student travel grant for the high quality of the paper.
- ◇ **Australian National University PhD Scholarship**, ANU, 2006-2009.
- ◇ **Australian National University-National ICT Australia Ltd Supplementary Scholarship**, ANU-NICTA, 2006-2009.
- ◇ **Travel Grant**, ANU Vice-Chancellor’s Higher Degree Research Travel Grant (A\$5500) + ACoRN International Attendance and Visit Grant (A\$4000), to attend 2008 IEEE ICASSP (Las Vegas, USA) and visit A/Prof. Ramani Duraiswami at the Perceptual Interfaces and Reality Laboratory, UMIACS, University of Maryland (College Park, USA), Apr. 2008.
- ◇ **Travel Grant**, ANU Vice-Chancellor’s Higher Degree Research Travel Grant (A\$1000) + ACoRN International Attendance and Visit Grant (A\$6000), to attend the 31 Audio Engineering Society conference (London, UK) and visit Dr. Mark Poletti at Gracefield Research Centre, Industrial Research Limited (Lower Hutt, New Zealand), June-July 2007.
- ◇ **Travel Grant**, ACoRN Domestic Attendance Grant (A\$1500), to attend 2006 Australian Communication Theory Workshop (AusCTW), Adelaide, Jan. 2006.
- ◇ **Chancellor’s letter of Commendation**, ANU, 2004-2005.
- ◇ **Third Prize in National Mathematical Contest**, China, 2002.

Professional Activities

- ◇ **Editorial board member**, Advances in Signal Processing, Horizon Research Publishing (HRPUB), 2013-2016.
- ◇ **Editorial board member**, Science Journal of Circuits, Systems and Signal Processing, 2013-present.
- ◇ **Affiliate member**, IEEE Signal Processing Society Sensor Array and Multichannel Technical Committee, 2013-present.
- ◇ **Member**, Institute of Electrical & Electronics Engineers (IEEE), 2010-Present.

- ◇ **Member**, Journal of the Acoustical Society of America (JASA), 2010-Present.
- ◇ **TPC Member**, IEEE 4th Joint Workshop on Hands-free Speech Communication and Microphone Arrays (HSCMA), 2014.
- ◇ Reviewer of IEEE Vehicular Technology Conference (VTC)-Spring.
- ◇ Reviewer of EURASIP Journal on Advances in Signal Processing.
- ◇ Reviewer of IEEE Antennas and Wireless Propagation Letters.
- ◇ Reviewer of IEEE Transaction on Vehicular Technology.
- ◇ Reviewer of IEEE/ACM Transactions on Speech, Audio and Language Processing.
- ◇ Reviewer of IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2014.
- ◇ Reviewer of European Signal Processing Conference (EUSIPCO), 2012-2014.
- ◇ Reviewer of Acoustics Australia, 2009.
- ◇ Reviewer of Australian Communications Theory Workshop (AusCTW), 2005,2009,2013.
- ◇ Visit to A/Prof. Ramani Duraiswami at Perceptual Interfaces and Reality Laboratory, UMI-ACS, University of Maryland, College Park, USA, Apr. 2008.
- ◇ Visit to Dr. Mark Poletti at Gracefield Research Centre, Industrial Research Limited, Lower Hutt, New Zealand, July 2007.

Journal Publications

- [J1] W. Zhang, R.A. Kennedy, and T.D. Abhayapala, “Efficient continuous HRTF model using data independent basis functions: Experimentally guided approach”, in *IEEE Trans. Audio, Speech, and Language Processing*, vol. 17, no. 4, pp. 819-829, May 2009.
- [J2] W. Zhang, T.D. Abhayapala, R.A. Kennedy, and R. Duraiswami, “Insights into head-related transfer function: Spatial dimensionality and continuous representations”, in *Journal of the Acoustical Society of America*, vol. 127, no. 4, pp. 2347-57, Apr. 2010.
- [J3] W. Zhang, M. Zhang, R.A. Kennedy and T.D. Abhayapala, “On high resolution head-related transfer function measurements: An efficient sampling scheme”, in *IEEE Trans. Audio, Speech, and Language Processing*, vol. 20, no. 2, pp. 575-584, Feb. 2012.
- [J4] W. Zhang, S.J. Spencer, and P. Coghill, “An acoustic technique for measurement of bubble solids mass loading (a) Fundamental study of single bubble”, in *Minerals Engineering*, vol. 36-38, pp. 45-52, Oct. 2012.
- [J5] S.J. Spencer, R. Bruniges, G. Roberts¹, V. Sharp, A. Catanzano, W.J. Bruckard, K.J. Davey and W. Zhang, “An acoustic technique for measurement of bubble solids mass loading (b) Monitoring of Jameson Cell flotation performance by passive acoustic emissions”, in *Minerals Engineering*, vol. 36-38, pp. 21-30, Oct. 2012.

