



NORTHERN
ARIZONA
UNIVERSITY



GoBabyGo A (Team 14)



Project Sponsor: W.L. Gore and
Associates

ME 476C

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Project Description

- Created in 2012 at the University of Delaware.
- Developed a set of DIY cars.
- Enabling young children to move and interact with their peers.

Project Goal:

- Design and build a new version of the GBG retrofits for children that have limited mobility of their arms and/or legs.

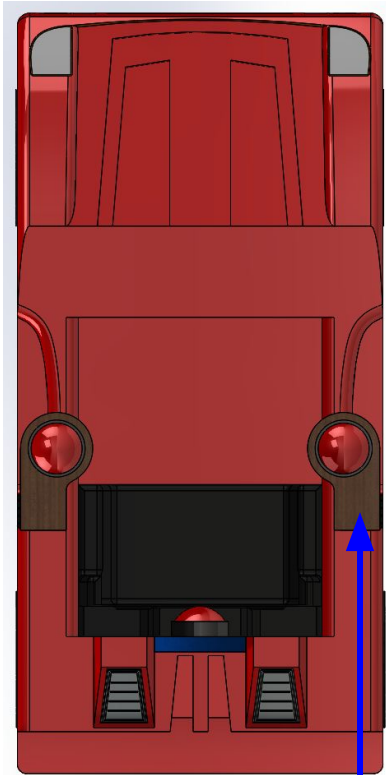


Figure 1: New CAD Design

Armrests/Steering Buttons



Figure 2: Final Product in Process

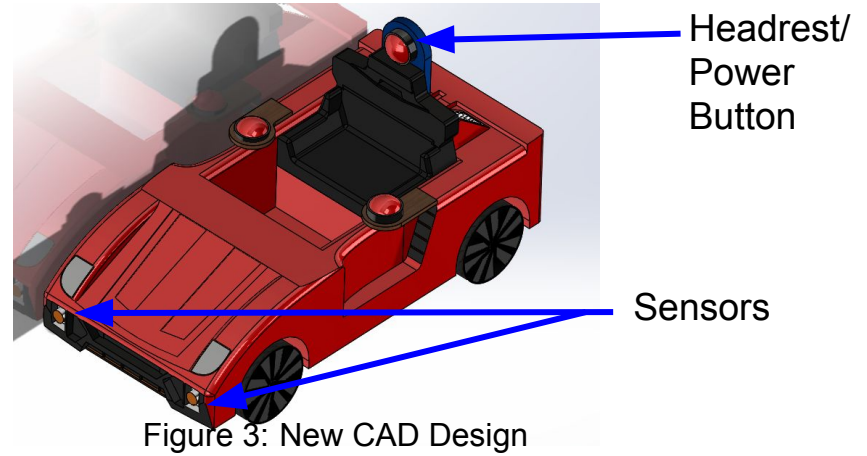


Figure 3: New CAD Design



Figure 4: Final Product in Process

5-point
Harness
Location

Updates

- Changing the armrests
- Using one distance sensor
- Using third button
 - From switch to pressure button
 - Multiple locations

