

A Miniature Radar for Detecting Objects Around and Measuring Distance for Short Range Applications

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Abstract: This paper delineates the development of Radar (Radio Detection and Ranging) for object detection and distance measurement. Radar has garnered considerable attention across multiple domains, owing to its durability and dependability in varied environmental circumstances. The capability of radar to function proficiently in low visibility conditions, including fog, rain, or darkness, renders it an essential technology in autonomous systems, automotive applications, and robots. Radar systems ascertain the distance to objects by emitting radio waves and evaluating the time delay of the reflected waves. The capability of radar to identify distant objects and precisely ascertain their location has considerable ramifications for enhancing the safety and effectiveness of diverse systems. The current study employs a scaled-down version of the actual Radar that functions on the same operational premise. This compact Radar variant is constructed utilizing an Arduino Uno microcontroller, an ultrasonic sensor, a servo motor, an LCD screen, and additional peripherals. Its cost-effective implementation and simplicity of application render it highly beneficial for many small-scale appliances. The system installation is simple and yields accurate results.

Keywords: Radar, Object detection, Distance measurement, Arduino

