

ABSTRACT

The ability to operate a motorized vehicle is an important need for many people, including people with hearing disabilities. However, the inability to hear the sound of horns and sirens on the highway poses a significant challenge for deaf drivers, namely the lack or absence of the ability to hear the sound of horns or sirens so that they cannot obtain a driver's license (SIM).

This study aims to design and develop an Internet of Things (IoT) based system to assist deaf people in driving. This system uses 2 sensors, a proximity sensor and a sound sensor. The sound sensor uses FC-04, while the proximity sensor uses HCSR-04. FC-04 is used to detect the sound of horns or sirens, while HCSR-04 is used to detect the distance of the nearest vehicle. The data collected by the sensors is then sent to the user's mobile device, providing a visual notification as a warning of other vehicles nearby. Thus, users can respond to situations on the road more quickly and precisely.

The results of quantitative testing show that the average percentage of error from the data obtained is around 19.21%, which indicates a significant difference between the data obtained from the device and the data obtained from the application. Nevertheless, the HC-SR04 sensor showed excellent performance with an average accuracy percentage of around 97.92%, and a very small error percentage of around 2.08%. With these results, it is proven that the system is quite effective in detecting approaching vehicles and providing warnings to deaf drivers, thereby improving the safety and comfort of these users while driving. In this study, the IoT technology developed will have enormous potential to improve the quality of life of people with disabilities by providing innovative solutions to support their independence and mobility.

Keywords: Internet of Things (IoT), Deaf People, FC-04 Sound Sensor, HC-SR04 Distance Sensor, Driving Safety, Quality of Life for Disabled People, Visual Warning, Accuracy Sensor, Disability Mobility, Warning System