

SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Faculty of Engineering

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Area: Signal Analysis & Machine Intelligence

Host: Prof Li Haizhou

TOPIC	:	Cochlear modelling: future direction
SPEAKER	:	Prof Eliathamby Ambikairajah, Head of School of Electrical Engineering and Telecommunications, University of New South Wales (UNSW), Australia
DATE	:	3 September 2019, Tuesday
TIME	:	10am to 11am
VENUE	:	E3-06-08, Engineering Block E3, Faculty of Engineering, NUS

ABSTRACT

The human cochlea is a critical part of the human auditory system, which transforms the acoustic signal to a mechanical movement and thereafter to a neural signal. The cochlea is unique and has some amazing characteristics, including very fine frequency resolution, wide dynamic range and rapid adaptability to different input sound levels – many of which are not yet fully modelled or exploited by speech processing systems. Its importance as a spectrum analyser has been recognised in the design of cochlea implants and speech and speaker recognition systems. In this presentation, cochlear modelling will be discussed from simple through to more advanced cochlear filter models. The application of these models to key speech processing systems, and the evolution of their design, will then be explained. Future approaches to cochlear models in a deep learning paradigm will be discussed, including building an active cochlear model.

BIOGRAPHY

Professor Eliathamby Ambikairajah received his BSc (Eng) (Hons) degree from the University of Sri Lanka, and received his PhD degree in Signal Processing from Keele University, UK. He was appointed as Head of Electronic Engineering and later Dean of Engineering at the Athlone Institute of Technology in the Republic of Ireland from 1982 to 1999. His key publications led to his repeated appointment as a short-term Invited Research Fellow with the British Telecom Laboratories, U.K., for ten years from 1989 to 1999.

He has served as the Head of School of Electrical Engineering and Telecommunications, University of New South Wales (UNSW), Australia from 2009 to 2019. His research interests include speaker and language recognition, emotion detection and biomedical signal processing. He has authored and co-authored approximately 300 journal and conference papers and is the recipient of many competitive research grants. He was a Faculty Associate with the Institute of Infocomm Research (A*STAR), Singapore from 2009-2018, and is currently an Advisory Board member of the AI Speech Lab at AI Singapore.

Prof Ambikairajah received the UNSW Vice-Chancellor's Award for Teaching Excellence in 2004 for his innovative use of educational technology and innovation in electrical engineering teaching programs, and in 2014 he received the UNSW Excellence in Senior Leadership Award.

Professor Ambikairajah was an APSIPA Distinguished Lecturer for the 2013-14 term. He is a Fellow and a Chartered Engineer of the IET UK and Engineers Australia (EA).