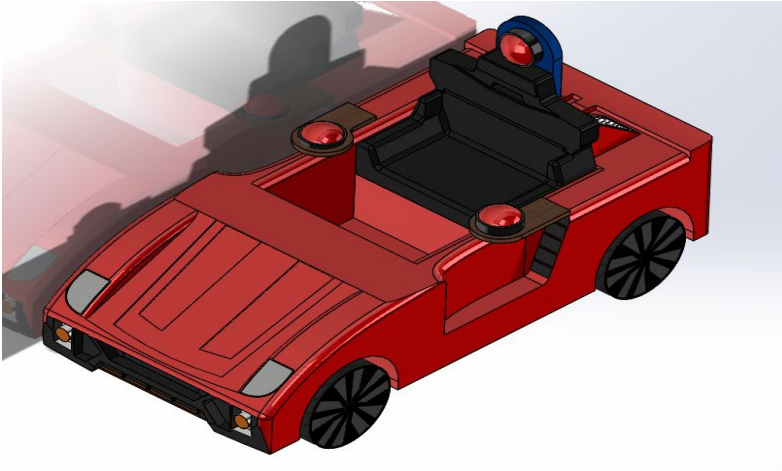


Figure 6: New Design

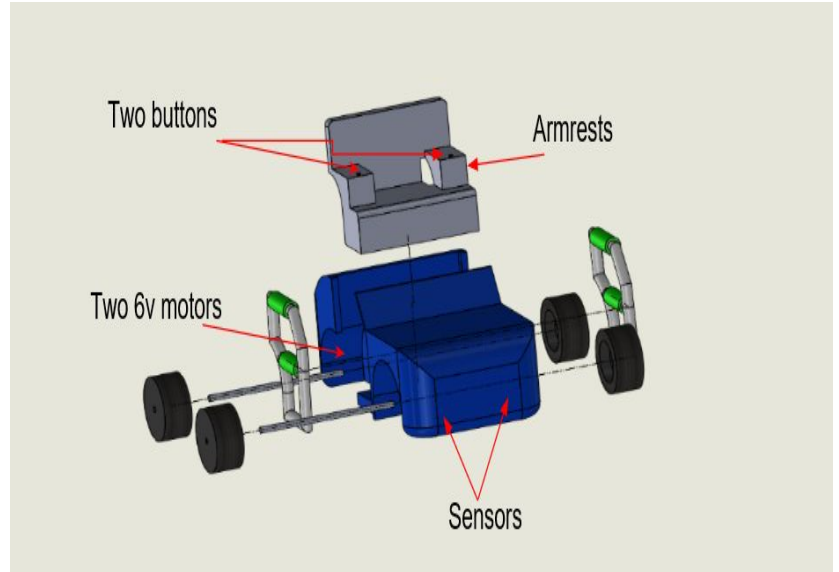


Figure 5: Old Design

Design of Experiment (DOE)

```
//Using Channel A for the DC Motor
if (Button1State == HIGH) {
    digitalWrite(LED1, HIGH);
    digitalWrite(DCMotor, HIGH); //Spins motor
    digitalWrite(DCBreak, LOW);
    analogWrite(PWMA, 255); //Half Speed Max = 255)

    delay(1000);
}
else{
    delay(100);
    digitalWrite(DCBreak, HIGH);
}
```

Table 6: DOE Trial 1 Sample

Turn Speed [s]	Delay [ms]	Speed	Battery Source [V]
Y	10	155	5
Y	10	255	5
Y	10	155	9
Y	10	255	9
Y	50	155	5
Y	50	255	5
Y	50	155	9
Y	50	255	9

Moving Forward

Manufacturing plans:

- Coding the third button.
- The location for the third button.
- Attaching seat belt to the car.

Testing the design:

- After finishing coding, the team will construct to test the design on 3/18- 3/19.
- Testing the sensors.
- Documenting any issues when testing the design.

Moving Forward

Possible redesign based on testing:

- Change the location of the third button.

Who is responsible for what?

- Sam: Complete the CAD Package.
- Ernes: Update schedule and complete coding with the arduino and buttons.
- Abdulrahman: Purchase components and budget tracking.
- Mohammed: Update website.
- Abdullah: Seat support and Seat belt attachments.

All team members will contribute in some way to every area

Go Baby Go Build

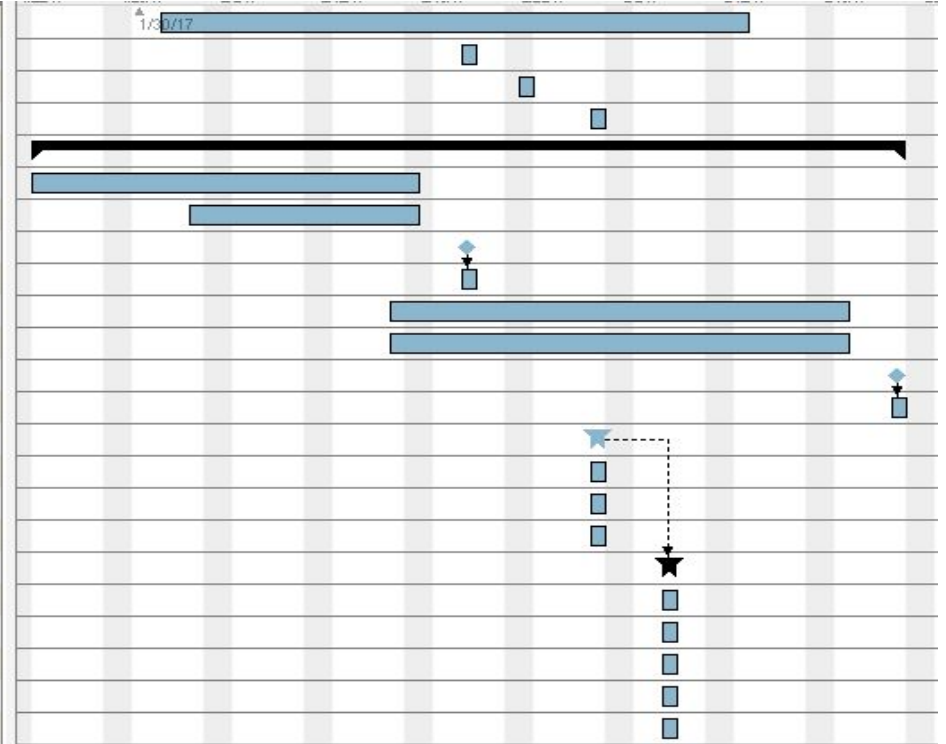
- Construct and build two GBG cars.
- More ideas about testing the design.
- See what GBG club have accomplished.
- Know how to connect motors to buttons.



