Arduino Based Radar System

Prof. Osmani. F. W [1], Matole Neha Uttam[2], Patil Vaibhavi Someshwar[3], Garad Tanuja Annasaheb[4]

[1,2,3,4]Students, Diploma in Information Technology Engineering

Vishweshwarayya Institute of Engineering and Technology, Almala, Maharashtra, India

Abstract: *An Arduino-based radar system is a cost- effective and efficient solution for object detection and distance measurement using ultrasonic sensing technology. This project utilizes an Arduino microcontroller, an ultrasonic sensor (HC- SR04), and a servo motor to simulate the working principle of a conventional radar system. The ultrasonic sensor emits high- frequency sound waves, which reflect off objects and return to the sensor, enabling distance calculation based on time delay. The servo motor rotates the sensor over a specified angular range, allowing detection across a wider field of view.*

The collected data is processed by the Arduino and visualized on a computer interface using serial communication and graphical software. This system is widely applicable in obstacle detection, surveillance, and automation systems due to its simplicity, low cost, and adaptability. The project demonstrates how embedded systems can replicate real-world radar functionality for educational and practical applications.

Keywords*: Arduino-based radar system*