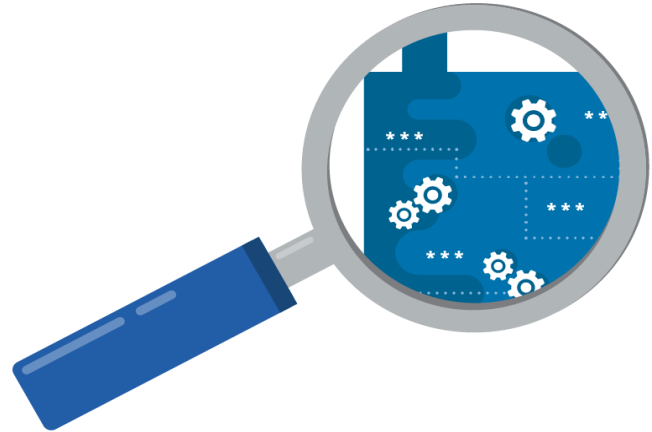# GoBabyGo

Ali Mohammad
Hakem Almutairi
Abdulla Almutairi
Ali Albaloushi
Project Mentor:

Ashwija Korenda

Overview:

- Introduction.
- Why this project was pursued and completed?
- Our clients and why it matters to them
- What was done?
- How it was done?
- End product
- Conclusion

Abdulla

Introduction:

- The GoBabyGo is an international movement to empower children with disabilities.
- Children with limited mobility often do not receive the much needed exposure of socialization.
- Existing research shows that enabling young children with self control of their own environment can have meaningful impacts.

Abdulla

Why this project was pursued and completed

- Project was pursued because it will allow kids with mobility issues to:
    - Socialize with friends and family.
    - Improve posture.
    - To reduce depression.
    - To explore their environment.
    - To make them kings/queens of their domain.
    - Lessen melancholy.

Hakem

Clients:

Dr. James Cole Galloway

- Professor, Dept. of Physical Therapy.
- University of Delaware.
- Founder of the project.

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

Hakem

Why does it matter to our clients:

- They want to help families.
- Bringing joy to the child's life.
- Boosts the confidence of the children.
- Allowing the child to move independently.
- Allowing the children to explore their environment.
- They want children with mobility issues to be more social with their peers.

Ali Albaloushi

Client Needs & Family Needs:

- Client Needs:
  - Kick the ball.
  - Simple.
  - Control the motor with a switch.

- Family Needs:
  - Adjust the car so the child can play kickball/soccer.
  - Distribute the weight evenly on the car.
  - Make the seat comfortable.

Ali Albaloushi

Work Breakdown Structure(WBS):

WBS	Task/ Activity	Deliverable	Description	Progression	Implementation on car	Team members
1	Hardware					
1.1	Brushless Motor	Will act as the force thus pushing the ball	Motor that will rotates 360 degrees	Not Needed	Not needed	Whole Team
1.2	Linear Motor	Will act as Will act as the force thus pushing the flippers	Linear motor that allows back and forward motion	100%	100%	Whole team
1.3	Flippers	Kick the ball	Paddles	100%	100%	Ali Albaloushi Abdulla Hakem
1.4	Screws washers	Connectors	Type of fastener mad from metal Plate used to distribute the load.	100%	100%	Ali Albaloushi Abdulla Hakem
1.5	Punched Square tube zinc plated	Punched tube can be telescoped inside other sizes to add adjustable height put the 1 in	A square hollow tube made of steel with holes punched in regular intervals	100%	100%	Ali Albaloushi Abdulla Hakem

Ali Mohammad

Work Breakdown Structure(WBS):

2	Arduino Code					
2.1	Brushless Motor Code	Controlling the speed of the motor	Code that sets up the voltage levels	100%	100%	Ali Mohammad Ali Albaloushi Abdulla
2.2	Linear Motor Code	Controlling the position of the linear motor	Code that sets up the voltage levels	100%	100%	Ali Mohammad Hakem
2.3	On and Off Switch	Giving the signal thus giving power to the Linear motor	A switch or a button that will allow the motor to function accordingly	100%	95%	Ali Mohammad Hakem
2.4	L298 Dual H-Bridge	Controlling the direction of the motor	A circuit that will control two motors of up to 2A each in both directions.	100%	100%	Ali Mohammad

Ali Mohammad

Work Breakdown Structure(WBS):

3	Website					
3.1	Update the website	Make sure all of the documents are updated to date on the website	Updating the website with any new information about the project	Updating it as we move forward	-	Hakem Abdulla
4	Drilling					
4.1	Drill	To make holes on the provided PVC pipes/shovel to connect everything together with screws	A machine that drill holes to allow screws to be attached accordingly	100%	-	Abdulla Ali Albaloushi
5	Documentation					
5.1	Writing project papers/reports	Each team member is going to be assigned to a specific section in the report	Complete Assigned Section	Completed when given	-	Whole team
5.2	Power Point Presentation	Each team member is going to be assigned to a specific section in the presentation	Complete Assigned Section	Completed when given	-	Whole team

Ali Mohammad

What was done:

- **Inspiration**: Function of a Pinball game; Use flippers in front of the wild car thing to kick the ball.


