VOWEL RECOGNITION BASED ON FREQUENCY RANGES DETERMINED BY BANDWIDTH APPROACH

Abstract:

Automatic speech recognition (ASR) has made great strides with the development of digital signal processing hardware and software especially using English as the language of choice. In this paper, a new feature extraction method is presented to identify vowels recorded from 80 Malaysian speakers. The features were obtained from vocal tract model based on bandwidth (BW) approach. Bandwidth approach identifies frequency bands based on the first peak of vowel frequency responses. Mean and maximum energies were calculated from these Bandwidth frequency bands. Classification results from bandwidth approach were compared with the first 3-formant features using Linear Predictive method. A multi-layer perceptron (MLP) and multinomial logistic regression (MLR) were used to classify the vowels. MLR and MLP shows comparable classification results for BW approach of 96.40% and 96.59% respectively. Bandwidth approach obtained 5.49% higher classification rate than 3-formant features using MLP.