Radar System

EEEN Kerem Yiğit 119202057
EEEN Sercan Yıldız 119202046
CMPE Hasan Hüseyin Kalay 120200077
CMPE Murat Can Önder 119200089
CMPE Alp Yıldırım 119200046

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1 Introduction

Radar (originally acronym for radio detection and ranging) is a detection system that uses radio waves to determine the distance (ranging), angle, and radial velocity of objects relative to the site. It can be used to detect aircraft, ships, spacecraft, guided missiles, motor vehicles, weather formations, and terrain.Radar was developed by various nations before and during Second World War.Generally, it works in the microwave area of the electromagnetic spectrum that is calculated in hertz when frequencies extend from 400 MHz to 40 GHz. The essential components which are used in the radar.

1.1 Importance Of Radar System

Radars today are used to detect and track aircraft, spacecraft, and ships at sea as well as insects and birds in the atmosphere; measure the speed of automobiles; map the surface of the earth from space; and measure properties of the atmosphere and oceans. In addition to this they are now used to help navigate ships in fog and airplanes in bad weather. Radar can detect a speeding car and track a satellite. Most importantly for meteorologists, radars can detect all sorts of atmospheric phenomena.

1.2 Aim of Project

The aim of this project is to show how to make radar, which is one of the most important parts of airplanes, ships and even cars whose value reaches thousands or millions of dollars in real life, with accessible and cheap materials, as well as to explain the principles of radar operation, to show what a wide range of uses radar has in real life and what materials a simple radar system consists of.

1.3 What is Radar?

Radar is all about using radio waves to detect the presence of objects and to find their position. The word radar, first used by the US Navy in 1940, is derived from radio detection and ranging, thus conveying these two purposes of detection and location. Modern radar goes further and is being developed to classify or identify targets, and even to produce images of objects, for example mapping the ground from a satellite. The principle of radar is that a transmitter sends out a radio signal, which will scatter off anything that it encounters (land, sea, ships, aircraft), and a small amount of the energy is scattered back to a radio receiver, which is usually, but not always, located near the transmitter. After amplification in the receiver, the signals are processed to sort out the required echoes from the 'clutter" of unwanted echoes by a combination of both electronic signal processing and computer software (data processing). There are many applications for radar, on scale sizes that vary from a few centimetres, such as the measurement of the thickness of furnace walls, to long-range systems probing planets across the solar system.

2 Requirements

Id	Produts
Item 1	Ardunio Uno R3 SMD CH340 Chip
Item 2	HC-SR04 ultrasonic distance sensor
Item 3	ultrasonic sensor mount (type a-b-c)
Item 4	SG90 RC Mini (9gr) Servo motor
Item 4	data cable
Item 5	M-F cable
Item 6	M-M cable
Item 7	Buzzer active 5v

