

## **Classification of speaker accent using hybrid DWT-LPC features and K-nearest neighbors in ethnically diverse Malaysian English**

### **Abstract**

Accent is a major cause of variability in automatic speaker-independent speech recognition systems. Under certain circumstances, this event introduces unsatisfactory performance of the systems. In order to circumvent this deficiency, accent analyzer in preceding stage could be a smart solution. This paper proposes a rather new approach of hybrid way to optimize the extraction of accent from speech utterances over other facets using linear predictive coefficients (LPC) derived from discrete wavelet transform (DWT). The constructed features were used to model an accent recognizer, implemented based on K-nearest neighbors. Experimental results showed that the hybrid dyadic-X DWT-LPC features were highly correlated to the Malay, Chinese and Indian accents of Malaysian English speakers through an increase of classification rate of 9.28% over the conventional LPC method.

**Keywords** — Accent classification, discrete wavelet transform, k-nearest neighbors, linear predictive coding, Malaysian English