GoBabyGo Wild thing!

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Introduction

- The GoBabyGo project at the University of Delaware has developed a set of DIY cars for families with children with mobility restrictions.
- Existing research shows that enabling young children with self-control of their own environment can have meaningful impacts on the long term outcomes given such impairments as cerebral palsy or muscular dystrophy.

Purpose of the Project:

- improve posture which is our main goal.
- Move and interact with their peers (Socialize).
- Reduce depression.
- Allowing kids to play Kickball/Soccer.

Inspiration:

- Pinball game function.
- Mario Kart game

Clients

- **Dr. Kyle Winfree.**
- Assistant Professor
- PhD,Biomechanics and Movement Science, University of Delaware.
- MSE,Robotics, University of Pennsylvania.
- BS,Physics, Northern Arizona University.

- **Dr. James Cole Galloway**
- Professor, Dept. of Physical Therapy.
- University of Delaware.
- Founder of the project.

Client Requirements

- Motor control with switch circuit.
- Allow the kid to play kick ball/soccer with her family.
- Simple control of the flippers used to kick the ball

Project Constrains:

- Design of the car itself.
- Distributing the weight equally on the car.
- Using the correct amount of voltage.
- Low Budget.
- Ensuring the motor can deliver enough force to kick the ball.
- Implementing and outdoor real-world and practical gaming system.

Technologies:

ARDUINO OPEN-SOURCE COMMUNITY

sparkfun ELECTRONICS

Figure 1 : Technologies Used

Sub-Systems

- **Switch circuit** – Giving the signal thus giving power to the Linear motor.

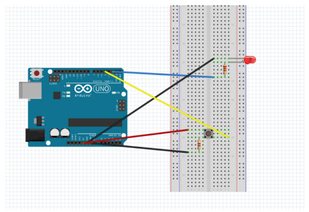


Figure 2: Control the output using a switch

- **L298 H-Bridge -** To control the motor accordingly.

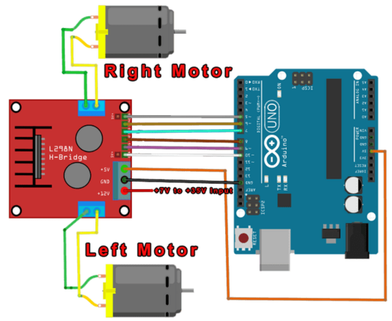


Figure 3 : Controlling the linear motors using dual H-bridge motor driver and Arduino

- **(DIY) reciprocating motor -** Will act as Will act as the force thus pushing/keeping the ball.

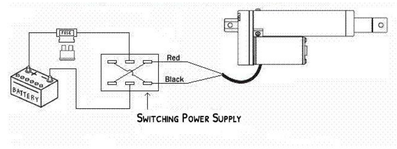


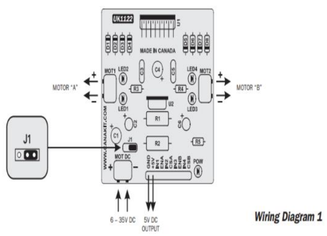
Figure 4: Circuit showing the switching power supply

- **Flippers –** Will attached to the motor thus kicking the ball.

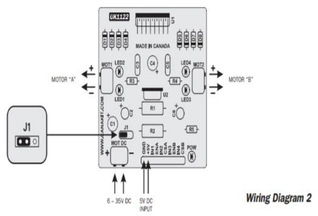
Figure 5: Flippers used to kick the ball

Results and Final Design

- Used Arduino UNO Microprocessor.
- Integrated the switch code to be compatible for the L298 H Bridge
- L298 H-Bridge instructions:
  - Motors:
    - Controlling Motor 1 : ENA “High”
    - Controlling Motor 2 : ENB “High”
  - Directions:
    - IN1 & IN2 for Motor 1
    - IN3 & IN4 for Motor 2



Wiring Diagram 1



Wiring Diagram 2

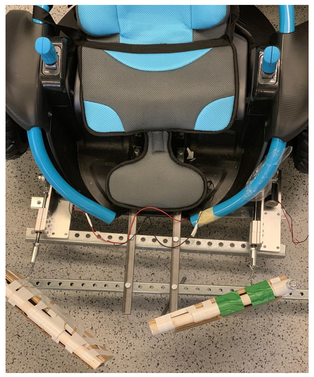


Figure 6: Integrating the switch circuit, linear motors with the Wild Thing

Conclusion

- We were able to implement the function of the pinball to allow the kid with disabilities to play kick ball with their family, thereby enabling them to socialize with other people.
- Using the dual H-bridge, we were able to control both the flippers simultaneously to kick the ball.
- Using a simple switch to control the linear motors, which will thereby control the flippers mimicking the kick functionality of the wild thing.
- The car was tested to ensure safety while driving an playing kick-ball.

Figure 7: Side views of the wild thing car

References

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