



## Speech and Audio Processing: New Applications and Research Challenges

### Prof. Tan Lee

Associate Professor, *DSP and Speech Technology Laboratory*  
 Department of Electronic Engineering

Associate Dean for Student Affairs

*Faculty of Engineering*

*The Chinese University of Hong Kong*

### Abstract

Being our most preferred and natural modality of communication, speech is an extremely complicated process that has to be studied with an inter-disciplinary perspective. From signal processing points of view, we are interested in the unique properties of acoustic speech signals and try to understand how these properties contribute to effective communication from the speaker to the listener. Speech and language research has many applications, which cover the entire speech communication pathway. For examples, automatic speech recognition, speaker recognition and language identification aim at retrieving information embedded in speech signals. Speech synthesis and speech coding facilitate efficient transmission and accurate delivery of speech information. Speech enhancement and speech separation address various problems due to imperfect transmission channel. In this seminar, we will give an overview of the research activities at the DSP & Speech Technology Laboratory (DSP-STL), the Chinese University of Hong Kong (CUHK). Our research is highly inter-disciplinary and emphasizes on the exploitation of prior knowledge. The research areas include spoken language systems, speech source separation and speech enhancement, and audio information retrieval. The major problems and challenges in the research will be discussed. A few of our recent projects will be described in detail.



## Biography

Tan Lee is an Associate Professor at the Department of Electronic Engineering, the Chinese University of Hong Kong (CUHK), where he is in charge of the DSP and Speech Technology Laboratory (DSP-STL). He also serves as the Associate Dean of Engineering at CUHK. Tan Lee received his BSc and MPhil degrees in Electronics in 1988 and 1990 respectively, and his PhD degree in Electronic Engineering in 1996, all from CUHK. During 1997-1998, he was a visiting researcher at the Department of Speech, Music and Hearing, Royal Institute of Technology (KTH), Sweden. Tan Lee's research covers many different areas of speech and audio processing, including automatic speech and speaker recognition, text-to-speech, tone modeling for Chinese, speech enhancement for hearing prostheses, and music signal processing. He has led 14 funded research projects as the Principal Investigator or Project Leader. He published 30 journal articles and over 120 conference papers. He has supervised over 20 research students to graduation. Tan Lee was the Chairman of IEEE Hong Kong Chapter of Signal Processing in 2005-2006. Currently he serves as an associate editor of the EURASIP Journal on Advances in Signal Processing. Tan Lee received the CUHK Vice-Chancellor's Exemplary Teaching Award in 2004 and the Engineering Faculty's Exemplary Teaching Awards for multiple years during 2001-2009.

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**Contacts:** Dr. Derek F. Wong & Dr. Lidia S. Chao  
**Telephone:** (853) 8397-8051  
**Website:** <http://nlp2ct.sftw.umac.mo/index.html>

**Address:**

Av. Padre Tomás Pereira,  
Taipa, Macau, China,  
University of Macau,  
Research and Development Building, R108