

## ***ABSTRACT***

*Visual impairment affects 2.2 billion people worldwide, many of whom use traditional mobility aids like white canes, which have limitations in navigation and cannot send emergency alerts. This study designs a Smart Blind Stick based on the Internet of Things (IoT) and ESP32 to detect obstacles, environmental conditions, and transmit data in real-time. The device utilizes an ultrasonic sensor for object detection, a water level sensor for detecting the presence of water, and a GPS module for tracking the user's location, with data transmitted via ESP32 to the Blynk application. Testing results show that the ultrasonic sensor achieves 99.9% accuracy at medium to long distances but decreases at very close ranges; the water level sensor effectively detects water at depths of 1-4 cm, and the GPS module can track the user's location in real-time with good accuracy, although performance may be affected by physical obstructions. Overall, the Smart Blind Stick enhances the mobility of visually impaired individuals and efficiently provides user condition information to family members.*

***Keyword:*** *blind stick, GPS, Internet of Things, sensor, visually impaired*