

Thesis Title	The Designing of Tone Recognition Model For Thai Language Using Pitch Quantization and Hidden Markov Modeling Techniques
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ABSTRACT

This Thesis presents the designing of tones level recognition modeling for spoken Thai language. First, the speech is divided into frames, and the autocorrelation method using center clipping is applied to each frame of speech to determine the pitch period and it fundamental frequency. The sequence of fundamental frequency is improved to make the connecting of data more smoother by using median filtered. The observation sequence of pitch levels are preprocessed to find the pitch differences and the sequence of pitch differences are then grouped into three quantized levels. The resultant sequence is used as bases for training a Hidden Markov Model and recognition of 5 tones.

The purpose of this experiment is processed to find pitch period from isolated monosyllable Thai speech, which indicates a possibility of gender independent tone recognition. The quantization of three levels has the properties of frequency independent. Further more, the studying also concerned with the optimum forms of HMM, and formed that a Hidden Markov Model with 10-state double-transition is optimized with our developed algorithm. The experimental results also showed the average recognition accuracy more than 90 percent.