

GoBabyGo: A joystick-activated bumper car for children with disabilities

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INTRODUCTION

- Few devices exist to support early mobility for children with disabilities.
- Ride-on cars are modified commercial toys that allow for switch activated controls. These allow more accessibility for children with disabilities and their families while reducing the financial burden.
- Ride-on cars with switches are difficult to steer so alternatives are being examined.
- Joysticks can enable steering, but current designs are too complex and time consuming.



Proof of Concept Design



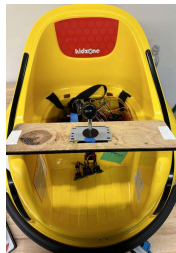
GoBabyGo Switch-Adapted Car

Our goal is to optimize the manufacturing of joystick-controlled cars, making it easier for volunteers to assemble within a single day with readily available household tools.

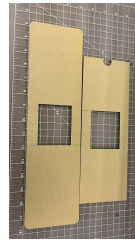
CRITICAL REQUIREMENTS

- Allow for joystick compatibility.
- Simple enough for volunteers to accomplish in a day (under 5 hours).
- Inexpensive and accessible (< \$300)

DESIGN AND DEVELOPMENT



Initial wood table prototype



Initial acrylic table prototype (failed)



Second acrylic table prototype



Initial latch



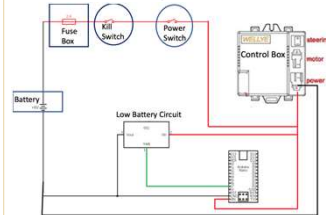
Final childproof latch



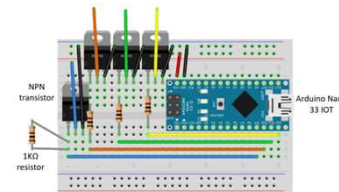
Side Joystick mount

- Childproof latch allows for ease off access in and out.
- Customizable Joystick mount (Center, Right or Left)

Circuitry



Simplified Wiring diagram



Breadboard diagram

Instructions Booklet



Look here for our instruction book

- Enables step by step instructions for modifications.
- Includes labeled pictures of parts with each step to help with manufacturing

RESULTS/VALIDATION



Child testing



Final prototype

- Can be manufactured < 5 hours as compared to 30 for the concept design.
- Instruction booklet enables easy manufacturing.
- Total cost for modifications is < \$300.

CONCLUSION & FUTURE WORK

- Create design with buttons to control the car as well as the joystick and support fixtures to the table, so it does not rock back and forth.
- Enable proportional control.

Acknowledgements

Eli Patten

The families who allowed their children to test our designs.

Mechanical Engineering Capstone Exposition

May 30th 2023, Husky Union Building, University of Washington, Seattle

GUO What is cost for a single modification?

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