1. Introduction

Congestion is a problem that often occurs in a traffic. The most frequent location that often occurs congestion is at intersection. The size of the vehicle volume used by the community is one of the congestions causes. Congestion causing unexpected travel times, creating critical delays in economy and emergency services, and can be stressful for certain people [1]. One way to deal with the congestion is to do traffic management. To simplify the traffic management process, it is necessary to identify congestion [2]. In this project, classification will be carried out based on audio data and create an application to identify a congestion.

Machine Learning developed rapidly in the computer science zone, with the extensive applications. It speaks about the automatic recognition of significant data patterns. Machine Learning that is developed in programs has the capacity to adapt and learn. There is reason to anticipate that smart data analysis will become even more prevalent as an essential component for technological advancement with the ever-increasing amounts of data becoming available [7].

There are several studies that have been carried out to classify congestion. Research [5] shows that Naïve Bayes method is implemented to get the predict of weather condition on traffic congestion. The accuracy result by using Naïve Bayes showed 72.25% in training and 85.03% accuracy in testing and 0.46% in RMSE. Research [1] obtain audio data from the environment of realistic road and downloaded audio files from Youtube. Audio data technically classify as two classes, Non-Congested (NC) and Congested (C). Non-Congested defines as a free flow road while Congested defines as a low speed vehicle passing and stop frequently. Research [6] implement and compare sigmoid kernel (libSVM) classifier and improved with SVM dot (mySVM) classifier to detect traffic congestion with the accuracy 96.24% and 98.92% respectively. The evaluation results in finding a similar condition with 17 out of 25 samples.

In this final project, Support Vector Machine (SVM) and Naïve Bayes algorithm is used to build a system to classify a congestion in road intersection. Author will compare the performances of 2 algorithm based on the accuracy, F-Measure, Precision, and recall. Not just building the system and analyze performances, a web-based machine learning application will be created to identify traffic audio sound by implementing both algorithm to the web system.

Formulation of the Problem

Based on the introduction, there is some formulation of the problem which is:

1. How to Implement and do Performance Test with 2 Classification Algorithm.
2. How to Implement a Congestion Sound Identification Web-Based Application.

Purpose

The goal of this final project is:

1. To implement 2 classification algorithm and analyzing the comparison of 2 algorithms (Support Vector Machine, Naïve Bayes) performance, where the performance result is taken from Accuracy, F-Measure, Precision, and Recall.
2. To implement the application of Web-Based Congestion Sound Identification.