

Autonomous Micromouse

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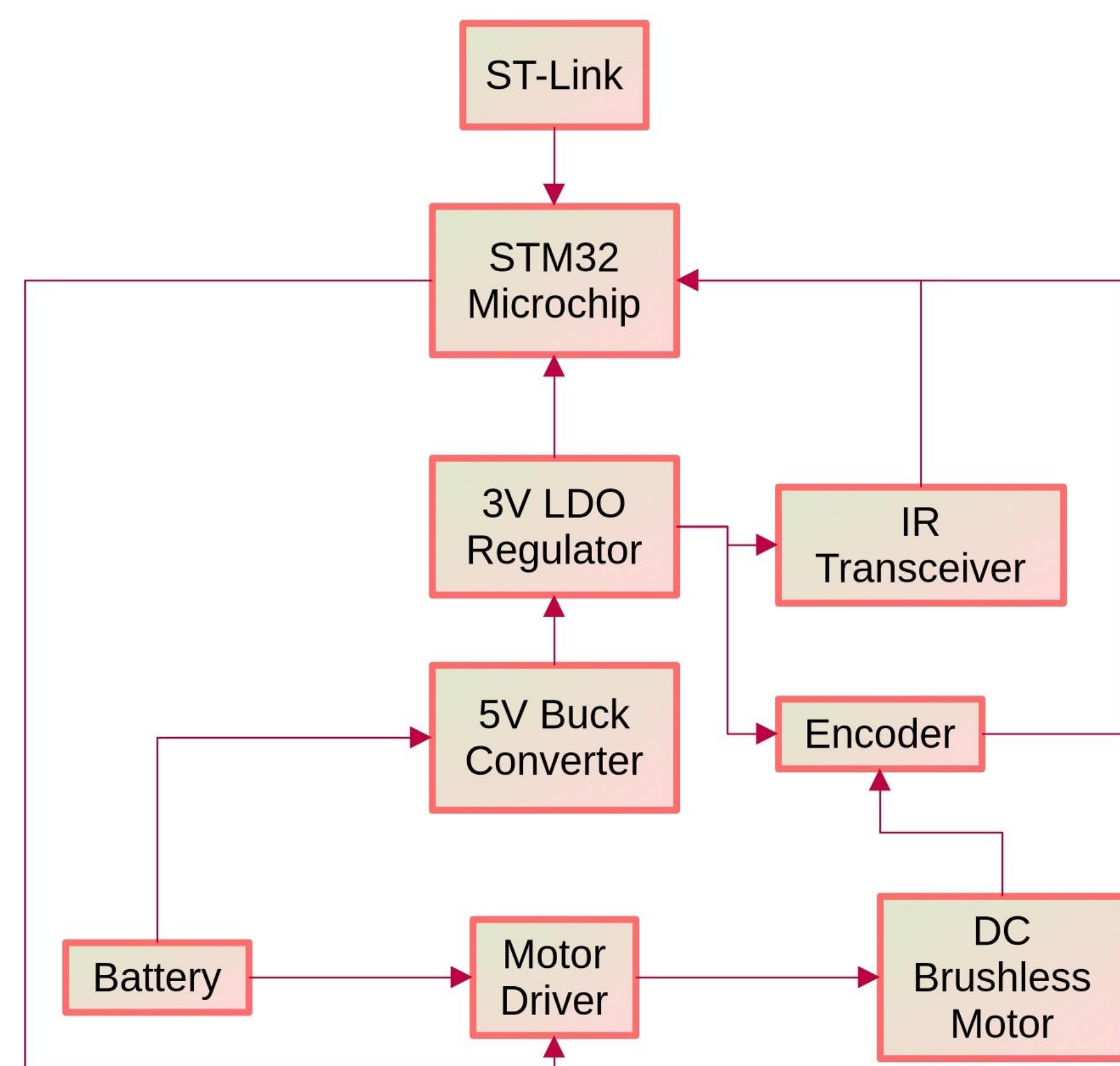