Ali Mohammad

What was done:

- Implementing the subsystems in the wild thing car
  - Switch:
    - Will sense the position of the flipper, thus it turning on/off.
    - DIY reciprocating motor & L298 H-Bridge
    - Will be connected on flippers.
    - H-Bridge will control the power sent to the motor.
  - Flippers:
    - To hit the ball.
- Worked as planned.

Ali Mohammad

What was done:

- Using the shovel and applying it on the wild thing car.
    - Plan A.1
- Implementing the subsystems in the wild thing car
    - Switch:
        - Will give the signal thus turning on/off the motor.
    - DIY reciprocating motor & L298 H-Bridge
        - Connected on flippers.
        - H-Bridge will control the direction of the motor.
    - Shovel:
        - To hit the ball.
- Didn't deliver required force to kick the ball.

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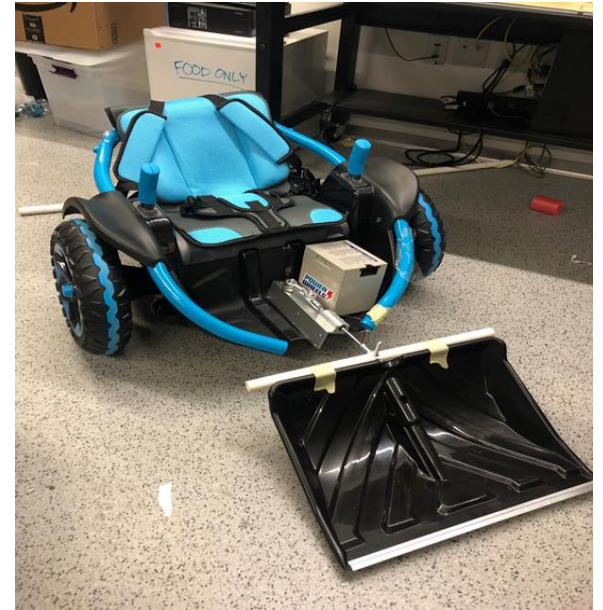
What was done:

- Back-up design
- Implementing the subsystems in the wild thing car
    - Brushless motor & Potentiometer:
        - Connected to the tires.
        - Potentiometer will control the speed of motor.
    - Tires:
        - Rotating to hit the ball.
- Was not able to kick as the size of the ball is bigger.

Ali Mohammad

Challenges:

- In terms of software:
    - Compiling error.
    - Uploading error.
    - Bugs in the code.
    - Implementation of Arduino Code.

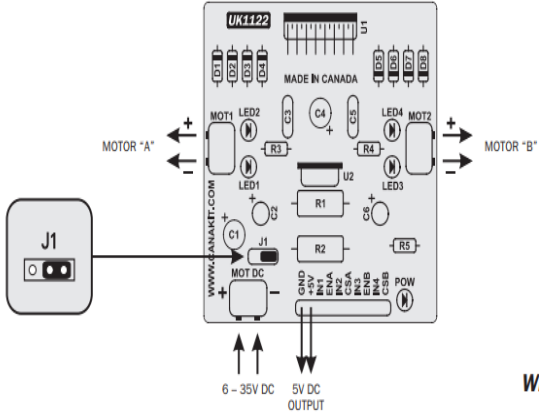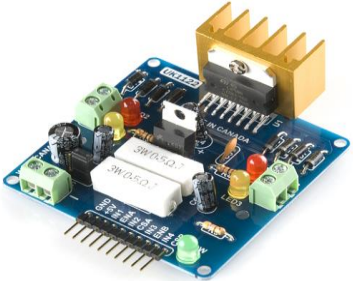Ali Mohammad

Challenges:

- In terms of hardware:
    - Loose structure.
    - Shorting out the circuit.
    - Wild thing car design it self.
    - Different screws to consider.
    - DIY Linear Motor configuration.
    - Momentary Switches attachment on on the wild thing.

Hakem

How it was done?

- Software:
  - Arduino Microprocessor.
  - L298 H-Bridge

Wiring Diagram 1

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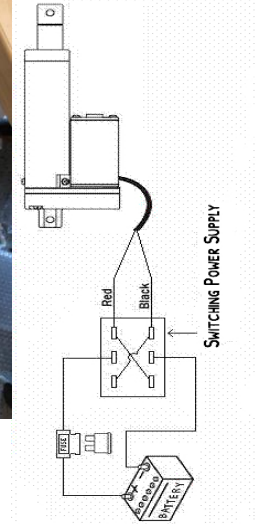
How it was done?

