

ABSTRAK

**RANCANG BANGUN ALAT PEMANDU JALAN PENYANDANG
TUNANETRA DENGAN GPS BERBASIS *INTERNET OF THINGS***

(R.A. Nika Niraini 2025: 59 Halaman)

Penyandang tunanetra memiliki keterbatasan dalam mendeteksi rintangan dan memberi tahu keberadaannya saat membutuhkan bantuan. Penelitian ini merancang tongkat pintar berbasis *Internet of Things* (IoT) untuk membantu mendeteksi hambatan dan mengirim lokasi pengguna dalam keadaan darurat. Alat ini menggunakan mikrokontroler ESP32, tiga sensor ultrasonik untuk mendeteksi objek di depan, kiri, dan kanan, serta modul GPS Neo-6M untuk memperoleh data lokasi. Ketika tombol darurat ditekan, lokasi pengguna dikirim melalui Telegram, dan posisi juga dapat dipantau melalui aplikasi *Blynk* secara *real-time*. Sinyal peringatan diberikan melalui *buzzer* dan audio dari DFPlayer Mini. Hasil pengujian menunjukkan sensor mampu mendeteksi objek hingga jarak 40 cm dan koordinat lokasi berhasil dikirim dengan cukup akurat. Alat ini diharapkan dapat membantu tunanetra berjalan lebih aman serta memudahkan keluarga memantau lokasi pengguna saat darurat.

Kata Kunci: Tunanetra, ESP32, GPS, *Internet Of Things*, *Blynk*, Telegram, Sensor Ultrasonik

ABSTRAC
DESIGN AND CONSTRUCTION OF A GUIDANCE DEVICE FOR THE
BLIND USING GPS BASED ON THE INTERNET OF THINGS

(R.A. Nika Niraini 2025: 59 pages)

Blind people have limitations in detecting obstacles and notifying their location when they need help. This research designs an Internet of Things (IoT)-based smart cane to help detect obstacles and send the user's location in an emergency. This tool uses an ESP32 microcontroller, three ultrasonic sensors to detect objects in front, left, and right, and a Neo-6M GPS module to obtain location data. When the emergency button is pressed, the user's location is sent via Telegram, and the position can also be monitored through the Blynk application in real time. Warning signals are given via a buzzer and audio from the DFPlayer Mini. Test results show that the sensor is able to detect objects up to 40 cm away and the location coordinates are successfully sent quite accurately. This tool is expected to help blind people walk more safely and make it easier for families to monitor the user's location in an emergency.

Keywords: *Blind, ESP32, GPS, Internet Of Things, Blynk, Telegram, Ultrasonic Sensor*