Figure 7: GBG Informal Build

Schedule

○ UGRADS Registration	2/1/17	3/13/17
○ Meeting Minutes 6	2/22/17	2/22/17
○ Meeting Minutes 6 -2	2/26/17	2/26/17
○ Meeting Minutes 7	3/3/17	3/3/17
☐ ○ Production	1/23/17	3/24/17
○ Buttons and Motor	1/23/17	2/18/17
○ Armrest	2/3/17	2/18/17
○ Hardware Review 1	2/22/17	2/22/17
○ Peer Eval 1	2/22/17	2/22/17
○ Third Button Code	2/17/17	3/20/17
○ Final Construction & Testing	2/17/17	3/20/17
○ Hardware Review 2	3/24/17	3/24/17
○ Peer Eval 2	3/24/17	3/24/17
☐ ○ Midpoint Report	3/3/17	3/3/17
○ Implementation	3/3/17	3/3/17
○ Design of Experiment	3/3/17	3/3/17
○ Design Changes	3/3/17	3/3/17
☐ ○ Midpoint Review Presentation	3/8/17	3/8/17
○ Project Description	3/8/17	3/8/17
○ Updates	3/8/17	3/8/17
○ Moving Forward	3/8/17	3/8/17
○ Schedule	3/8/17	3/8/17
○ Budget	3/8/17	3/8/17



Budget

- Project's Budget \$1500.
- Remaining Budget \$1121.78.

Part #	Part Name	Description	Qty	Item model number	Supplier	Cost
1	Power Wheels Car ✓	(2) 6v motors	1	SKY907	Amazon	\$ 159.99
2	Push Button ✓	Big Red Button	3	COM-09181	Amazon	\$ 66.00
3	Sensors ✓	Car Parking Sensor	1	B00XBYXOPU	Amazon	\$ 18.00
4	5 Point Seat belt ✓	9.4 x 3.6 x 3.2 in	1	2V-8TCC-ASKP	Amazon	\$ -
5	Foam board ✓	1 in. x 2 ft. x 2 ft	1	203553730	Home Depot	\$ 5.98
6	Double Sided Tape ✓	1 in. x 1.6 yds	1	207088689	Home Depot	\$ 4.98
7	Mini Hacksaw ✓	10 in	1	100026795	Home Depot	\$ 8.97
8	Kit ✓	Ultimate Starter Kit	1	B00BT0NDB8	Amazon	\$ 48.99
9	Wire ✓	White Primary Wire	1	48243000104	Home Depot	\$ 5.19
10	Butt Splic ✓	15PK	1	32076075040	Home Depot	\$ 2.39
11	Disconn ✓	15PK	1	32076075217	Home Depot	\$ 2.99
12	Sanded Plywood ✓	1/2 in. x 2 ft. x 4 ft	1	202088926	Home Depot	\$ 15.95
13	Distance Sensor ✓	Arduino Pack (5pcs)	1	B00P5W1JLM	Amazon	\$ 9.95
14	Arduino Motor Shield r3 ✓	Motor controller	1	B007BHKRVW	Amazon	\$ 24.97
15	Set of Nails ✓	125 Nails	1	100113374	Home Depot	\$ 3.87
Total			17			\$378.22

Questions?



<http://www.mrwallpaper.com/go-baby-go-button-wallpaper/>