- Hardware:
  - Metal Bars.
  - Screws and washers.
  - Flippers.
  - PVC pipes.
  - Punched Square tube zinc plated
  - Momentary-On Push Button Switch
  - DIY Recorperating motor

Hakem

18

How it was done?

- Create the design.
- Electric saw:
  - Cut metal bars.
- Screws:
  - To tight all parts together.
  - To have a solid structure.
- Adjust the design of the wild thing car:
  - Pipes of the car itself.
  - Make space for the motors.
- Implementing momentary switches on the wild thing car:
  - Switch on controller.
  - Switch next to the motor.
- Wiring the circuit.

Ali Albuloushi

Project Constraints:

- Clients imposed constraints:
  - Have to use the wild thing car.
  - Can't use any other car in the lab.
- Hardware constraints:
  - Materials arriving late.
  - Not satisfying the purpose as expected.
- Budget Constraints:
  - 500$ dollars.
  - exceeding our budget.
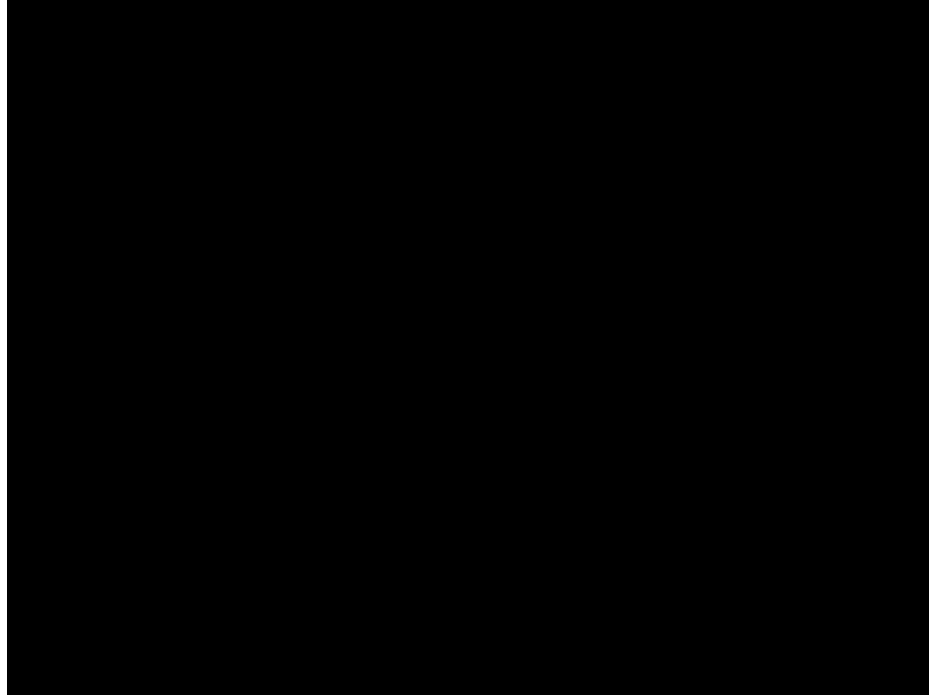- Not having enough equipment in the lab.
  - Went to Home Depot.

Ali Albaloushi

End Product:

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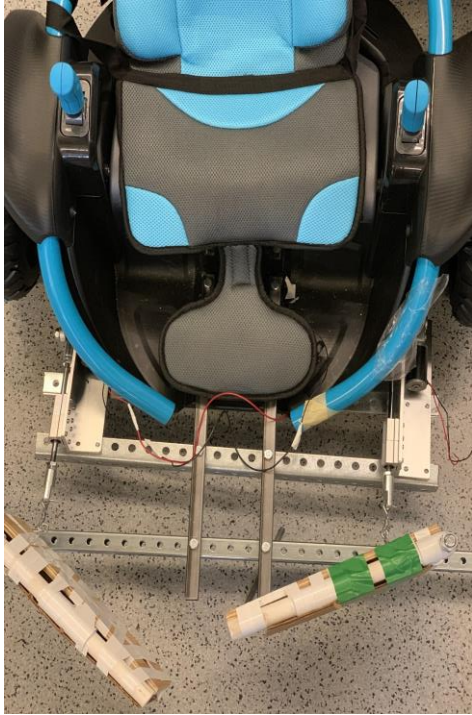
End Product:

- A brief video of using the wild thing car:

Conclusion:

- Existing research shows that enabling young children with self control of their own environment can have meaningful impacts.
- The project was pursued to help support children with mobility issues.
- **Inspiration**: Function of a Pinball game; Use flippers in front of the wild car thing to kick the ball.
- We had multiple backup designs, but we went back to the original design which is the flippers idea.
- Challenges were dealt with and solved accordingly.

Abdulla

Questions