



Thai Sign Language Recognition System using Hidden Markov Model

Investigator: Wuttichai Visarnkuna

Sign language is exchanging information for most of the hearing impaired. In addition, it also supports the communication between the deaf and normal person. This research proposes Thai sign language recognition system using Hidden Markov Model for transcribing human sign language into text or speech. Figure 1 illustrates words of “You” and “We” in Thai sign language.

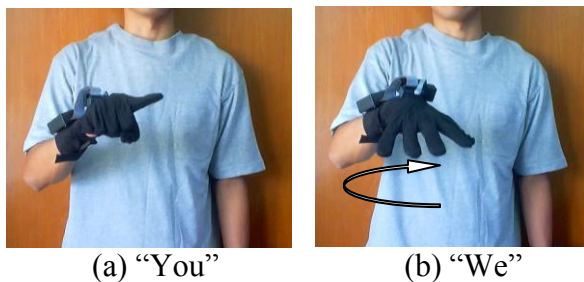


Figure 1. Example of Thai sign language.

As shown in Figure 2, this system measures hand gestures using input devices which are CyberGlove and Motion tracker on each hand. All training data such as finger flexures and hand position/orientation are captured by using CyberGloves and Motion tracker, respectively. Those data inputs are then preprocessed and classified into 4 categories which are posture, position, orientation, and motion. This preprocessing section solves the problem of determining end points in a sequence of gesture input and detecting discontinuities for segmentation. This section also determines whether the hand movement is represented by one or two-hand gesture. After preprocessing section, those data inputs are then compressed by the vector quantization section. This greatly increases the speed of training and recognition processes of Hidden Markov Models. In continuous Thai sign

language recognition, natural language processing is used to choose the most probable word sequences, which have each word affects the probabilities of its subsequent word occurrences, from all trained word sequences.

Consequently, a user can communicate with the other person by using this trained Thai sign language recognition system. The output of this system could be text or synthesized speech.

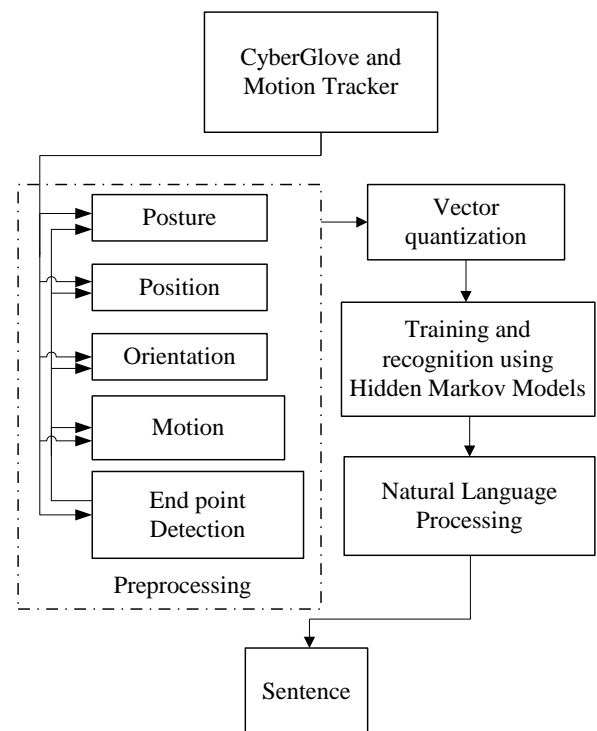


Figure 2. Thai sign language recognition system

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