- [J6] W. Zhang, S.J. Spencer, and P. Coghill, “Charaterisation of acoustic emissions resulting from particle collision with a stationary bubble”, in *Journal of the Acoustical Society of America*, vol. 133, no. 5, pp. 2523-2527, May 2013.
- [J7] D. Talagala, W. Zhang, and T.D. Abhayapala, “Broadband DOA estimation using sensor arrays on complex-shaped rigid bodies”, in *IEEE Trans. Audio, Speech, and Language Processing*, vol. 21, no. 8, pp. 1573-1585, Aug. 2013.
- [J8] D. Talagala, W. Zhang, T.D. Abhayapala, and A. Kamineni, “Binaural sound source localization using the frequency diversity of the head-related transfer function”, in *Journal of the Acoustical Society of America*, vol. 135, no. 3, pp. 1207-1217, March 2014.
- [J9] W. Zhang, and T.D. Abhayapala, “Three dimensional sound field reproduction using multiple circular loudspeaker arrays: Functional analysis guided approach”, accepted by *IEEE/ACM Trans. Audio, Speech, and Language Processing*, May. 2014. (to appear)
- [J10] D. Talagala, W. Zhang, and T.D. Abhayapala, “Multi-Channel adaptive room equalization and echo suppression in soundfield reproduction”, submitted to *IEEE Trans. Audio, Speech, and Language Processing*, Feb. 2013. (second round review)
- [J11] A. Gupta, T.D. Abhayapala, and W. Zhang, “Conical Sensor Array for Spherical Harmonics Decomposition of Wavefields”, submitted to *IEEE Trans. Signal Processing*, Jan. 2014.

Conference Publications

- [C1] W. Zhang, T.D. Abhayapala, and J. Zhang, “Frequency dependency in UWB channel modelling”, in *Proc. 8th International Symposium on DSP and Communication Systems (DSPCS’2005) & 4th Workshop on the Internet, Telecommunications and Signal Processing (WITSP’2005)*, Sunshine Coast, Australia, Dec. 2005, pp. 248-252.
- [C2] W. Zhang, T.D. Abhayapala, and J. Zhang, “UWB Spatial-frequency channel characterization”, in *Proc. 63rd IEEE Vehicular Technology Conference (VTC)*, vol. 6, Melbourne, Australia, May 2006, pp. 2732-2736.
- [C3] W. Zhang, T.D. Abhayapala, and R.A. Kennedy, “Horizontal plane HRTF reproduction using continuous Fourier-Bessel functions”, in *Proc. the 31st Audio Engineering Society (AES) international conference on “New directions in high resolution audio”*, London, UK, Jun. 2007, pp. 9 pages.
- [C4] W. Zhang, R.A. Kennedy, and T.D. Abhayapala, “Signal estimation from incomplete data on the sphere”, in *Proc. IEEE 9th Australian Communication Theory Workshop (AusCTW’07)*, Christchurch, New Zealand, Feb. 2008, pp. 39-44.
- [C5] W. Zhang, R.A. Kennedy, and T.D. Abhayapala, “Iterative extrapolation algorithm for data reconstruction over sphere”, in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Las Vegas, USA, Apr. 2008, pp. 3733-3736.
- [C6] R.A. Kennedy, W. Zhang, and T.D. Abhayapala, “Spherical harmonic analysis and model-limited extrapolation on the sphere: Integral equation formulation”, in *Proc. the 2nd International Conference on Signal Processing and Communication Systems (ICSPCS’2008)*, Gold Coast, Australia, Dec. 2008, pp. 6 pages.

- [C7] W. Zhang, T.D. Abhayapala, R.A. Kennedy, and R. Duraiswami, “Modal expansion of HRTFs: Continuous representation in frequency-range-angle”, in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Taipei, Taiwan, Apr. 2009, pp. 285-288.
- [C8] M. Zhang, W. Zhang, R.A. Kennedy, and T.D. Abhayapala, “HRTF measurement on KE-MAR manikin”, in *Proc. ACOUSTICS 2009 (Australian Acoustical Society)*, Adelaide, Australia, Nov. 2009, pp. 8 pages.
- [C9] M. Zhang, R.A. Kennedy, T.D. Abhayapala, and W. Zhang, “Internal structure identification of random process using principal component analysis”, in *Proc. the 4th International Conference on Signal Processing and Communication Systems (ICSPCS’2010)*, Gold Coast, Australia, Dec. 2010, pp. 6 pages.
- [C10] M. Zhang, R.A. Kennedy, T.D. Abhayapala, and W. Zhang, “Statistical method to identify key anthropometric parameters in HRTF individualization”, in *Proc. the 3rd Joint Workshop on Hands-free Speech Communication and Microphone Arrays (HSCMA’11)*, Edinburgh, UK, May 2011, pp. 213-218.
- [C11] D. Talagala, W. Zhang, and T.D. Abhayapala, “Active acoustic echo cancellation in spatial sound field reproduction”, in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013, pp. 620-624.
- [C12] D. Talagala, W. Zhang, and T.D. Abhayapala, “Robustness analysis of room equalization for soundfield reproduction within a region”, *International Congress on Acoustics (ICA)*, Montreal, Canada, June 2013. (invited paper)
- [C13] W. Zhang, T.D. Abhayapala, R.A. Kennedy, and M. Zhang, “Towards optimal functional representation of head-related transfer functions in the horizontal plane”, *International Congress on Acoustics (ICA)*, Montreal, Canada, June 2013. (invited paper)
- [C14] W. Zhang, T.D. Abhayapala, and F.M. Fazi, “Functional analysis guided approach for sound field reproduction with flexible loudspeaker layouts”, accepted by *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)*, New Paltz, NY, USA, Oct. 2013.
- [C15] R.A. Kennedy, W. Zhang, and T.D. Abhayapala, “Comparison of spherical harmonics based 3D-HRTF functional models”, accepted by *International Conference on Signal Processing and Communication Systems (ICSPCS)*, Gold Coast, Australia, Dec. 2013.