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Radar System using Arduino

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Abstract: *This paper presents the design and implementation of a low-cost radar system using an Arduino microcontroller, an ultrasonic sensor (HC-SR04), and a servo motor to enable 2D object detection and distance measurement. The system emulates basic radar functionality by rotating the ultrasonic sensor in a predefined arc to detect obstacles within its range, capturing both angular and distance data. Real-time data visualization is achieved through serial communication with a host computer, where the detected points are plotted on a radar-like interface using Processing IDE. The proposed system demonstrates the feasibility of using inexpensive, off-the-shelf components to develop a functional and scalable radar prototype for educational and experimental applications. Experimental results validate the accuracy and responsiveness of the system, highlighting its potential in fields such as robotics, automation, and environmental mapping..*

Keywords: radar system

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