

## ABSTRACT

Forest fire are one of the disasters that can cause huge losses. Forest fire can spread rapidly and uncontrollably. The size of the fire in forest fire is very fatal when there is a gust of wind that can destroy living things and the environment in a matter of minutes. The purpose of this research is the development of a forest fire detection system based on the Internet of Things (IoT).

The tool designed for forest fire detection consists of a fire sensor, DHT22 temperature and MQ-2 gas as well as a SIM800L GSM/GPRS module to send sensor data to ThingSpeak to help provide information on fires that occur in forests. With this tool, we will know the condition of the forest in real time and make quick decisions when a fire occurs.

The results of testing the fire sensor, it can be seen that small fires can only be detected at a distance of less than 60cm, medium fires less than 100cm and large fires less than 160cm. Furthermore, for the test results of the DHT22 temperature sensor after calibrating with a comparative measuring instrument using a Mini Digital Hygrometer Thermometer, the maximum error temperature value was 0.79% and 5.22% humidity for an air-conditioned room. Next, in the room, the maximum error value for temperature is 0.38% and for humidity it is 2.18%. Furthermore, outdoors the maximum temperature error values are 0.79% and humidity 3.17%. Then the highest value result in testing the MQ-2 gas sensor, the smoke detected when one tissue was burned was 60.4 PPM and two tissues were burned was 81.74 PPM. Next, the highest score for burning one cigarette is 60.54 PPM and when two cigarettes are burned it is 67.17 PPM.

**Keyword:** Internet of Things (IoT), ThingSpeak, SIM800L GSM/GPRS, fire sensors, DHT22 temperature sensors, MQ-2 gas sensors.