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An Auditory-Motivated Feature Extraction Method for Automatic Speech Recognition

by

Serajul Haque

Centre for Intelligent Information Processing Systems,
School of EE&C Engineering, UWA

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VENUE: **Billings Room 3.04** (3rd Floor)
School of Electrical, Electronic & Computer Engineering
Electrical Engineering Building
The University of Western Australia
Fairway Entrance 2 and 3, Crawley (Perth)

CONVENOR: **Dr. Roberto Togneri**
Tel: 6488 2535
E-mail: roberto@ee.uwa.edu.au

ABSTRACT:

The application of auditory features for speech recognition has not resulted in improved performance in many cases. Furthermore, auditory features have been shown to perform better in class discrimination rather than with the more robust statistical recognizer like a hidden Markov model (HMM). We present, a novel feature extraction method for ASR front-end based on perceptual features each of which is adapted to a specific assigned task as observed in the cochlear nucleus. The excitatory and the inhibitory functions of the specific neurons of the cochlear nucleus are simulated by three parallel processing in the form of a zero-crossing synchrony detector, a synaptic mean rate output and a companding stage. The proposed processing scheme shows improved recognition on HMM over the existing computational models.

This paper is based on a paper presented at the Eleventh Australasian International Conference on Speech Science and Technology held at the University of Auckland in December, 2006.

ABOUT THE SPEAKER:

Serajul Haque received his Master of Engineering from Louisiana Tech University, USA and is currently a PhD student at the CIIPS, School of EECE, UWA. His current research interests include speech information processing and recognition, and auditory and perceptual modeling.