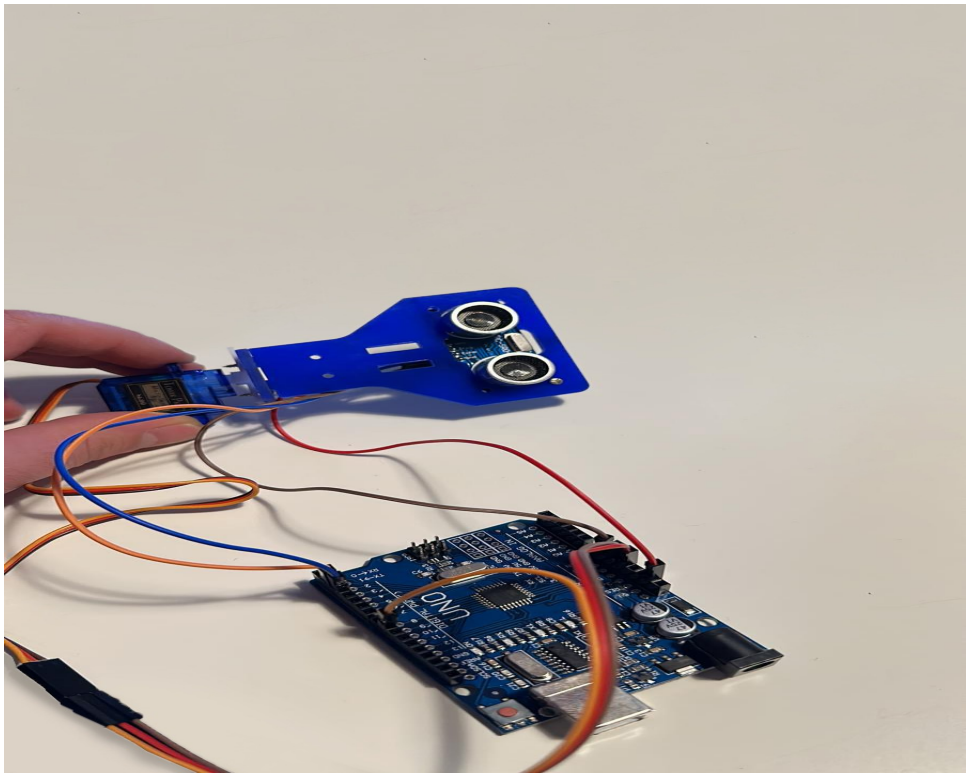


Figure 1: HC-SR04 ultrasonic distance sensor

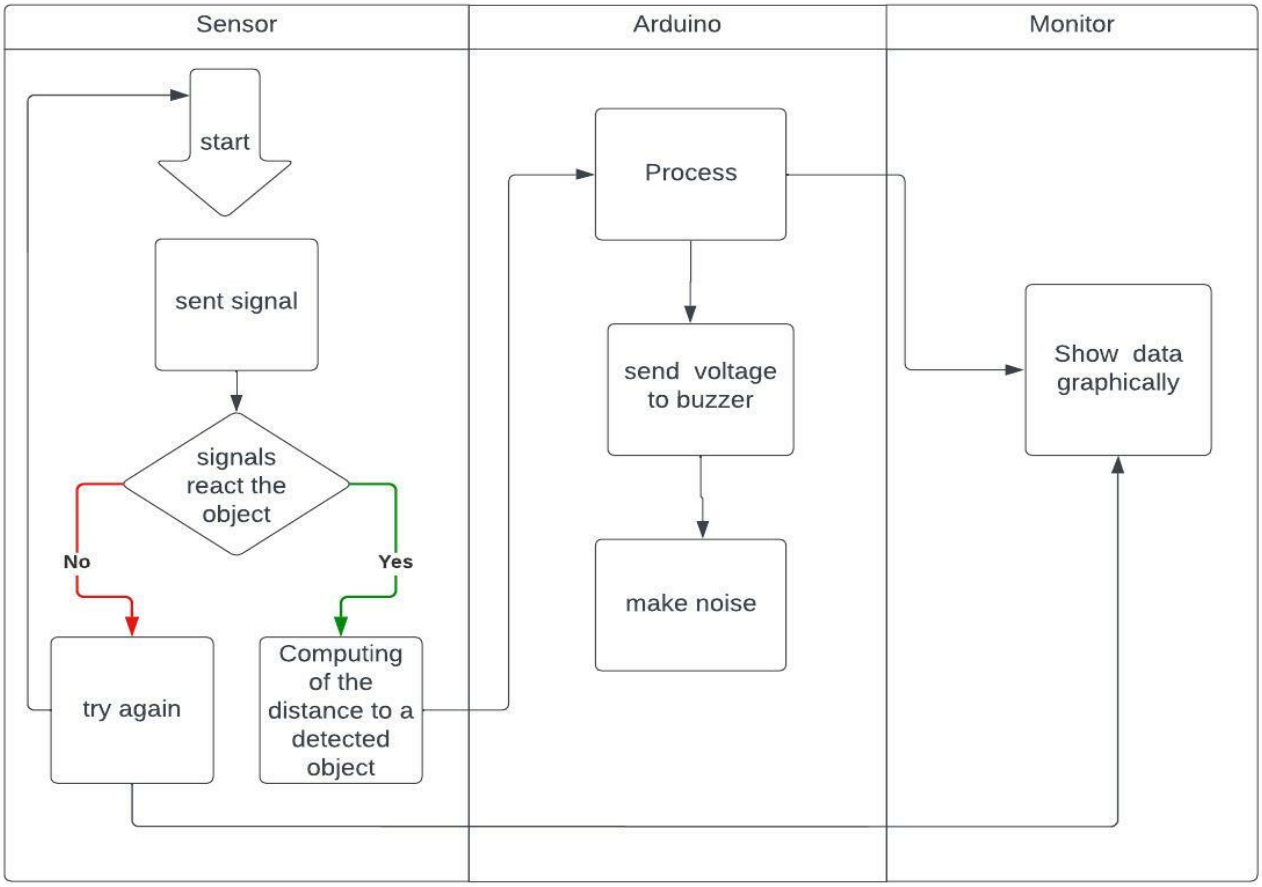
3 Planning

Week	Objectice	Duration
3	Creating group members	1 Day
4	Resarech about requirements	2 Day
5	Group meeting	2 Hours
6	Combining Project	3 Days
7	Programming and latex	2 Day
8	Midterm	1 Week
9	Presentation	1 Week

