

ABSTRACT

Road damage that is not promptly detected can disrupt community activities and increase the risk of accident. This study designs a road damage monitoring and detection system using an Inertial Measurement Unit (MPUc050) sensor to measure acceleration on the X, Y, and Z axes, along with a GPS NEO-M8N module to determine location coordinates. The system is controlled by an ESP32 microcontroller, which also manages time logging through an RTC DS3231 module and transmits data to a database via Wi-Fi tethering. Testing was conducted on a small scale with a data reading interval of 1 second and data transmission to the database every 10 seconds. The test results indicate that the system is capable of recording acceleration data. This system is expected to serve as a solution to support road damage monitoring without requiring manual reporting.

Keywords: road damage, MPUc050, GPS, ESP32, Wi-Fi