Ultrasonic Distance Measuring Device

Abstract

A handheld device that measures distance using an HC■SR04 sensor and displays values on a 0.96■inch OL

Key Components

• Arduino Nano
• HC■SR04 Ultrasonic Sensor
• SSD1306 I²C OLED
• TP4056 Li■ion Charger
• 3D■Printed Enclosure

Working Principle

The microcontroller triggers the ultrasonic burst, captures echo time via interrupt, computes distance, and upda

Results & Observations

Calibration against a steel ruler shows ±2■mm accuracy from 5■cm to 250■cm. Battery runtime is 6■hours. F

Future Enhancements

• Add Bluetooth BLE to stream readings to a phone
• Replace ultrasonic with ToF sensor for lower blind■zone
• Add EEPROM to log measurements