Project Planning

Ultrasonic Object Detector
sdmay25-36
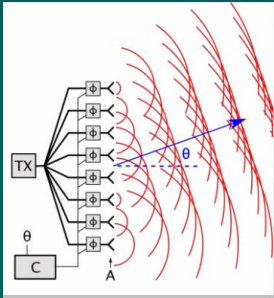
- Brock Dykhuis
- Nate Clarke
- Nicholas Jacobs
- Jonathon Madden

Project Overview

- Design an ultrasonic radar

- Array of transducers

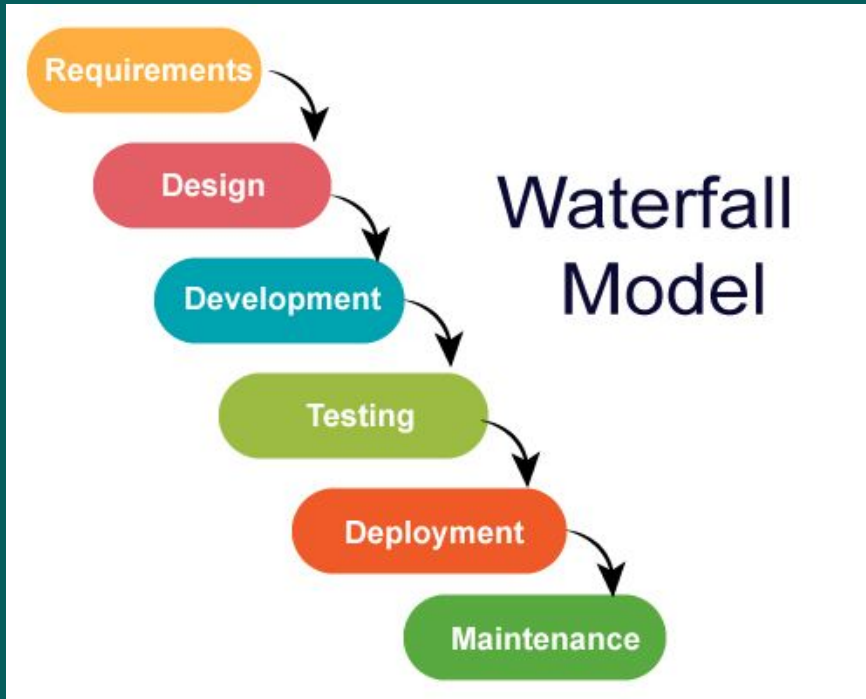- Rely on reflected sound waves to determine object distance

- Use of time-delay (phase) to control scanning direction and location
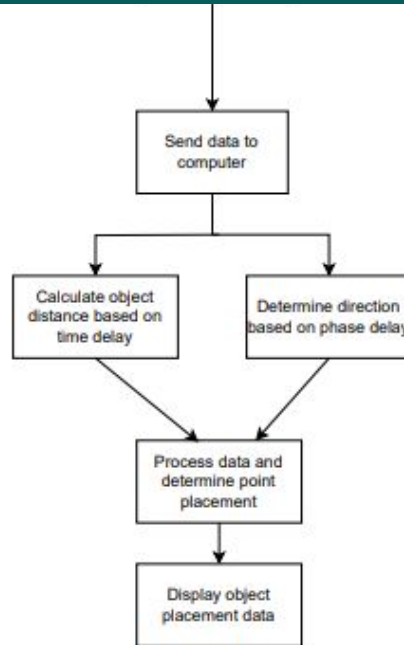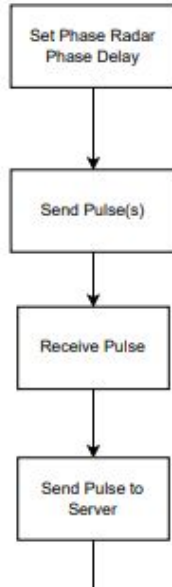
Problem Statement

