

ABSTRACT

Uncontrolled vehicle speed in residential neighbourhoods poses a serious threat to the safety of residents, especially children. To address this, this research develops an Internet of Things (IoT)-based vehicle speed monitoring system integrated with a camera, YOLO (You Only Look Once) algorithm, and Mini PC/Raspberry Pi device. The system is able to detect vehicles traveling over the 30 km/h speed limit in real-time, calculate the speed based on the movement in the video, and send violation notifications automatically via Telegram. Information such as vehicle speed, time and location of the violation, and image capture are sent directly through the Telegram bot. In addition, the violation data is stored in Firebase for long-term documentation and analysis. This system offers an effective, cost-effective, and easy-to-implement solution to create a safer and more orderly residential neighbourhood.

Keywords: Speed monitoring, Internet of Things, YOLO, Mini PC, Raspberry Pi, Telegram, Firebase, residential neighbourhood.