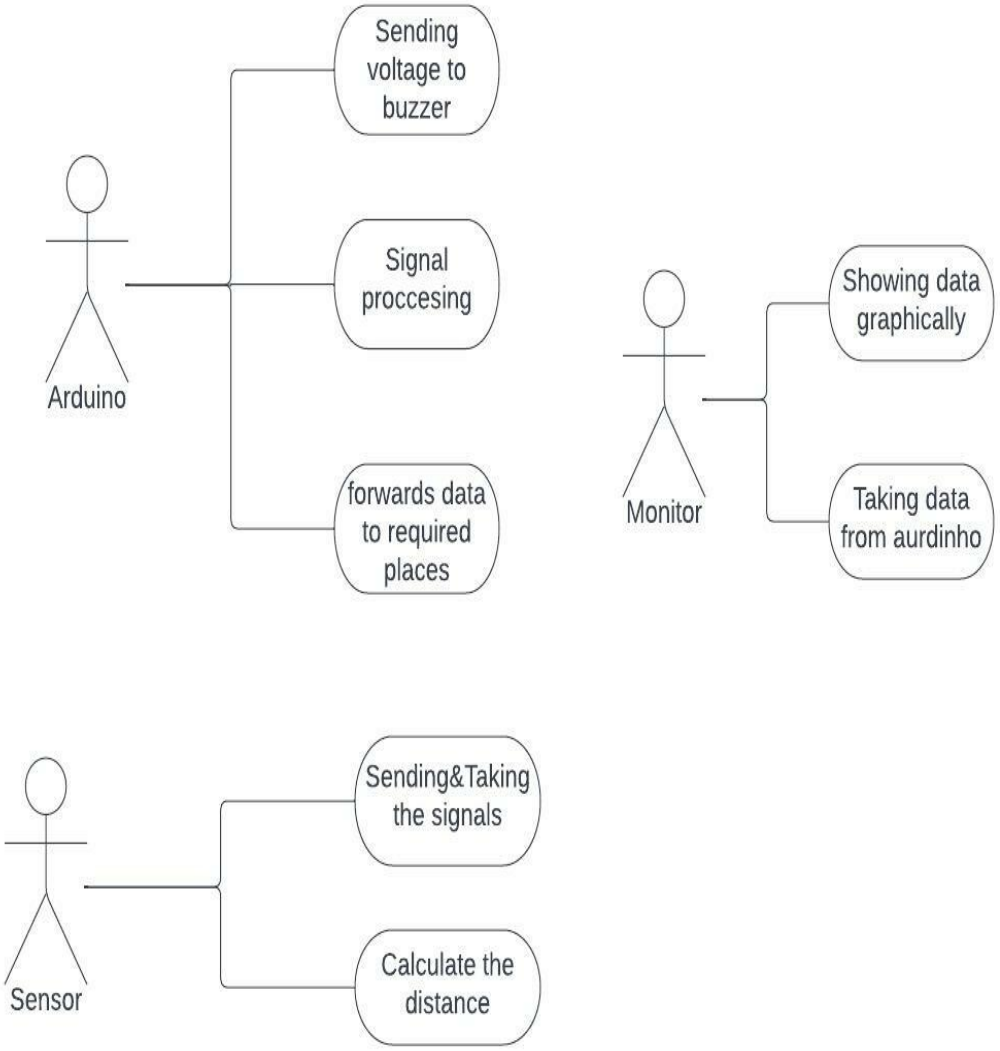
4 Test Cases and Expected Sysytem Responses

Test case	Geting satisfied final
Testting code	No bugs in code
Testing sensors	First sensor was not working we take one more new sensor
Testing arduino	Working without problem

5 Activity Diagram



6 Use Case Diagram



7 References

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