

DESIGN AND IMPLEMENTATION OF AN
ULTRASONIC RANGE FINDER

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ABSTRACT

This paper describes a method to design and implementation of an ultrasonic range finder. Ultrasonic range finders, referred also as sonar, are known as robust and cheap distance measurement devices suitable for various applications including gathering of information from environment for real world modeling as well as for navigating in mobile robotics. The microcontroller provides the timing signals, measures the time of flight from the transmitted pulse to the received echo, and calculates the distance. The ultrasonic range finder was calibrated manually based on the experimental results. The calibration includes: (1) probability directional diagram of the sensor and (2) probability estimation of the sensor measurements. The experiment results show that the accuracy of the ultrasonic range finder decreases when the reflector surface is unbalance. The accuracy also will decrease when the reflector angle increases.