Abstract

Effective classification of music in the management of music databases is very important for the user search activity on Thai – English music databases is increasing continuously year by year. Because of the increased volume and complexity it is necessary to use skilled personnel to administer the databases. Therefore, finding an effecient system which helps reduce mistakes in music classification plays an important role in make databases more user - friendly, especially when dealing with songs in different languages.

This research presents a classification of Thai – English songs with a multi – layer artificial neural network using timbral features. The first part of the experiment related to the classification of eight song categories. The researcher adjusted five important parameters, namely, hidden unit, learning rate, training time, momentum, and threshold. The topology of input comprised 34 nodes; hidden unit comprised 30 nodes; and output unit comprised eight nodes. The test was conducted with 10 – fold cross validation. To find the best tuning parameter, the researcher tuned the parameter of the multi – layer artificial neural network to. The optimal parameters of identified by this experiment were as follows: Learning Rate, 0.75; Momentum, 0.25; Hidden Unit, 30; Training Time, 3000; and Threshold, 40. According to the result of analyzing the middle value; after using seven groups of statistical values as the middle value, the researcher found that the best value used in classification was the Mean – Median. According to comparison results, the best feature groups which could classify a song at 10 seconds were ZC+SR+MFCC+LPC+SC+SF at 74.45%. MFCC+SR+LPC were the feature which could classify a song in the first 10 second at 67.32%. ZC+MFCC+SSB+LPC+SC+SF were the feature which could classify the song in the first 20 second at 58.72%. ZC+LPC+MFCC+SF+SC+SSB were the feature which could

classify a song in the first 30 second at 58.72%. The result were also classified using five values of frame; 128, 256, 512, 1024, and 2048. The researcher found that the value of frame best used in classification was 512. After finding the best value of MFCC 0 - 4, the researcher found the MFCC 1 gave the best value. After comparing the value of MFCC 1 with had a value, the researcher found that MFCC 1 was less than the SR value for a value only.

Part 2 of the research the classification of eight song categories in two steps. The researcher found that the values in the first described above, relate to classification of Thai – English songs form a group with more than two features, could classify song categories with an accuracy of 99.75%.The second step related to classification of Thai song. Part 3 of the research found that the feature which could best classify were ZC+SR+MFCC+LPC+SC+SF giving an accuracy level of ZC+SR+MFCC+LPC giving an accuracy level of 73.43%.As for the songs using the same melody but different languages, the researcher found that ZC value was most effective at 61.54%.