



Princess Sumaya
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Path Finder, Sharp Shooter Robot

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Introduction

Our project focuses on developing an advanced line-following robot. The robot is designed to stay on track along black lines and it automatically adjusts its wheels when it navigates white lines to stay on the right track. It has dual control modes: a manual mode operated via Bluetooth and an autonomous mode using the onboard sensors. Additionally, the robot also integrates a shooting mechanism that is capable of detecting an object at specific distances.

Design

This project was designed using two PIC16F877A microcontrollers interfaced with 4 DC motors using an H-Bridge, 2 IR sensors, an IR sharp sensor, a servo motor, and an HC-06 Bluetooth module.

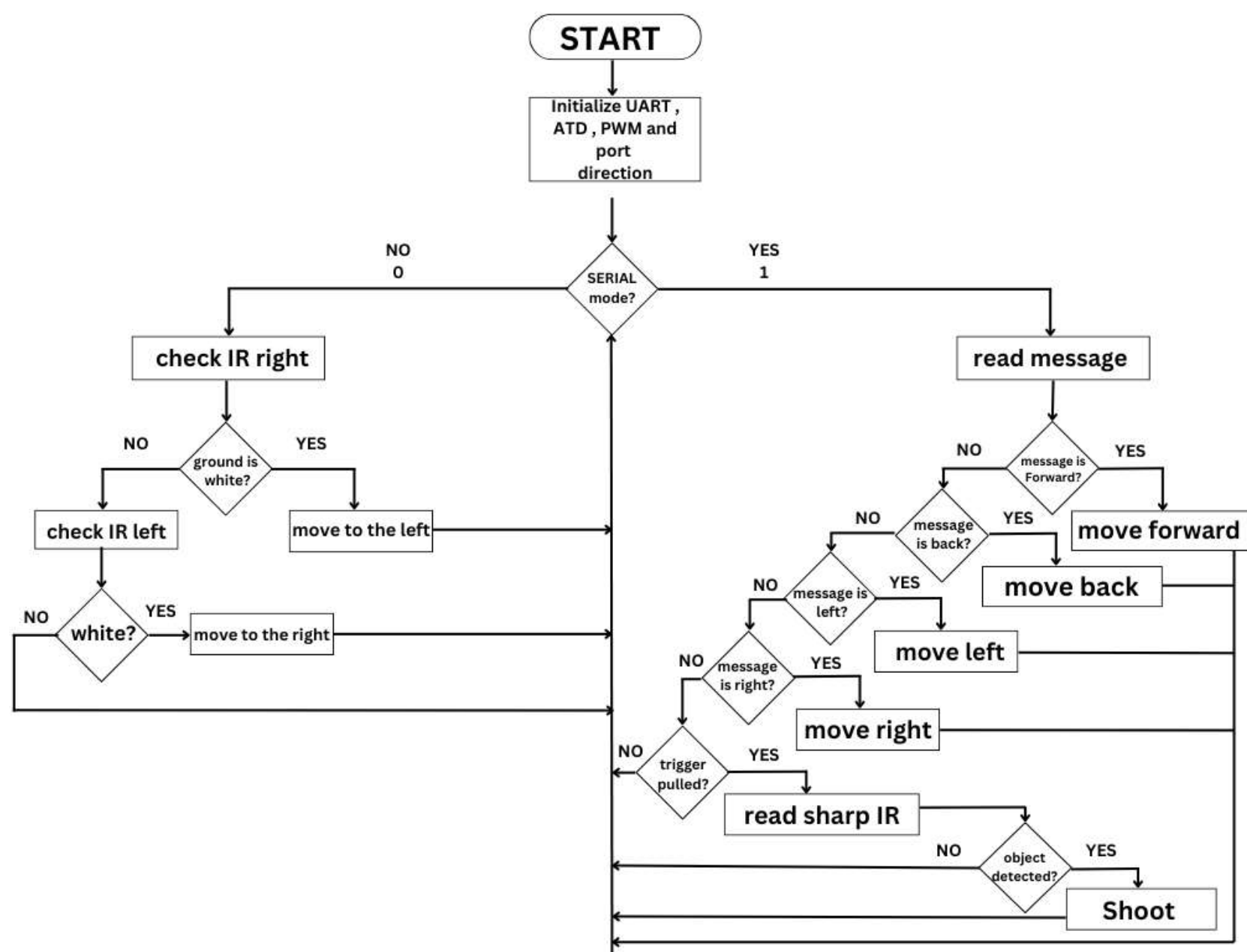


Figure 1: Software Design

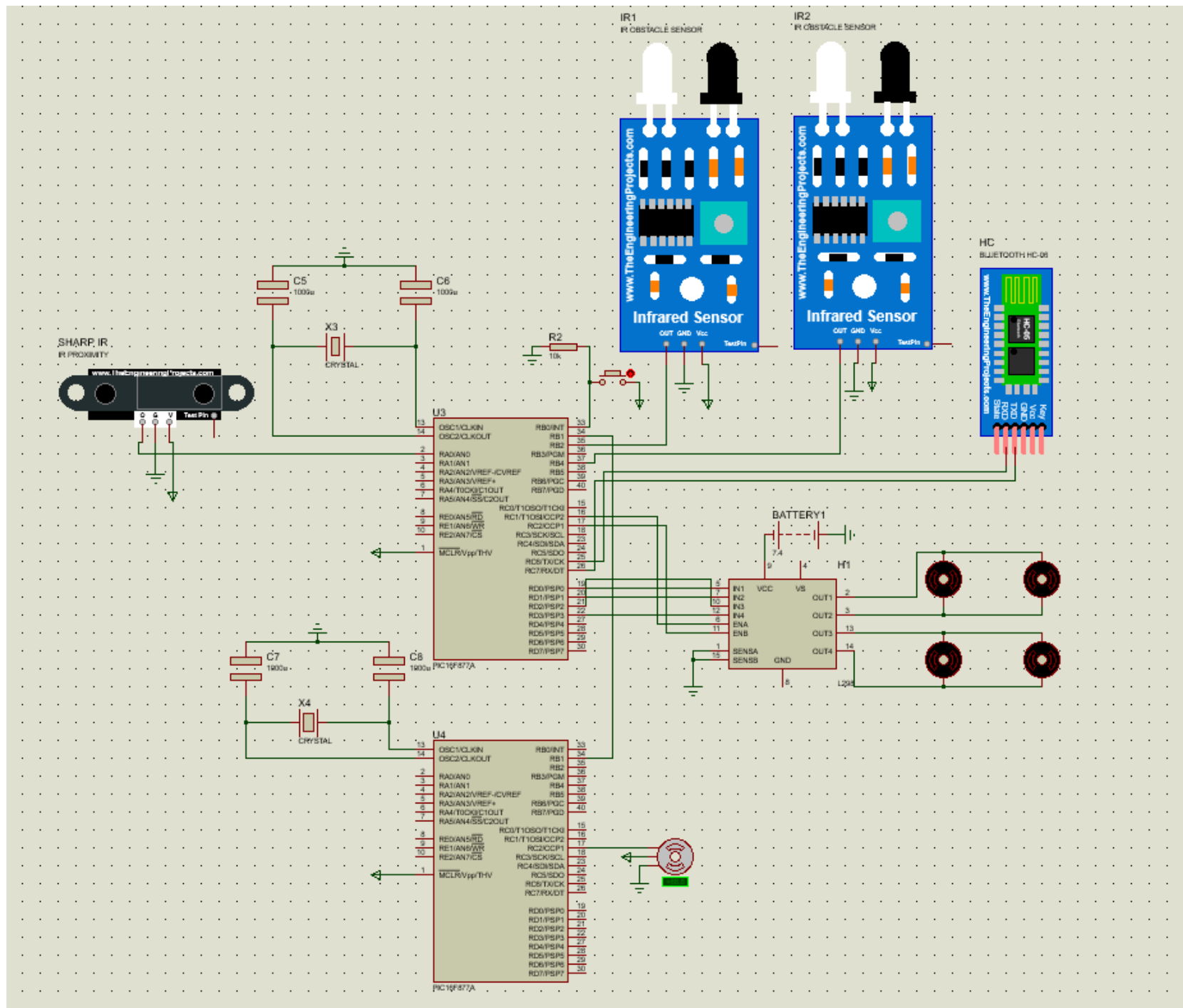


Figure 2: Hardware Design

Results

Our robot excelled in achieving our goals. In autonomous mode, it navigated the black line, responding intelligently to white lines. The front IR sharp sensor detected the object and the servo shot at it. And in Bluetooth mode, our robot showcased precise control through mobile devices. Check out snapshots of our robot in action below.



