

ABSTRACT

Natural disasters often occur in Indonesia due to its location between two continental plates and the equator, causing a tropical climate with high rainfall that makes the country prone to flooding, especially in the western region. This final project is an Internet of Things (IoT) based monitoring to monitor river water levels, using a Nodemcu microcontroller, ultrasonic sensor, and WiFi connected to the Telegram application and Website.

System testing for 20 days using scenarios of river water rise in three statuses: safe (0-20 cm), alert (21-40 cm), and danger (41-60 cm). The QoS results show the average delay of sensor 1 is 41.78 ms and sensor 2 is 39.62 ms, the average throughput of sensor 1 is 636.704 bps and sensor 2 is 846.232 bps, packet loss on sensor 1 is 4.07% and sensor 2 is 2.96%, and the average response time of sensor 1 is 1.7 ms and sensor 2 is 1.6 ms. Simulation of water flow velocity from sensor 1 to sensor 2 with a distance of 3 meters using PVC gutter pipes shows an average water flow time of 0.76 (m³/s). Testing the speed of water flow from sensor 1 to sensor 2 with a distance of 200 meters shows an average safe category water flow time of 399.84 (m³/s).

Keywords: Flood, Fuzzy Logic, NodeMCU, Ultrasonic , Telegram.