ABSTRACT

One application in the application of IoT is a fire detection system. Fires in residential areas are often caused by human negligence, especially in the kitchen area. The number of fire cases per 2020 in the city of Bandung reached 192 incidents of which 73 fires occurred in residential areas. The application of IoT as a result of technological developments can be an alternative fire prevention solution. That is by building a fire detection system that is reliable and easy to monitor and based on IoT.

This study aims to utilize IoT technology to reduce the impact of fires with the KNN algorithm. K-Nearest Neighbor algorithm and Wemos D1-Mini microcontroller are used as data classification and processing. The way this system works is that the DHT-11 sensor is tasked with detecting the temperature and humidity around the room, the flame sensor detects fire points, and the MQ-2 sensor detects smoke in the room. If there is a fire, the system will carry out the calculation process with the KNN algorithm and then get the classification results that are used as the final result of this system and can then be sent to the Telegram Bot application.

After the research was conducted, it was found that the system test results had an accuracy of 86,663%, an average delay of 44ms, a throughput of 80.657 bps, and a power consumption of 13.4 Watts. The KNN algorithm where the K-Value is worth 3 the highest decision accuracy value. The results of this study can also be used as a reference parameter in studies related to fire detection systems.

Kata Kunci: DHT-11 sensor, Fire, Flame sensor, IoT, K-Nearest Neighbor , MQ-2 sensor, Telegram