GB 2017 with <Sahil and Kyle>

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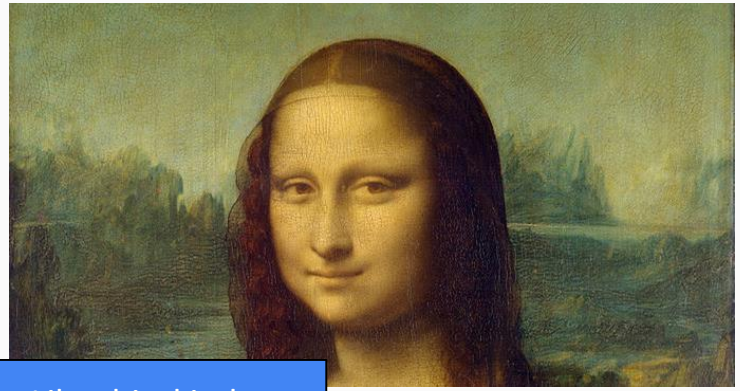
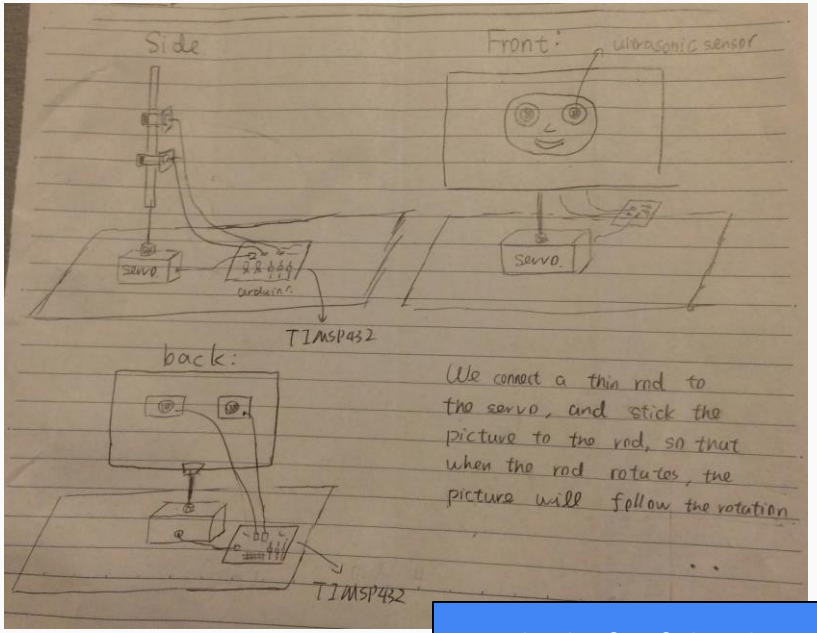
Overview

Our Plan

- A person-following portrait that tracks a person's movements and "follows" them accordingly



Like this, kinda.

