

ABSTRACT

The high fatality rate of motorcycle accidents in Indonesia is a crucial issue, partly caused by delayed medical response. The delay in obtaining accurate information regarding the occurrence and location of an accident is a primary obstacle to providing first aid within the critical golden hour. This research aims to address this problem by designing and implementing an automatic accident notification system.

The implemented solution is an integrated system consisting of an IoT device on the motorcycle, a backend server, and a mobile application. The IoT device utilizes an MPU6050 IMU sensor and GPS to detect motion and tilt anomalies indicative of an accident. Upon detection, location and time data are automatically transmitted via the GPRS network to a Django server, which then forwards the information as a real-time push notification to the emergency contact's mobile application.

Based on test results, the system functions successfully as designed. GPS location sensor testing shows an average difference of 6.92 meters, indicating high accuracy. The end-to-end notification transmission time, from detection by the IoT device to reception by the mobile application, was achieved with an average of 2.016 seconds. These results demonstrate that the developed system can provide a fast and accurate emergency notification solution, thus holding significant potential to accelerate emergency response times and improve victim safety.

Keywords: *Accident Detection, Automatic Notification, Internet of Things, Motorcycle, Warning System*