

## ***Two Day Short Course on Speech and Acoustics: An In-Depth Introduction***

6 - 7 July 2009  
Centre for Signal Processing  
School of Electrical and Electronics  
Nanyang Technological University, Singapore

**By  
Professor Chin-Hui Lee  
Georgia Institute of Technology, USA**



### **Course Overview**

Speech is the most natural means of communication among humans. It also plays a critical role in enhancing human-machine communication. In this course, we attempt to cover all aspects of digital speech processing, including both theoretical and practical topics, starting with speech production and acoustics, followed by speech analysis and parameter extraction, speech modeling, theory of hidden Markov models and their applications to automatic speech and speech recognition. The linkage with acoustics and language processing will also be discussed, including topics on language modeling and microphone arrays. MATLAB demos will be used in class for illustration of the fundamentals. Homework exercises will also be provided for after-class learning.

### **Course Outline**

- Speech Communications and Acoustics
- Speech Analysis and Parameterization
- Speech Coding and Synthesis
- Hidden Markov Modeling of Speech
- Speaker and Speech Recognition
- Microphone Array and Beam Forming
- Applications of Speech and Acoustics

### **Speaker Profile**

#### **Processor Chin-Hui Lee**

Dr. Chin-Hui Lee is a professor at School of Electrical and Computer Engineering, Georgia Institute of Technology. Dr. Lee received the B.S. degree in Electrical Engineering from National Taiwan University, Taipei, in 1973, the M.S. degree in Engineering and Applied Science from Yale University, New Haven, in 1977, and the Ph.D. degree in Electrical Engineering with a minor in Statistics from University of Washington, Seattle, in 1981.

Dr. Lee started his professional career at Verbex Corporation, Bedford, MA, and was involved in research on connected word recognition. In 1984, he became affiliated with Digital Sound Corporation, Santa Barbara, where he engaged in research and product development in speech coding, speech synthesis, speech recognition and signal processing for the development of the DSC-2000 Voice Server. Between 1986 and 2001, he was with Bell Laboratories, Murray Hill, New Jersey, where he became a Distinguished Member of Technical Staff and Director of the Dialogue Systems Research Department. His research interests include multimedia communication, multimedia signal and information processing, speech and speaker recognition, speech and language modeling, spoken dialogue processing, adaptive and discriminative learning, biometric authentication, and information retrieval. From August 2001 to August 2002 he was a visiting professor at School of Computing, The National University of Singapore. In September 2002, he joined the Faculty Georgia Institute of Technology.

## Speaker Profile (continue)

Prof. Lee has participated actively in professional societies. He is a member of the IEEE Signal Processing Society (SPS), Communication Society, and the International Speech Communication Association (ISCA). In 1991-1995, he was an associate editor for the IEEE Transactions on Signal Processing and Transactions on Speech and Audio Processing. During the same period, he served as a member of the ARPA Spoken Language Coordination Committee. In 1995-1998, he was a member of the Speech Processing Technical Committee and later became the chairman from 1997 to 1998. In 1996, he helped promote the SPS multimedia Signal Processing Technical Committee in which he is a founding member.

Dr. Lee is a Fellow of the IEEE, and has published more than 250 papers and 25 patents on the subject of automatic speech and speaker recognition. He received the SPS Senior Award in 1994 and the SPS Best Paper Award in 1997 and 1999, respectively. In 1997, he was awarded the prestigious Bell Labs President's Gold Award for his contributions to the Lucent Speech Processing Solutions product. Dr. Lee often gives seminar lectures to international audience. In 2000, he was named one of the six Distinguished Lecturers by the IEEE Signal Processing Society. He was also named one of the two ISCA's inaugural Distinguished Lecturers in 2007-2008. Recently he won the SPS's 2006 Technical Achievement Award for "Exceptional Contributions to the Field of Automatic Speech Recognition".

## Who Should Attend?

This short course is designed for researchers, engineers and professionals who are starting to get into speech-related work and want to get more basic knowledge, or those who are already involved in speech technology development and would like to learn more fundamentals with broad coverage of all areas related to speech processing.

## Course Date and Venue

Date	6th – 7th July 2009
Venue	Executive Seminar Room (Block S2.2-B2-53), School of EEE, Nanyang Technological University, Singapore
Time	9am – 5pm

## Course Fees and Registration

Normal	Early Bird (payment & registration before 15 <sup>th</sup> May 09)	Group Discount (3 or more participants from the same organization)	NTU Staff & Students
S\$888.10	S\$799.29	S\$823.90	S\$765.05

The course fees are inclusive of 7% GST, course materials, lunch and refreshments.

Please register online at  
[https://wis.ntu.edu.sg/pls/webexe/REGISTER\\_NTU.REGISTER?EVENT\\_ID=OA09031816154255](https://wis.ntu.edu.sg/pls/webexe/REGISTER_NTU.REGISTER?EVENT_ID=OA09031816154255)

- Any cancellation or replacement will have to be conveyed to the organizer in writing. A cancellation fee of 50% will be charged if cancellation is received less than 1 week before the course due date. There will be no refund of course fees if cancellation is made less than 3 working days before the course commences.
- The University reserves the right to cancel the course and fully refund the participants, should unforeseen circumstances necessitate it.

Cheque should be crossed and made payable to  
"NANYANG TECHNOLOGICAL UNIVERSITY"  
forwarded to: EEE/CSP (S2-B4b-05), 50 Nanyang Ave,  
Singapore (639798)

Attn: Catherine Teng

**For enquiries** please call Catherine Teng at Tel: 065-6790-4882, Fax: 065-6791-2383

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