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New Hampshire

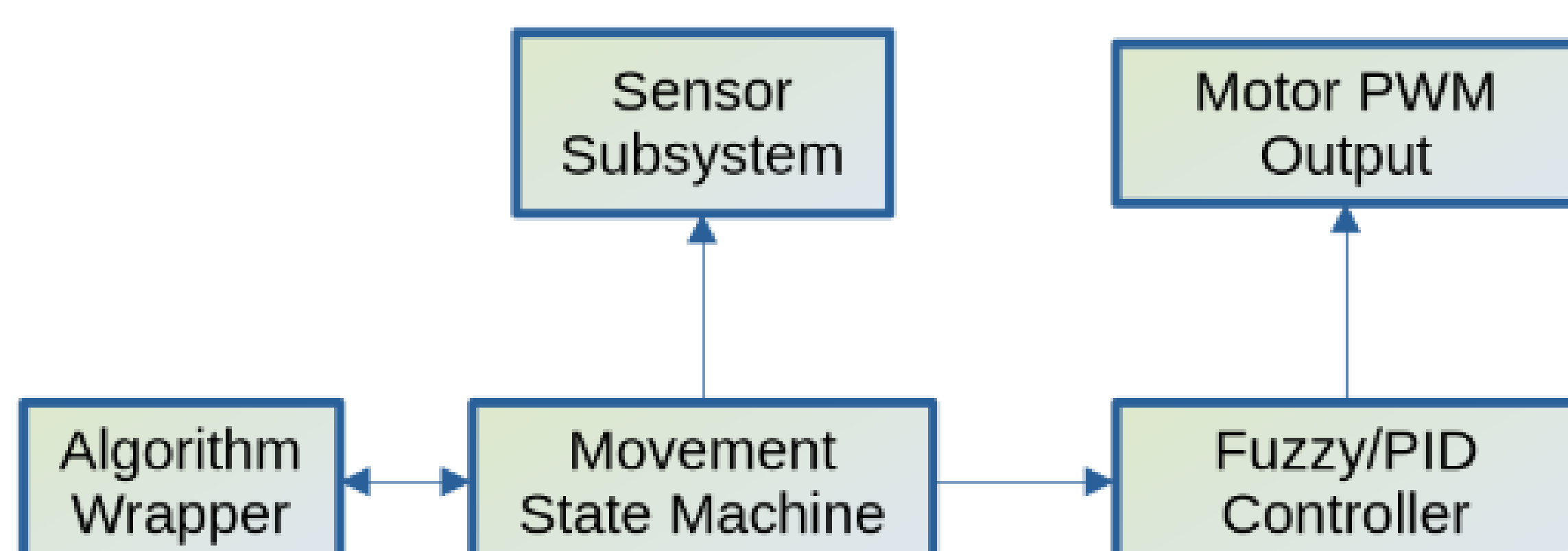
Introduction

- Micromouses utilize IR sensors, PID or fuzzy controller, and a flood fill navigation system to solve a maze autonomously.
- Problem: Previous micromouse had a big footprint, moved slowly, and unreliable navigation.
- **Goal: Build a compact and reliable micromouse that is capable of solving a physical test maze.**

