ROMOB

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Introduction

ROMOB is a smart robot that can vacuum and mop the floor on its own. It uses the PIC16F877A microcontroller to control its movement, cleaning, and sensors. ROMOB helps keep your home clean without any effort, using simple electronics and smart programming.

Design

In the following, the Flowchart of this project that demonstrates how our Vacuum/Mob Robot works according to our code flow:

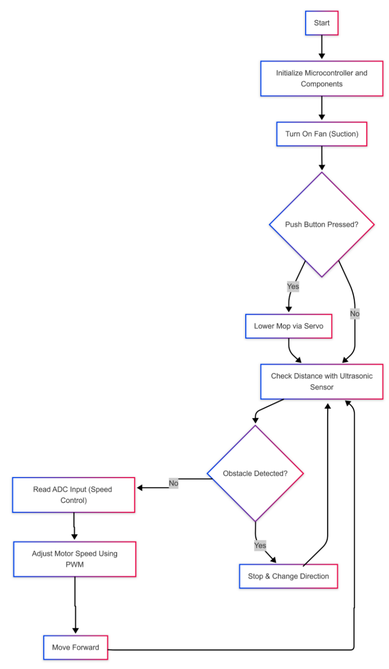

Figure 1: Flowchart

What follows, is the designed circuit of the system we are seeking to construct:

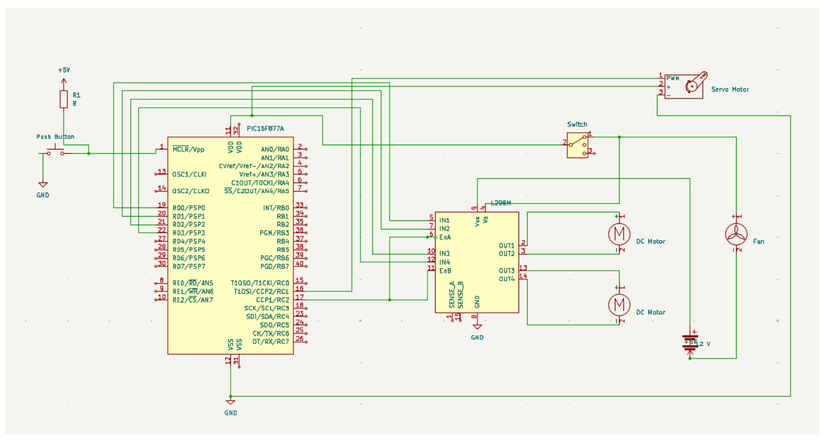

Figure 2: Schematic Design

Results

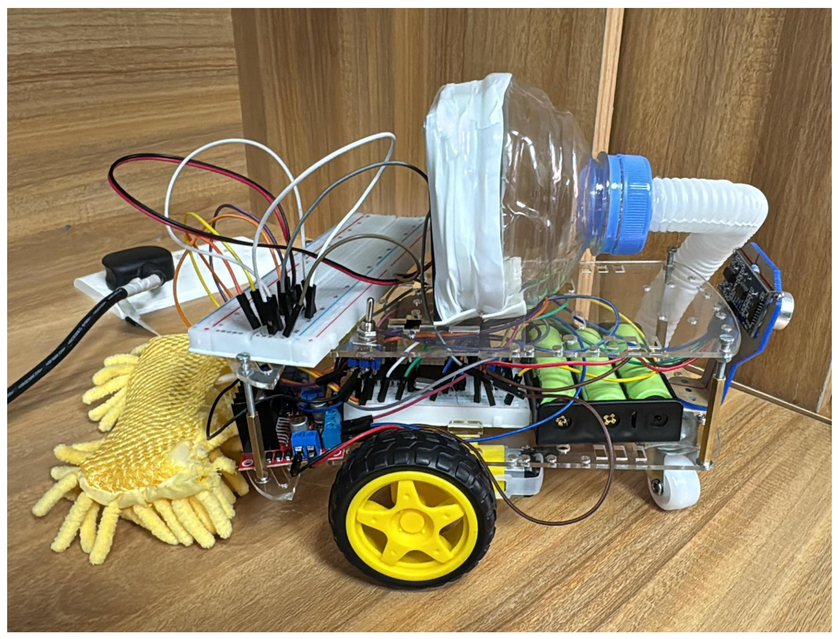

Figure 3: Right view of ROMOB.

