

信興高等工程研究所 及 微軟香港中文大學利群計算及界面科技聯合實驗室

# Shun Hing Institute of Advanced Engineering & Microsoft-CUHK Joint Laboratory for Human-centric Computing and Interface Technologies Shun Hing Distinguished Lecture Series

December 2, 2006 (Saturday)

## Professor Fred Juang

Motorola Foundation Chair Professor and  
Georgia Research Alliance Eminent Scholar

Digital Signal Processing Group and Telecommunications Group

School of Electrical & Computer Engineering, Georgia Institute of Technology, USA



### Title

***Pattern Recognition: Bayes or not Bayes, Is that the Question?***

### Abstract:

**Pattern recognition** is a well-studied problem which recently regains its significance in machine learning, artificial intelligence, data mining, and the general area of inferential computing. A theory developed by Thomas Bayes (1702-1761) on optimal decision has long served as the mathematical foundation of statistical pattern recognition techniques. In this talk, we review and re-examine this well-established framework in the context of practical problems and ask the question: Is Bayes minimum risk an achievable goal and if possible how to reach that goal? We analyze the question against backdrop of modern techniques and come to the formulation of a performance-based approach to the fundamental problem of pattern recognition that holds the potential of achieving Bayes' optimal result.

### About the speaker:

**Professor Fred Juang** received his Ph.D. from University of California, Santa Barbara. He had worked at Speech Communications Research Laboratory (SCRL) and Signal Technology, Inc. (STI) on a number of Government-sponsored research projects. Notable accomplishments during the period include development of vector quantization for voice applications, voice coders at extremely low bit rates, 800 bps and around 300 bps, and robust vocoders for use in satellite communications. He was also a co-Principal Investigator for the project on co-channel separation of speech signals sponsored by the Department of Defense. Professor Juang subsequently joined the Acoustics Research Department of Bell Laboratories in 1982, working in the area of speech enhancement, coding and recognition. Professor Juang became Head/Director of Acoustics and Speech Research at Bell Labs, and Director of Multimedia Technologies Research at Avaya Labs (a spin-off of Bell Labs) in 2001. His group continued the long heritage of Bell Labs in speech communication research.

Professor Juang has published extensively, including the book "Fundamentals of Speech Recognition," co-authored with L.R. Rabiner, "Pattern Recognition in Speech and Language Processing," with Wu Chou, and holds about twenty patents. He has served as Editor-in-Chief for the IEEE Transactions on Speech and Audio Processing, and a number of positions in the IEEE Signal Processing Society, including current Chair of its Fellow Evaluation Committee. Professor Juang has received a number of technical awards, notable among which are several Best Paper awards in the area of speech communications and processing, the Technical Achievement Award from the IEEE Signal Processing Society, and the IEEE Third Millennium Medal. He is a Fellow of the IEEE, a Fellow of Bell Laboratories, and a member of the National Academy of Engineering of the United States. He is currently Motorola Foundation Chair Professor at the School of Electrical & Computer Engineering, Georgia Institute of Technology which he joined in 2002. Professor Juang is also an Eminent Scholar of the Georgia Research Alliance.

**Date:** December 2, 2006 (Saturday)

**Time:** 10:30a.m. - 12:00p.m. (Reception starts at 10:00a.m.)

**Venue:** Lecture Theater, 9/F, William M.W. Mong Engineering Building,  
The Chinese University of Hong Kong, Shatin, Hong Kong

**ALL ARE WELCOME**

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