

# Go Baby Go

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# Overview

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# Introduction

## 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.



## GTA Mentor:

### Ashwija Korenda

- BS in Electronics and Communication Engineering, May 2015.
- Northern Arizona University, Expected May 2017 MSE, Electrical Engineering.
- PhD. Candidate, Northern Arizona University



# Importance

- Why kids with disabilities need it?
  - To allow socialization with friends and family.
  - To reduce depression.
  - To allow them to explore their environment.
  - To help with strengthen the posture.
  - To make them kings/queens of their domain.



# Design

Over All design:

- Taking the function of a pin-pinball flipper applying it on the wild thing.
- A wild thing that can be used for playing kickball and soccer.
- Joystick which can control the flipper.



# Problems

- Implementing the flipper on to the wild thing.
- Controlling the flipper with the a joystick..
- Making it safe.
- Making it user friendly
- Making it comfortable.
- Socializing aspect.

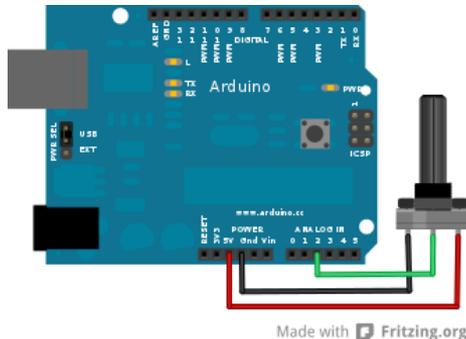
# Solutions

- Using screws to connect flipper on wild thing
- Using Arduino UNO to control joystick
- Making the wild thing fun thus using it for games (soccer & kickball)
- Using it for family and friend activities to improve socializing
- Using PVC pipes that are covered by a pool noodle to make it safe.
- Making it comfortable by adding seat cushion.

# Solutions - Prototype 1

- **Potentiometer:**

- It has a rotating contact, that helps adjust the voltage divider, which help with measuring the electric potential. And also helps with **controlling the power in a joystick.**

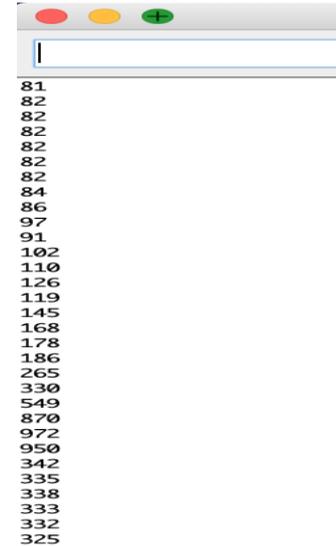
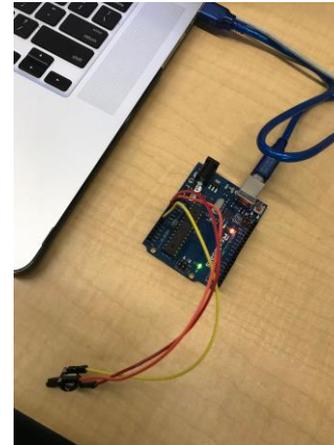


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```
potentiometer
void setup() // the setup routine runs when you press reset
{
  Serial.begin(9600); // initialize serial communication at 9600 bits per second
}

void loop(){
  //the loop routine runs and over again and forever

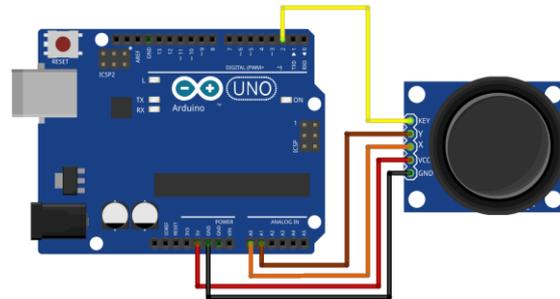
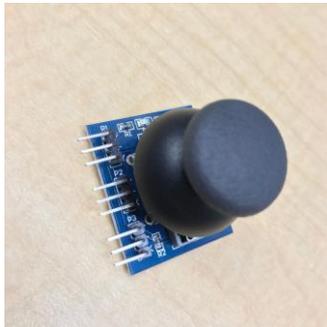
  int sensorValue = analogRead(A2); // reads the input from pin A2
  Serial.println(sensorValue); // print out value
  delay(11); // delay between reads
}
}
```



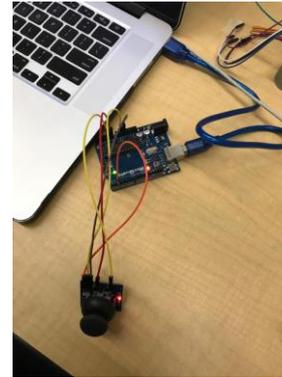
# Solution - Prototype 2

- **Analog Joystick:**

- It has two-dimensional inputs **that control the movement of the device or flipper.**
- It works with the potentiometer by running electric activity into it to measure the range of motion for the stick.



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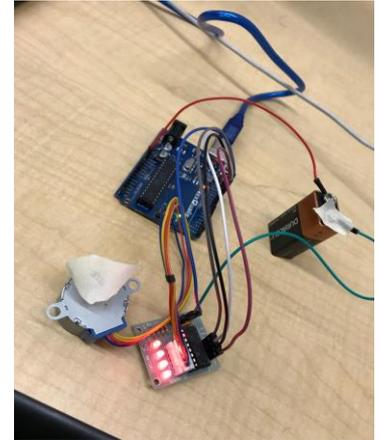
Switch: 1  
X-axis: 524  
Y-axis: 524

Switch: 1  
X-axis: 524  
Y-axis: 523

Switch: 1  
X-axis: 524  
Y-axis: 523

# Solutions - Prototype 3

- **Step-motor:**
  - It's a DC electric motor, that makes full rotations divided into equal steps.
  - speed can be controlled each step by using Arduino code.
  - **Will allow the flipper to rotate to a certain degree**



# Solutions:

- Why these prototypes?
  - To have a better understanding on joysticks.
  - To improve our understanding on DC motors.
  - To improve our coding language abilities.
  - To Build up for the final and over all prototype.

# Conclusion:

- “Go-Baby-Go” project is aiming to help children with disabilities.
- We applied the pinball game function to the wild thing so that kids can play soccer, kick ball and to socialize.
- As mentioned before in the problems is that how can we improve the socialization aspect of the wild thing.
- As mentioned before safety and comfort are one of the top priorities.

# Conclusion:

- Prototypes that will better our understanding thus improving the project.
- Finally, we would like to thank our client Dr. Cole Galloway & Dr. Kyle Winfree for taking part in this project.

# Resources:

1. M. Arduino, “Arduino analogRead Serial Monitor with Potentiometer,” *YouTube*, 10-Nov-2016. [Online]. Available: <https://www.youtube.com/watch?v=t9DEAreCD3g>. [Accessed: 30-Nov-2018].
2. 2018. [Online]. Available: <https://www.quora.com/How-do-I-connect-6-potentiometers-with-arduino>. [Accessed: 30- Nov- 2018].
3. “How to connect and use Analog Joystick with Arduino,” *Brainy-Bits*. [Online]. Available: <https://www.brainy-bits.com/arduino-joystick-tutorial/>. [Accessed: 30-Nov-2018].

# Resources:

4. "Pinball game The World of Dr. Pickaxe jumps from Windows Phone to Windows 8 and RT", *Windows Central*, 2018. [Online]. Available: <https://www.windowscentral.com/dr-pickaxe-pinball-windows-8>. [Accessed: 30-Nov- 2018].