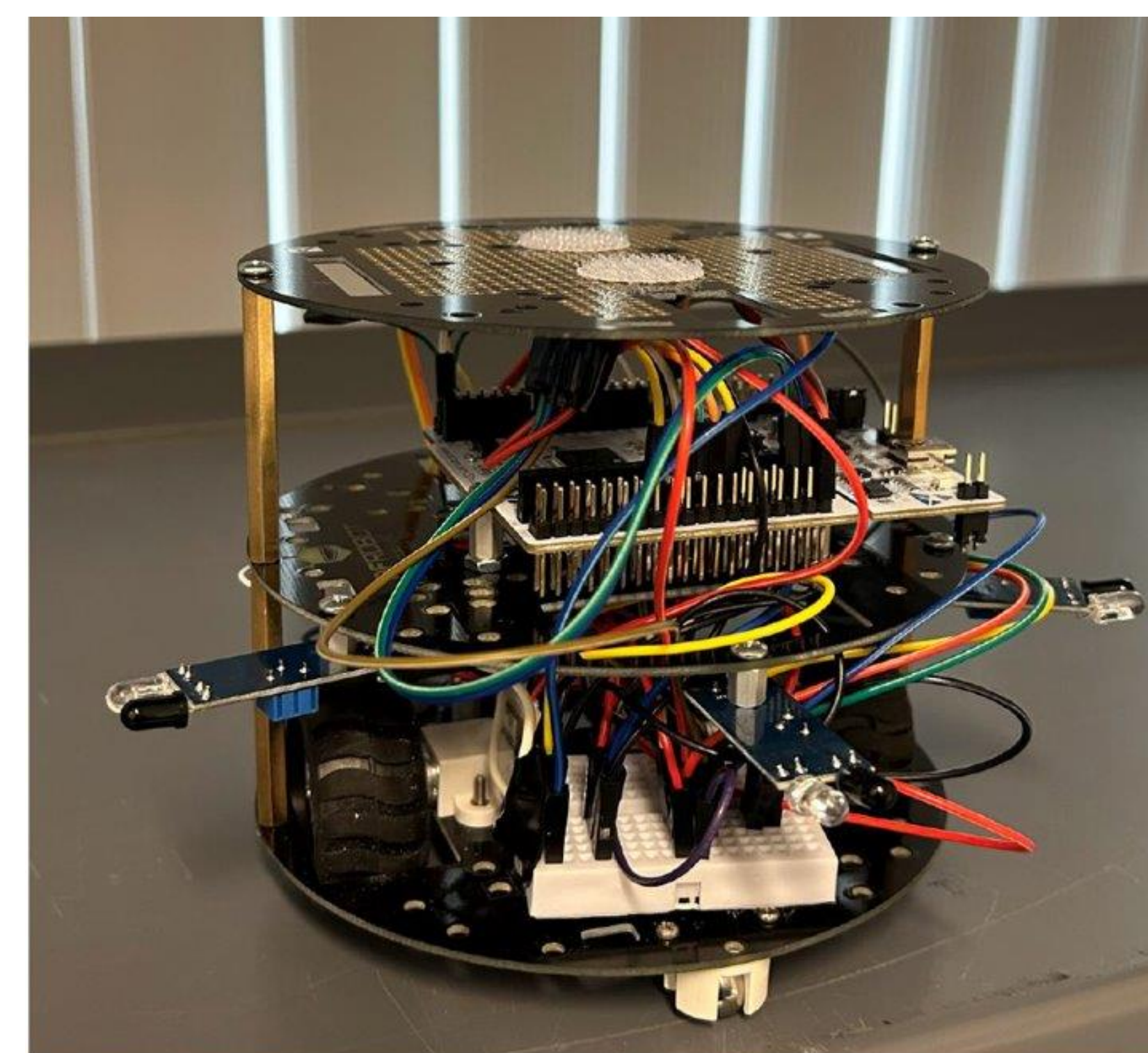
Hardware



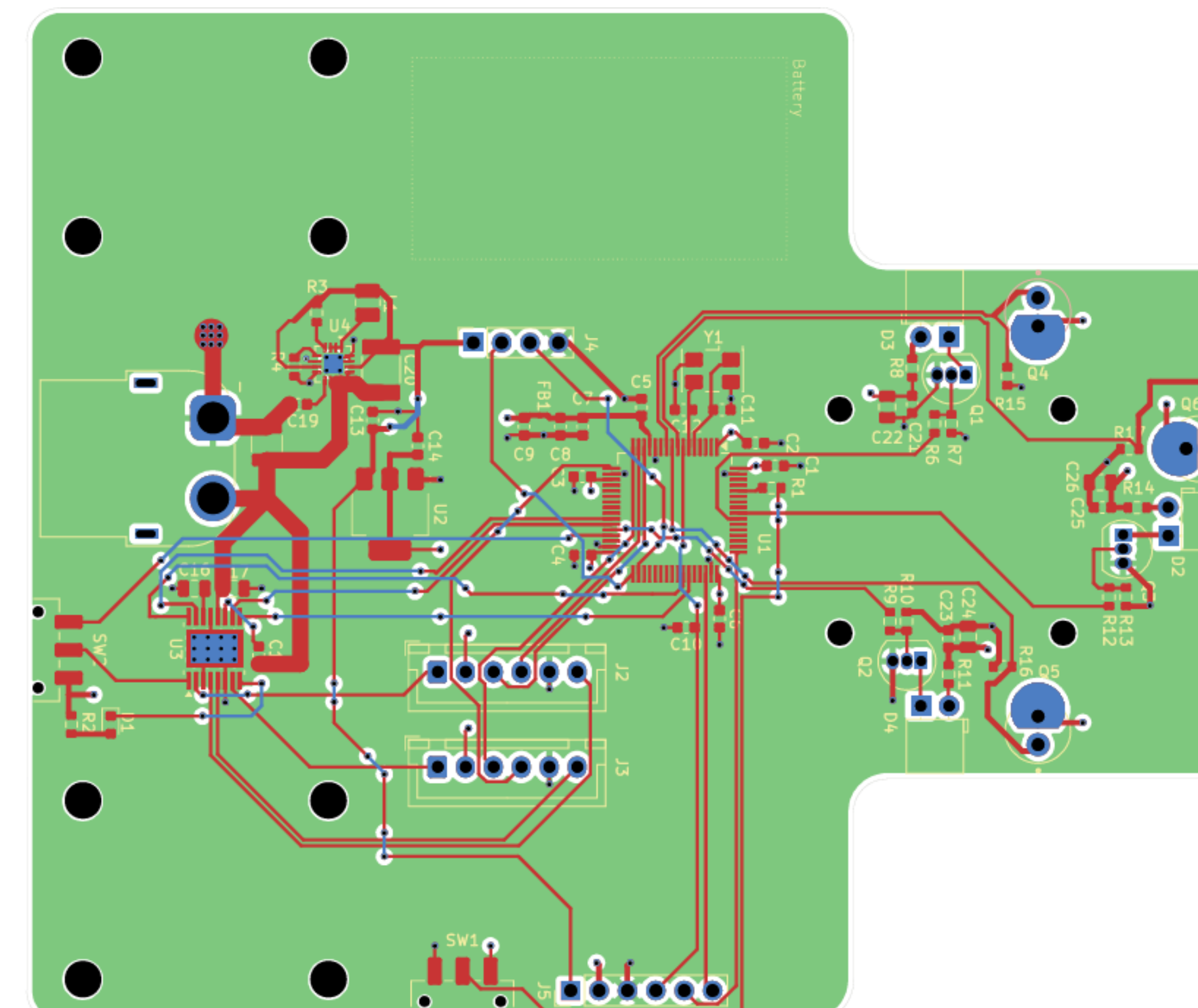
Software



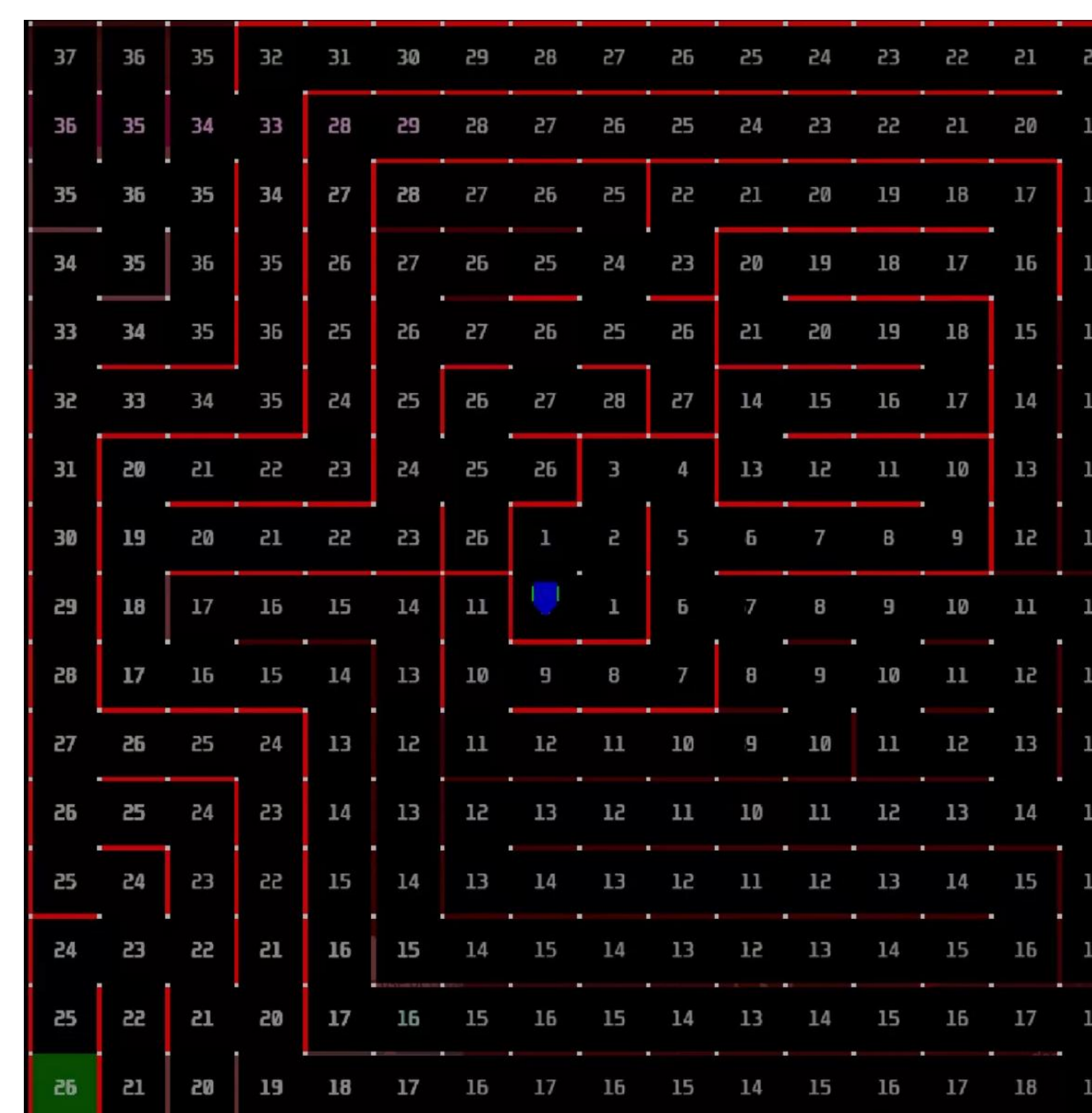
