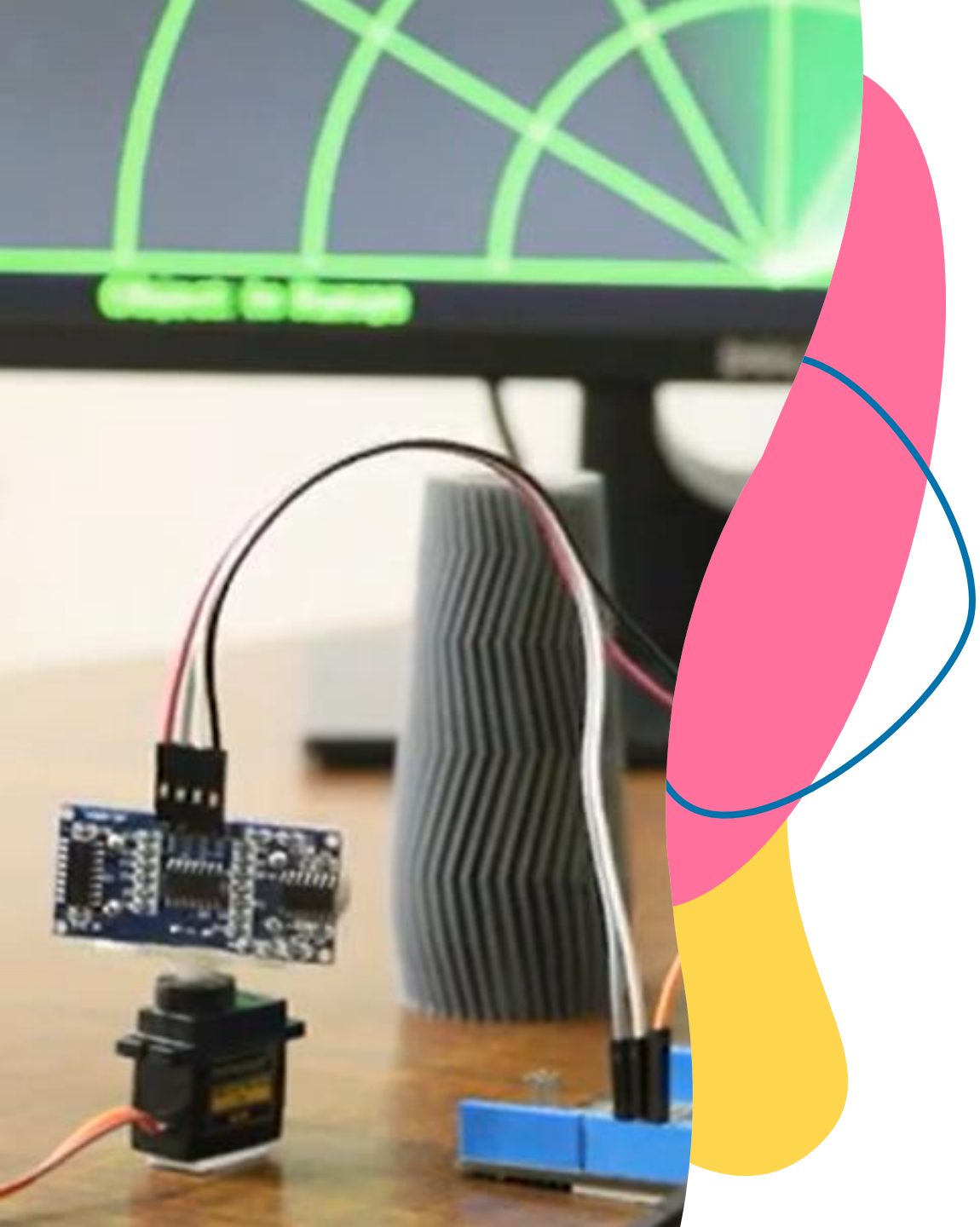
Ultrasonic ranging with ESP32

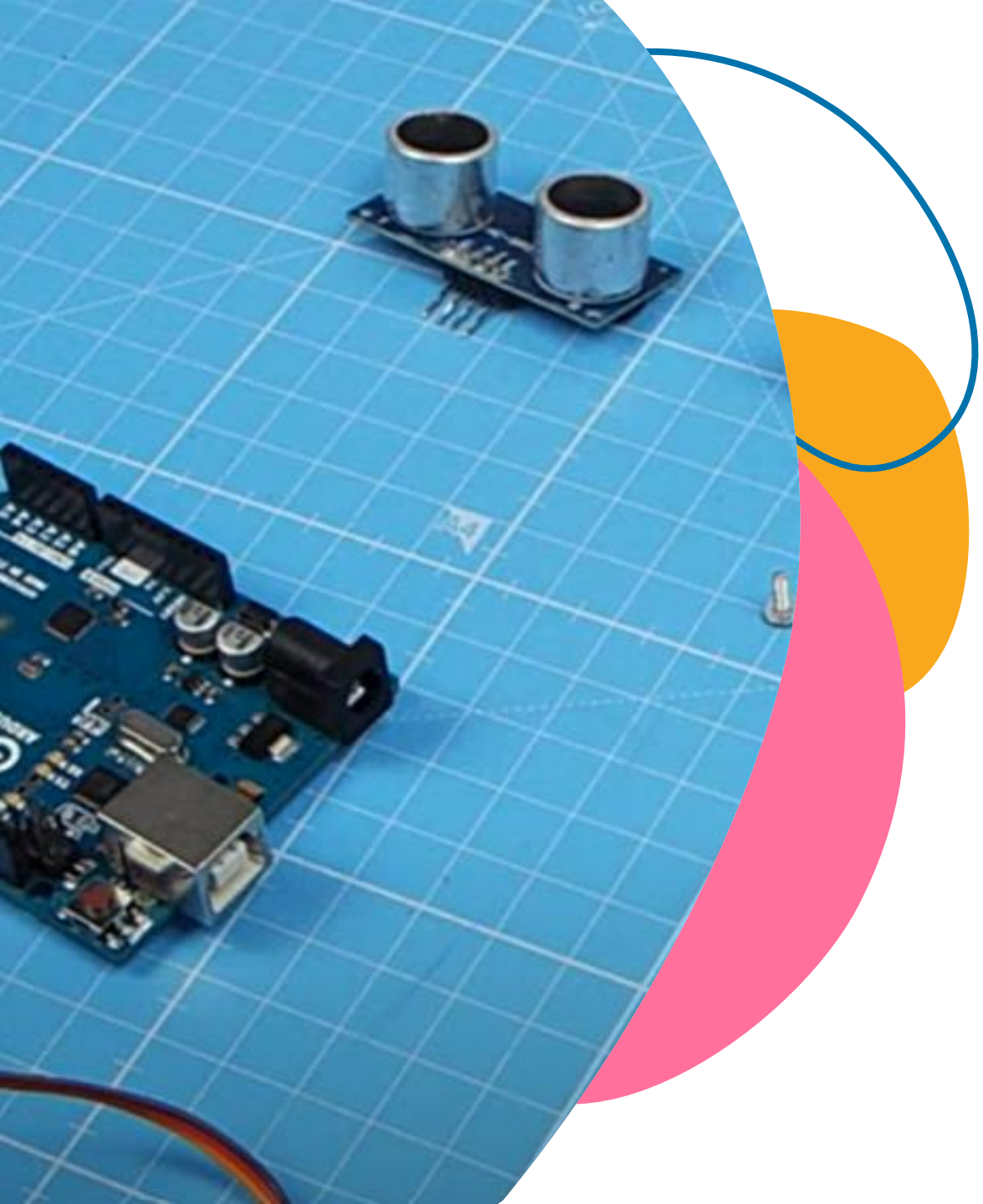
IoT Project Presentation

SENTHILNAATHAN K - 210701238
SHAMINI P N - 210701239



Agenda

- Introduction
- Purpose of Project
- Components used
- Circuit diagram
- Conclusion and future enhancements



Introduction

This project delves into the construction of an DIY ultrasonic ranging system, also known as a radar.

This system utilizes an ESP32 microcontroller, a servo motor, and the Blynk application for data visualization.

