

Abstract

Classification of emotions or emotion recognition based on sound signal is a topic that has been widely researched because this classification of emotions can be used in many fields such as education, cars, security, communication, and health. This study will discuss the classification of multi-class emotions from voice signals using machine learning techniques, the classes that will be classified include angry, disgust, fear, happy, neutral, pleasant surprised, and sad. The steps for classifying emotions in this study are preprocessing, feature extraction, feature reduction, hyperparameter tuning, and classification. Feature extraction, feature reduction, and hyperparameter tuning are important things to improve accuracy for the classification of features extracted from audio data, namely MFCC using the librosa library. The dataset that will be used as training and testing data is data derived from TESS(Toronto Emotional Speech Set). The methods used in this study are 1. Literature study, 2. Development of a multi-class emotion classification algorithm, 3. Performance testing and correction of the application of the algorithm. The objectives of this final project are 1. Determine the characteristics and emotional features of sound signals, 2. Implement machine learning techniques to classify emotions through sound signals, 3. Perform performance analysis on the machine learning techniques used. The characteristic of every sound signal could be found in extracted features from MFCC that become a statistic-descriptive feature. This study uses three algorithms which are Support Vector Machine(SVM), Decision Tree(DT), and K-Nearest Neighbour(KNN). The result shows that SVM has the best accuracy with 80% respectively after hyperparameter tuning (accuracy before hyperparameter tuning is 40%), this also shows hyperparameter tuning is an important part

Keywords: emotion classification, multi-class classification, MFCC.

