ABSTRACT

This research is the development of an IoT-based fire detection system with BOT communication media using telegram. The development carried out by researchers by adding artificial intelligence can classify sensor datasets. The fire classification parameters used are safe and unsafe conditions. The control center consists of the NodeMCU ESP32 and sensors MQ-7, LM35, and KY-026 for fire detection and data collection. The data that has been obtained is classified using the skit-learn module which consists of 2 stages, namely training data and data predicting (testing).

The classification method used is the Support Vector Machine (SVM) Algorithm. By utilizing the SVM method as one of the Machine Learning technologies, the problem of classifying potential fires is easier to do. The data are classified in 5 conditions, the ratio between the training set and the test set is 50%:50%, 60%:40%, 70%:30%, 80%:20%, and 90%:10%. The classification carried out is divided into two planning stages. The first planning stage is the Confusion Matrix and calculation. The second planning stage is the calculation of the Classification Report. The results of the classification analysis are in the form of accuracy and performance parameters analysis.

The results of the ratio comparison analysis using skit-learn obtained the best performance Accuracy of 100% at a ratio of 90%:10% and from the performance results obtained 100% Recall at a ratio of 90%:10%. The highest percentage of Precision 100% at a ratio of 90%:10%. While the largest F1-Score percentage was obtained at 100% at a ratio of 90%:10%, it is known that the precision and recall values at that point were sufficient for the expected target.

***Keywords**: IoT, Fire Detector, Classification, SVM, Machine Learning*