

TITLE:

Speech Enhancement and Signal Parameter Estimation with Microphone Arrays

ABSTRACT:

Voice communication and human-machine interaction systems are facing more and more challenging application environments where there exist not only strong noise, but reverberation, echo, and competing sources as well. How to acquire high-fidelity speech signals and the associated signal parameters in such complicated environments has become a very challenging problem, which involves the use of microphone arrays and many acoustic signal processing technologies. In this talk, I will present a brief overview of the basic principles of sensing and processing of speech signals as well as the state-of-the-art in the field. I will then focus on discussing important problems faced by teleconferencing and audio-bridging systems such as echo cancellation, source localization, and robust beamforming.

BIO:

Jingdong Chen received his PhD degree from the National Laboratory of Pattern Recognition, Chinese Academy of Sciences in 1998. He is currently a professor at the Northwestern Polytechnical University in Xi'an, China. Before joining NWPUE in January 2011, he served as the Chief Scientist of WeVoice Inc. in New Jersey for one year. Prior to this position, he was with Bell Labs in New Jersey for nine years. Before joining Bell Labs, he held positions at the Griffith University in Brisbane, Australia and the Advanced Telecommunications Research Institute International (ATR) in Kyoto, Japan.

Dr. Chen has long been working on the problems of speech enhancement, noise reduction, echo cancellation, and microphone array processing. He has authored and co-authored 12 monograph books and published over 200 papers in peer reviewed journals and conferences. He has been serving in various capacities in the global research community: as the Chair of IEEE Xi'an Section, as an Associate Editor to the IEEE Transactions on Audio, Speech and Language Processing and as a Member of the Editorial Board of several journals. He was the general chair of the IWAENC 2016, the technical program co-chair of the IEEE WASPAA 2009, IEEE TENCON 2013, ChinaSIP 2014, and helped organize many other conferences. Dr. Chen received the IEEE Signal Processing Society Best Paper Award in 2009, the best paper award from the IEEE *Workshop on Applications of Signal Processing to Audio and Acoustics* (WASPAA) in 2011, the Bell Labs Role Model Teamwork Award twice, respectively, in 2009 and 2007, the NASA Tech Brief Award twice, respectively, in 2010 and 2009, the Japan Trust International Research Grant from the Japan Key Technology Center in 1998, the "Distinguished Young Scientists Fund" from the National Nature Science Foundation of China (NSFC) in 2014, and the Young Author Best Paper Award from the National Conference on Man-Machine Speech Communications in 1998. He is also the co-author of a journal paper for which his PhD student, Chao Pan, received the IEEE Region 10 (Asia-Pacific) 2016 Distinguished Student Paper Award (First Prize). Dr. Chen is Fellow of IEEE.