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| **Title:** | Microcontroller-Based High Precision Non-Contact Distance Measurement System Using Ultrasound | | |
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| **Abstract:** |  |
| Abstract— The objective of this work is to implement a high precision and cost-effective contactless distance measurement system using ultrasound. Our result shows that the system can calculate the accurate distance from any obstacle that we want to measure. PIC16f877a microcontroller and the ultrasonic transducer module HC-SR04 are the basis of this circuit. According to the datasheet, recommended range for the sensor is 2 cm to 4 m at an accuracy of 3 mm. The ultrasonic module transmits ultrasonic waves at 40 kHz, then picks up its echo and outputs a waveform whose time period is proportional to the distance. The microcontroller accepts this signal, performs necessary processing, and displays the corresponding distance on the LCD display. The system can be applied in many different fields like accident-proof vehicles, water level measurement, robotics, etc. | |