Figure 3: Final implementation (1)

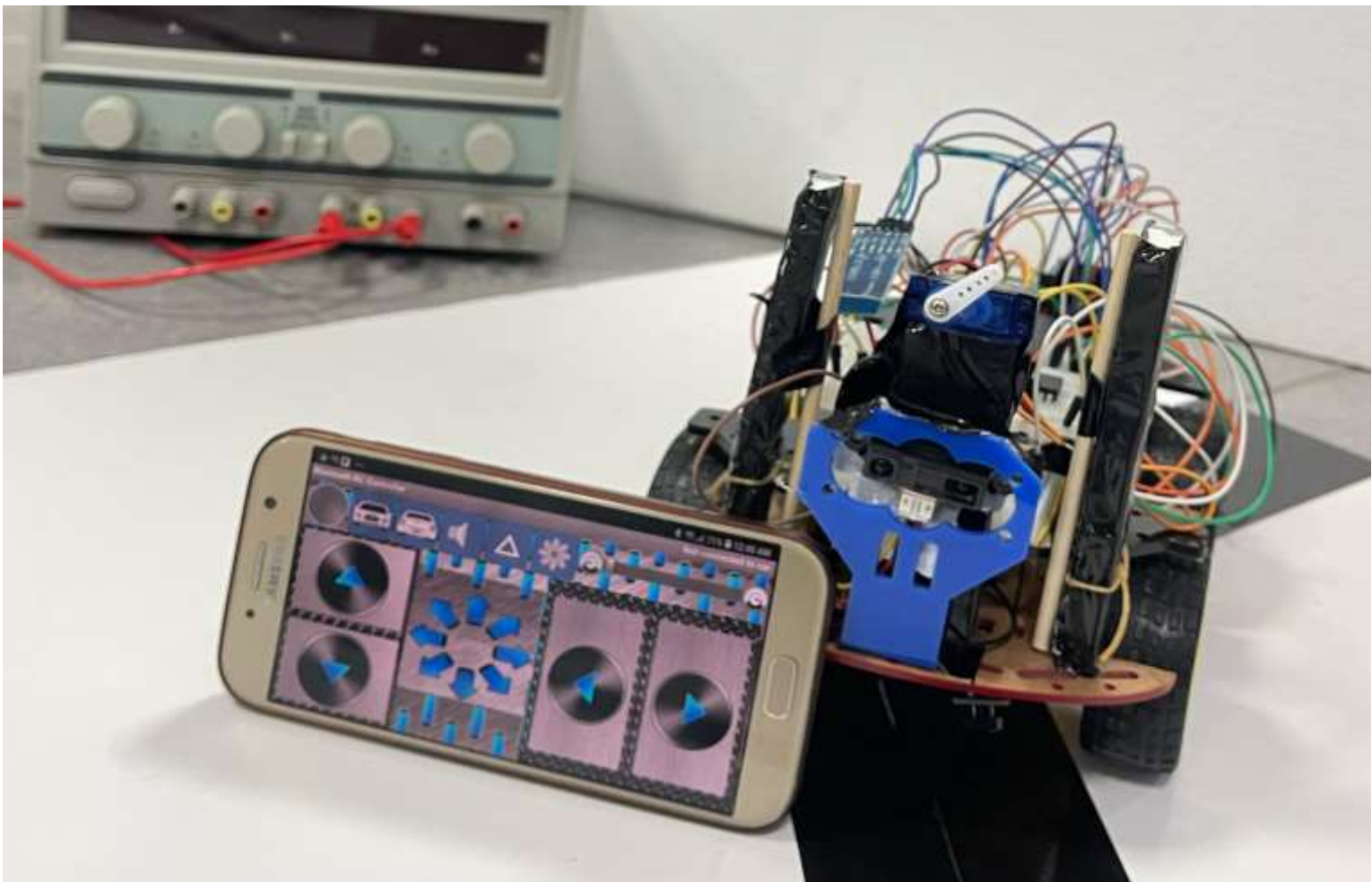


Figure 4: Final implementation (2)

Scan the
QR code to
explore our
GitHub



Conclusion

Although building our Robot was a challenging experience, we successfully managed to achieve the desired functionalities and meet the requirements of this project. Through this process, we gained a deep knowledge of microcontrollers and sensors and how to integrate them to build a comprehensive robotic system.