The measured parameters are plotted as a radar form in PROCESSING IDE and visualized in Blynk app

Components

ULTRASONIC SENSOR

SERVO MOTOR

ESP32

Arduino IDE
Processing IDE

Blynk app

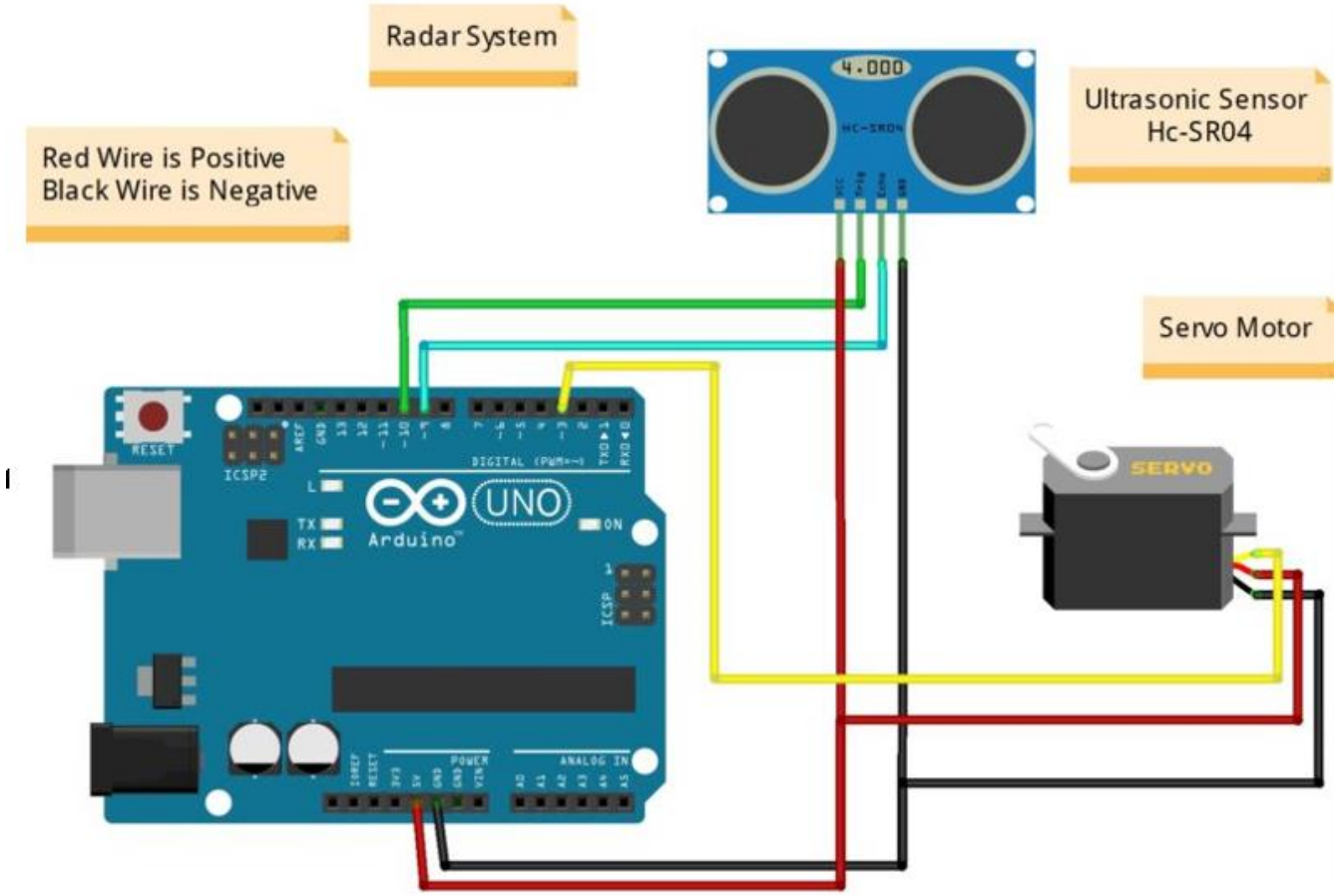
Purpose

The primary objective of this project is to build a practical ranging system using readily available components.