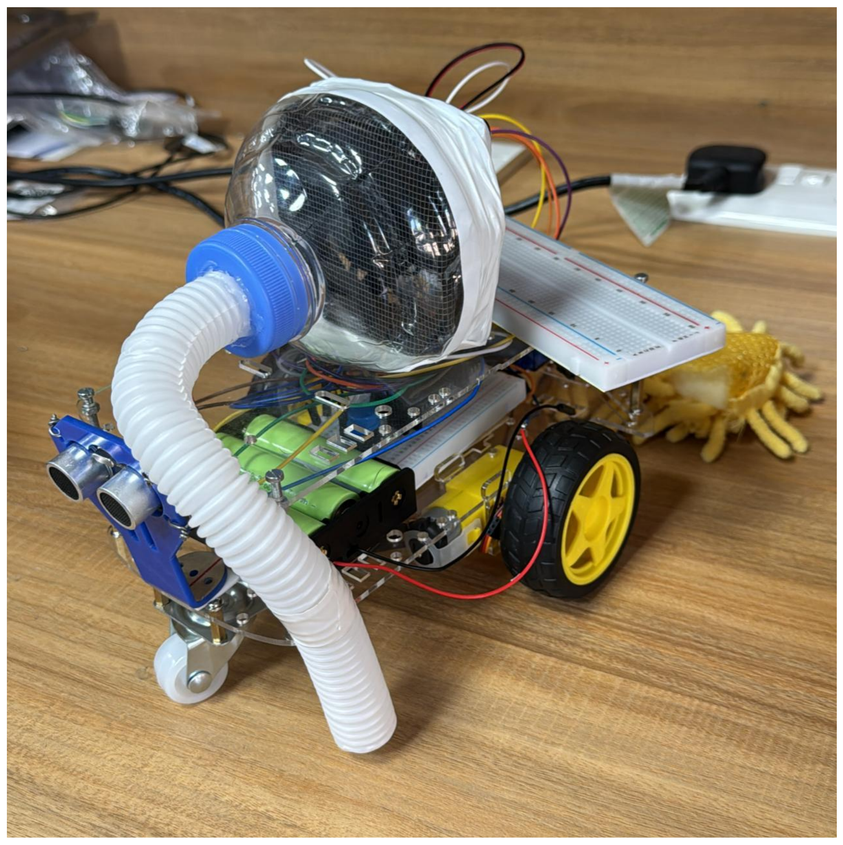

Figure 4: Front-Left view of ROMOB

The final design of the ROMOB robot successfully achieved a balance between performance and ease of maintenance. The placement of key components—such as the motors, ultrasonic sensors, microcontroller, fan, and power supply—was carefully arranged to support smooth movement and effective cleaning. This layout improved both vacuuming and mopping functions during operation.
ROMOB proved to be lightweight, durable, and capable of handling various cleaning surfaces. The organized structure also allowed easy access to all parts, making maintenance simple. Overall, the robot performed reliably in real-world tests, showing strong cleaning efficiency and obstacle avoidance.

Conclusion

The ROMOB project shows how we can build a smart cleaning robot using basic electronic components and a microcontroller. It can move on its own, avoid obstacles, and clean the floor using a vacuum fan. The PIC16F877A microcontroller controls all parts of the system. It turns on the fan at the start, controls the speed of the motors using an ADC signal, and uses an ultrasonic sensor to detect objects and avoid them.
We also added a push button that lets the user lower the mop using a servo motor. This gives the robot the ability to clean in different ways. By using simple sensors and components, ROMOB can clean floors in an efficient and automatic way.
This project helped us learn how to combine hardware and software in an embedded system. It is a good example of how microcontrollers can be used in real-life applications to solve everyday problems.