Radar using Arduino

Project Overview:

The aim of this project is to build a radar system using an Arduino micro-controller, an ultrasonic sensor, and a servo motor. The radar will detect objects in its vicinity using the ultrasonic sensor and display their position on a graphical interface.

Materials:

Arduino Uno board
Ultrasonic sensor (e.g., HC-SR04)
Servo motor
Jumper wires
Breadboard

Software Requirements:

Arduino IDE (Integrated Development Environment)
Servo library for Arduino

Hardware Setup:

* Connect the ultrasonic sensor to the Arduino as follows:
VCC pin of the sensor to 5V pin of the Arduino
GND pin of the sensor to GND pin of the Arduino
Trigger pin of the sensor to digital pin 9 of the Arduino
Echo pin of the sensor to digital pin 10 of the Arduino
* Connect the servo motor to the Arduino as follows:
Signal wire of the servo motor to digital pin 3 of the Arduino
VCC pin of the servo motor to 5V pin of the Arduino
GND pin of the servo motor to GND pin of the Arduino

Software Implementation:

Write code in Arduino IDE to control the servo motor and read distance measurements from the ultrasonic sensor.
Use the Servo library to control the servo motor's movement based on the detected objects' positions.
Implement a graphical interface on the computer to display the radar readings.

Use of this Project:

The Arduino-based radar system developed in this project can be utilized in various applications, including:
Obstacle Detection and Avoidance: The radar can be integrated into autonomous robots or vehicles to detect obstacles in their path and navigate around them safely.

Security Systems: The radar can serve as a motion detection system to monitor a specific area for intruders or unauthorized access.

Environmental Monitoring: The radar can be deployed for environmental monitoring applications, such as detecting the presence of objects in restricted areas or monitoring wildlife movements.