Results



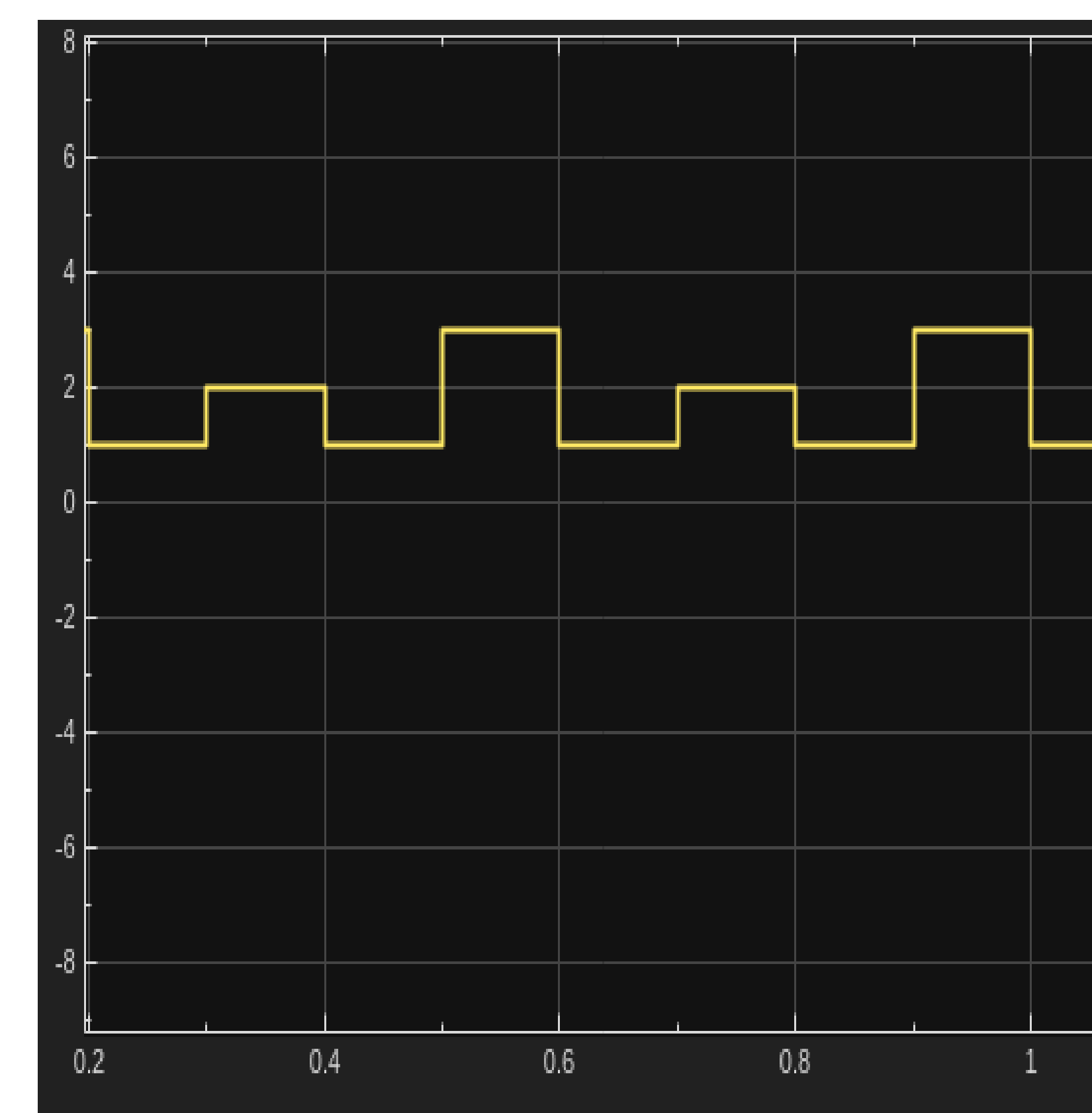
Previous Micromouse



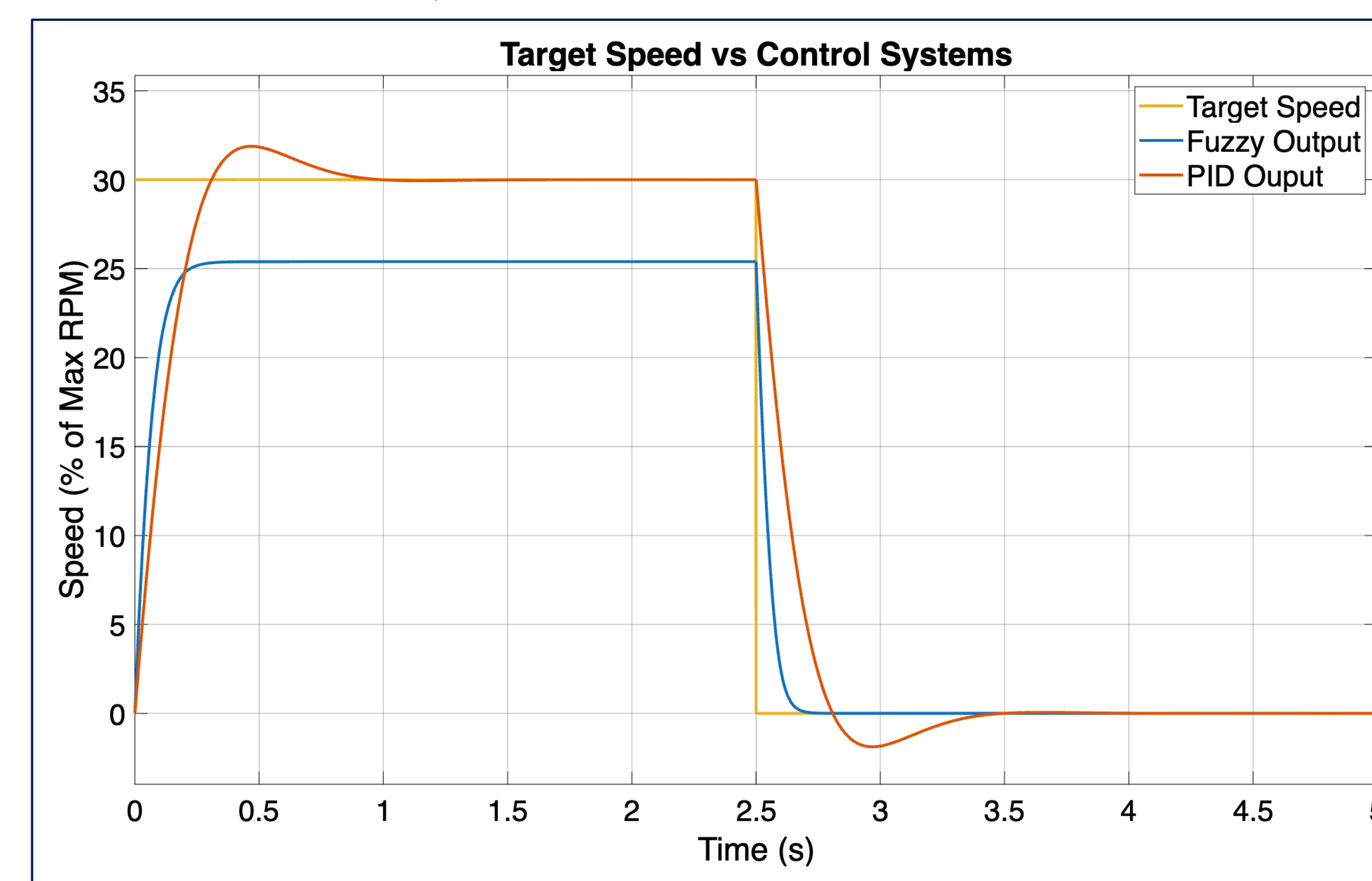
Updated PCB Design