Through its construction, we gain valuable insights into the functionalities of:

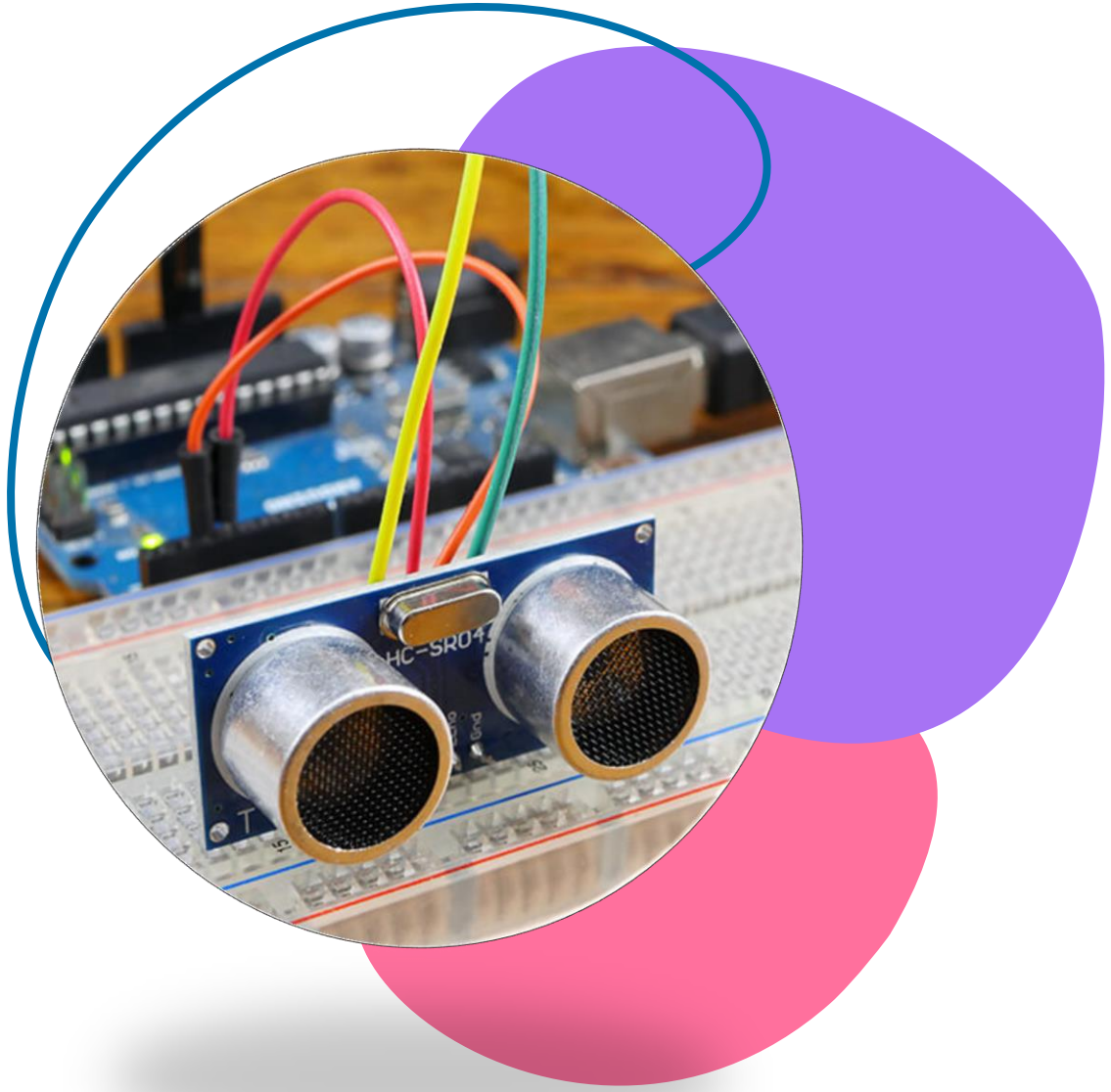
- Ultrasonic sensors for distance measurement
- ESP32 microcontrollers for data processing and communication
- Servo motors for controlled movement of the ultrasonic sensor
- Visualizing the results using PROCESSING IDE

CIRCUIT DIAGRAM



Results

- A simple radar system using Ultrasonic sensor is developed
- Studied integration of various IoT Components in real time
- Serial communication with COM 8 on Processing IDE is achieved
- Device control and Data visualization using Blynk.



Conclusion

In conclusion, this project successfully demonstrates the construction of a functional ultrasonic ranging system. We have gained valuable practical experience working with ultrasonic sensors, ESP32 development, servo motor control, and data visualization using the Blynk app.

Future enhancements：

Additional sensors to improve accuracy and coverage, such as infrared or LIDAR sensors.

Implementing machine learning algorithms for object recognition and classification could further enhance the system's capabilities.

Thank you