Abstract

Speech recognition is a way to representing voice signals into a form that is understandable by system to solve a problem. Currently, speech recognition already include variety of languages in the world. Hijaiyah letter is part of the Arabic language that has special characteristics in both of writing and pronunciation.

Hijaiyah letter recognition can be solved using Hidden Markov Model Algorithm. Early stages, voice signal sample taken its characteristic information and then created models for each of said constituent who wants to be recognized. Each signal has a characteristic of each one represented by the samples they have. A very short sound signal is then stored into the frames and searched its cepstral coefficient (feature vector) and the only order derivative coefficients using Linear Predictive Coding (LPC). Further stages performed on each feature vector quantization using K-Means Clustering method to be changed into form of discrete observation symbols (codebook). Determination the number of codebook is computed from the smallest value of Sum Square Error. Codebook generated sequences form a distinct state and each Hijaiyah letter who wants to be recognized will be modeled by HMM architecture resulting from the training process.

After doing some testing scenario, writer find the best accuracy for 240 samples frame and 160 samples overlap, using 64 codebook and 5 state HMM in modeling.

Keywords: *Frame Blocking, Linear Predictive Coding, K-Means Clustering, Hidden Markov Model, Sum Square Error.*