- Design an Ultrasonic Radar System which can detect small objects

- Accurately detect two side-by-side objects

- Effectively convey an image through the use of an intuitive display

Project Management Style

Waterfall Model: Requirements → Design → Development → Testing → Deployment → Maintenance
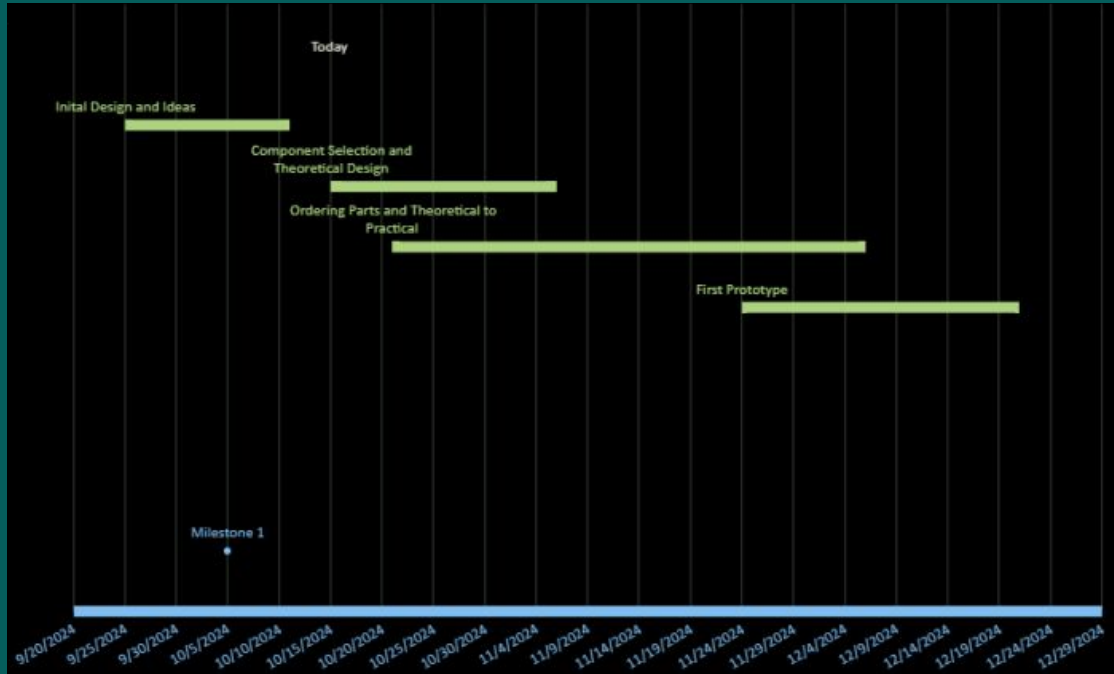
- Our project requires initial planning for what components to order.

- After determining component specifications we need to draft a design.

- Initial implementation will be creating the hardware design, followed by the display software design.

- We will then test the system and deploy an initial version.

- We will continue to maintain the system, improving its accuracy

Task Decomposition

- The first major step is to set the array to a particular phase delay to determine the direction.

- After this the pulses are sent and received, and data is sent to the server.

- The data is then sent to the computer to process

- The data is processed to determine distance and direction

- Processed data is displayed on radar sweep.

Gantt Chart

Key Milestones

No.	Start Date	End Date	Task
1	9/25/2024	10/16/2024	Inital Design and Ideas
2	10/15/2024	11/5/2024	Component Selection and Theoretical Design
3	10/21/2024	12/5/2024	Ordering Parts and Theoretical to Practical
4	11/24/2024	12/20/2024	First Prototype

Key Risks and Mitigation Strategies

Components

- Be careful with our transmitters and receivers, to make sure we do not fry too many of them

- Research components to ensure they have the right specifications needed for this project

On Task

- We meet weekly with our team and advisor to make sure we are getting stuff done

Base Knowledge

- Our group does not have much experience with radar systems or ultrasonic sensors, we plan on talking with some professors

- Our group will also look over past group projects for information and insight

Questions?