Floodfill visualization



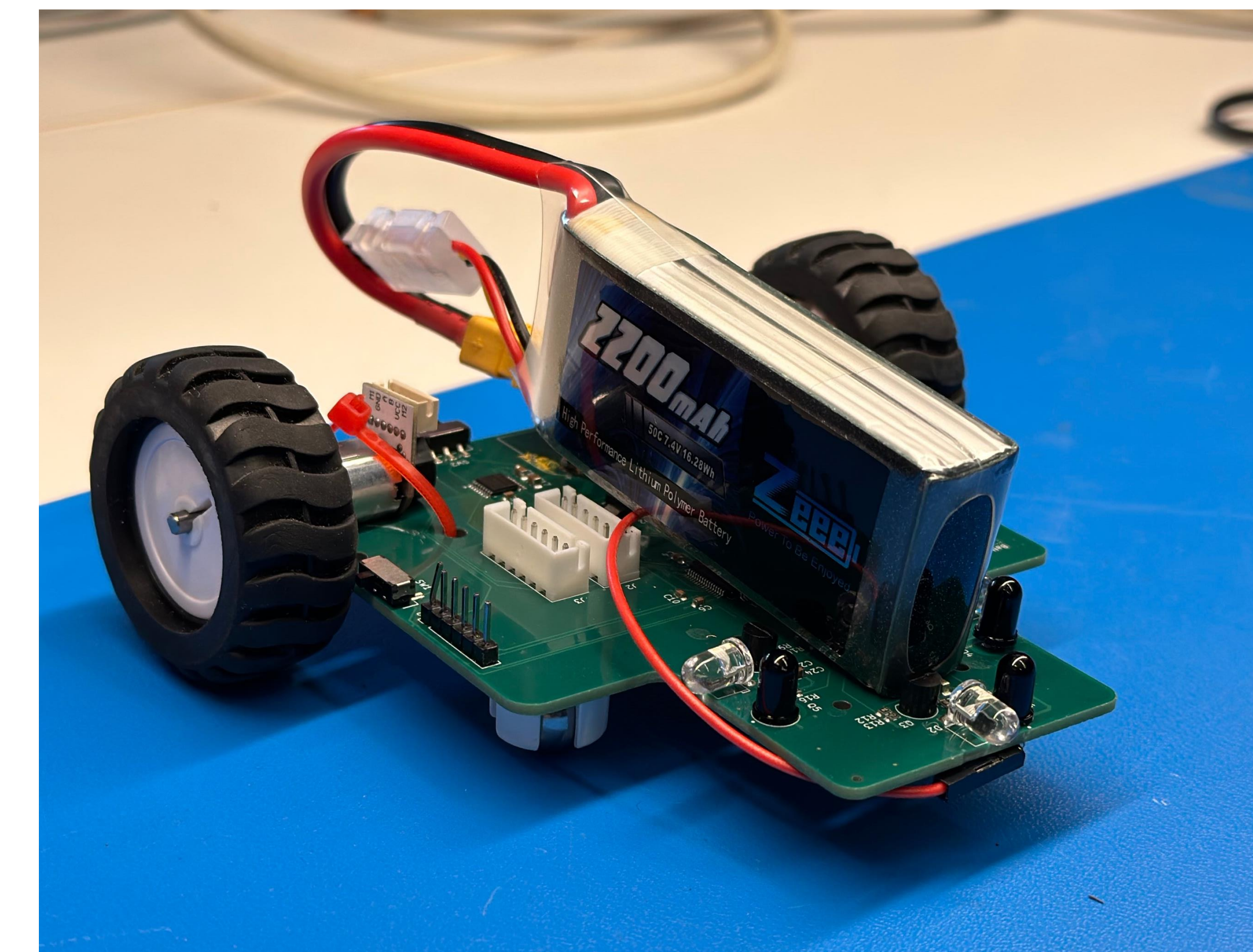
Floodfill State Machine Output



Motor Controller Results

- Ideal Case:
0% overshoot
Steady state error of 0
- PID:
7.89% overshoot
Steady state error of 0
- Fuzzy:
0% overshoot
Steady state error of 5

Final Design



Future Work

- Improve fuzzy controller logic
- Physical test maze
- Turn more efficiently.
- Update maze solving algorithm
- More improvements to physical design

Conclusion

- Created a more compact design
- Found that PID is the better controller
- Created working floodfill algorithm