ABSTRACT

WiFi Round Trip Time (RTT) is a new feature of the 802.11 standard, more precisely the 802.11mc standard which provides a feature to calculate the time back and forth from an Access Point (AP) to User Equipment (UE). This feature allows WiFi to estimate the distance by calculating the time back and forth multiplied by the speed of light. This can be used as an Indoor Positioning System (IPS) because the system for positioning in general, namely the Global Navigation Satellite System (GNSS) still relies on RSSI to estimate the position of an object. WiFi RTT is expected to be able to overcome the shortcomings of GNSS which can even only have an error distance of less than equal to 1 meter.

WiFi RTT requires characteristics of a map or called an RTT Fingerprinting Map to be able to estimate the position. This Wifi RTT Map can later be used as a dataset because of the unique characteristics of each position that has a different RTT value for each point. One way to take advantage of this characteristic is to use a classification algorithm that can be done in this research using k-nearest neighbor classification algorithm, random forest, decision tree, naive-bayes, and support vector machine.

In this project, k-nearest neighbor, random forest, decision tree, naïve-bayes and support vector machine classification algorithms are tested by looking at the effect of random state changes in the split train test on the dataset that being used. It was found that the assumption of Wifi RTT is less than 1 meters and which of the four classification algorithms is the best, the result is naive - bayes with an error distance of 0.05 meters and the results of the four classification algorithms have an average error distance of less than 1 meter.

Keyword: *WiFI RTT, k - nearest neighbor, random forest, decision tree, naive-bayes, support vector machine*