ABSTRACT

Air quality is usually worsened by the increase in the number of motorized vehicles. This growth will contribute to increasing levels of air pollutants produced by gas emissions from motorized vehicles. Generally, evaluation of air quality is carried out by paying attention to the concentration of measurable air pollution parameters, whether they are at higher or lower levels. The Air Pollution Standard Index (ISPU) is a number that describes the air quality conditions at a certain location and time in an area. The Air Pollution Index parameters include Particulates (PM10), Carbon Monoxide (CO), Sulfur Dioxide (SO2), Nitrogen Dioxide (NO2), Ozone (O3). Based on the problems faced, research was conducted to classify air quality to understand the level of air quality.

Air Quality Classification using Adaptive KNN and Weighted KNN with the Use of SMOTE-Tomek Links and the Bagging Approach is a method that uses the application of the SMOTE-Tomek Links technique to handle the problem of class imbalance in the data. Additionally, a Bagging approach is also implemented to optimize the overall model performance. The aim of this research is to increase accuracy in predicting air quality levels with the Weighted KNN and Adaptive KNN machine learning algorithms.

In this research, we compare the results of Adaptive KNN and Weighted KNN machine learning with Bagging. Adaptive KNN obtained an accuracy value of 85%, precision 85%, recall 83% and F1 score 83%, while Weighted KNN and Bagging obtained an accuracy of 95%, precision 96%, recall 92%, and F1 Score 93% and a G-mean value of 0.97 , Stratified K Fold 0.97 and also Cross validation 0.84

Keywords: Air Classification, Adaptive KNN, Weighted KNN.