

## INTISARI

### **RANCANG BANGUN SISTEM MONITORING BUS BERBASIS INTERNET OF THINGS (IOT)**

Oleh :

Abdul Hadi Bilhaqiu

20/462069/PA/20041

Transportasi umum seperti bus memainkan peran penting dalam mobilitas masyarakat, namun risiko kecelakaan lalu lintas meningkat seiring tingginya intensitas penggunaannya. Data Kementerian Perhubungan menunjukkan tren peningkatan angka kecelakaan, terutama yang melibatkan bus, disebabkan oleh perilaku pengemudi, kondisi kendaraan, dan faktor lingkungan. Penelitian ini merancang sistem monitoring berbasis IoT untuk memantau kecepatan, kemiringan, lokasi, suhu, dan kelembapan kabin bus menggunakan sensor Neo6M, DHT22, dan MPU6050. Sistem ini mendeteksi pelanggaran kecepatan dan memberikan notifikasi kepada operator bus melalui email, serta memperingatkan pengemudi dengan buzzer. Data divisualisasikan dan dikelola melalui dashboard berbasis Node-RED, MySQL, dan Next.js. Hasil pengujian menunjukkan sistem berfungsi baik dengan pengiriman data real-time tanpa delay signifikan, dan fitur peringatan berhasil beroperasi. Sensor-sensor yang digunakan mampu menggambarkan kondisi kendaraan secara akurat. Sistem ini diharapkan dapat berkontribusi dalam mengurangi kecelakaan dengan memberikan peringatan dini, serta membantu perusahaan dalam meningkatkan kualitas pengemudi melalui identifikasi perilaku berkendara yang berisiko.

## ABSTRACT

### ***BUS MONITORING SYSTEM DESIGN INTERNET OF THINGS ( IOT ) BASED***

By :

Abdul Hadi Bilhaqiu

20/462069/PA/20041

*Public transportation, such as buses, plays a crucial role in urban mobility, but the risk of traffic accidents increases with its high usage intensity. Data from the Ministry of Transportation shows a rising trend in accident rates, particularly involving buses, caused by driver behavior, vehicle conditions, and environmental factors. This study designs an IoT-based monitoring system to track speed, tilt, location, temperature, and humidity of bus cabins using Neo6M, DHT22, and MPU6050 sensors. The system detects speed violations and sends notifications to bus operators via email, while alerting drivers with a buzzer. Data is visualized and managed through a dashboard developed with Node-RED, MySQL, and Next.js. Testing results indicate that the system functions well, transmitting data in real-time without significant delay, and its alert features operate effectively. The sensors used accurately reflect the vehicle's real conditions. This system is expected to contribute to reducing accidents by providing early warnings, as well as helping companies improve driver quality by identifying risky driving behaviors.*