

Malaysian English accents identification using LPC and formant analysis

Abstract

In Malaysia, most people speak several varieties of English known as Malaysian English (MalE) and there is no uniform version because of the existence of multi-ethnic population. It is a common scenario that Malaysians speak a particular local Malay, Chinese or Indian English accent. As most commercial speech recognizers have been developed using a standard English language, it is a challenging task for achieving highly efficient performance when other accented speech are presented to this system. Accent identification (AccID) can be one of the subsystem in speaker independent automatic speech recognition (SI-ASR) system so that deterioration issue in its performance can be tackled. In this paper, the most important speech features of three ethnic groups of MalE speakers are extracted using Linear Predictive Coding (LPC), formant and log energy feature vectors. In the subsequent stage, the accent identity of a speaker is predicted using K-Nearest Neighbors (KNN) classifier based on the extracted information. Prior, the preprocessing parameters and LPC order are investigated to properly extract the speech features. This study is conducted on a small set speech corpus developed as pilot study to determine the feasibility of automatic AccID of MalE speakers which has never been reported before. The experimental results indicate a highly promising recognition accuracy of 94.2% upon feature fusion sets of LPC, formants and log energy.

Keywords — Accent identification, formant, k-nearest neighbor, linear predictive coding, Malaysian English