ABSTRACT

The mobility of visually impaired individuals in urban environments is often hindered by the lack of disability-friendly facilities, particularly at road intersections. This study aims to design and develop the Inno-Traffic Smart Traffic Signal System, a prototype of a sensor-assisted smart traffic light system utilizing Arduino, specifically designed to enhance the safety of visually impaired pedestrians. The system integrates an ultrasonic distance sensor to detect the presence of pedestrians and a sound module that provides audio signals as navigation guidance. The research methodology includes the design phase, hardware and software development, and testing the system's effectiveness under various environmental conditions. The collected data were analyzed to evaluate sensor response, detection accuracy, and the effectiveness of audio signals in assisting users. The study results indicate that this system can improve the safety of visually impaired individuals by providing real-time information about traffic conditions. The conclusion of this research is that the InnoTraffic Smart Traffic Signal System can serve as an innovative solution to support inclusive mobility in urban areas. Further implementation and refinement of the system based on Internet of Things (IoT) technology in the future could enhance its efficiency and adaptability to various traffic environments.