

ABSTRACT

As technology advances rapidly, particularly in the field of transportation, motor vehicle accidents on the road remain prevalent. Approximately 18-23% of these accidents are caused by tire blowouts or bursts, often due to tire pressure exceeding the recommended limits while the vehicle is still in motion. One solution to this issue is monitoring car tire pressure, allowing drivers to continuously observe and assess tire conditions. An LCD display installed in the car can facilitate easy monitoring for the user. In case of a malfunction in the dashboard tire pressure monitoring device, remote monitoring can alert the driver and track the vehicle's location. Such a solution is feasible if tire pressure data is transmitted wirelessly via IoT networks, and vehicle location tracking is enabled by installing a GPS module on a Raspberry Pi. This study develops a car tire pressure monitoring system with an added location tracking feature based on Raspberry Pi. Tire pressure and vehicle location data can be monitored via smartphone or laptop/pc. The data generated by the four sensors is also very reliable, with an average accuracy rate above 90%. Both the sensor data and GPS data can be transmitted in real-time to the website, continuously updating smoothly and efficiently. The accuracy of the GPS module is also very good and precise with an average error 0.299m. Thus, this research has been successfully conducted, resulting in a real-time tire pressure monitoring and vehicle tracking system.

Keywords: Tires, Air Pressure, Temperature, Raspberry Pi, Location Tracking