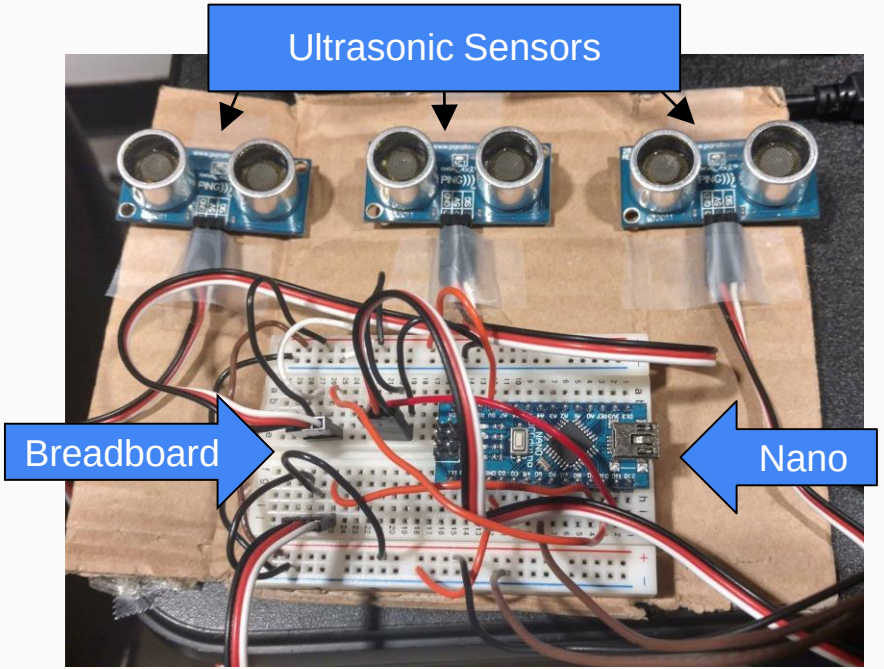


Early draft of the design

Details

Components

- Arduino Nano
- 3 Ultrasonic Sensors - Parallax Ping)))
- Servo - PowerHD Micro Servo
- Breadboard
- Cardboard
- A lot of wires
- Sensei



Details

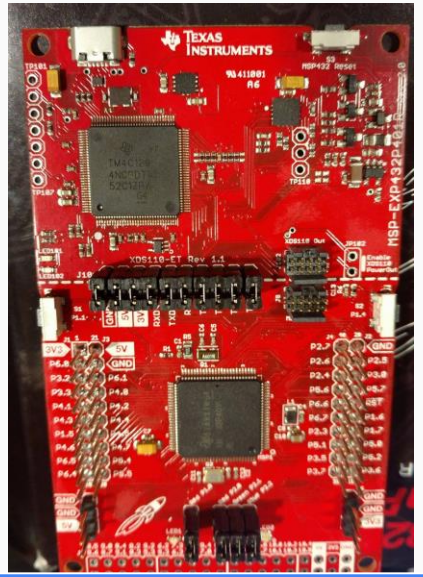
Purpose

- Determine if someone is passing by the portrait using the ultrasonic sensors
- If so, move the servo accordingly to track the person's movements
- Basically, an entertaining (and perhaps a tad creepy) project

Details *(cont'd)*

Tradeoffs

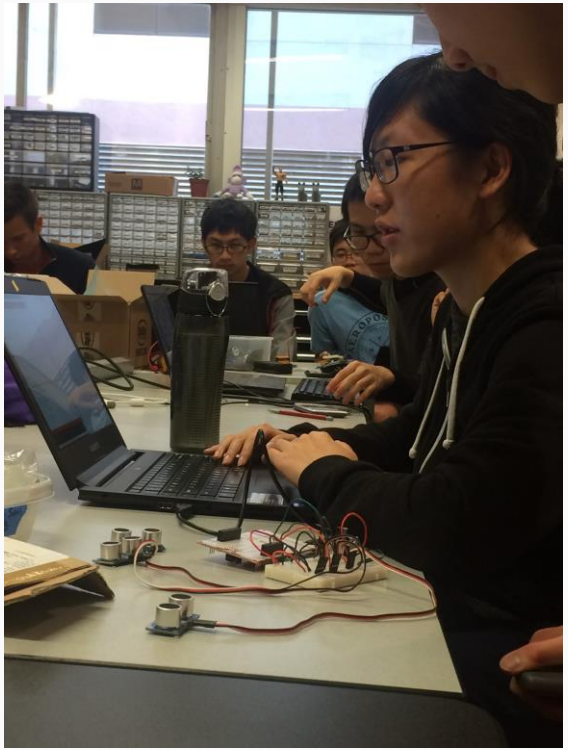
- Cost:
  - We originally planned to use an Arduino Uno, but then decided to use a TI-MSP432 launchpad since they are easily accessible in the lab. Ultimately, due to some technical issues with the launchpad, we used an Arduino Nano, also easily accessible.
- Accuracy:
  - So as not to go overboard, we chose to implement our person-following portrait with only three ultrasonic sensors, as that would be easier and cheaper. Thus, our portrait is not accurate as it potentially could of been.



The abandoned MSP432

Actual Process/Progress

- Came up with a proposal and plan
- Researched to determine the best way to track people
- Tested sensors and servos on the TI Launchpad by modifying provided example code
- Tried externally powering the Launchpad as well
- Decided to switch to the Arduino Nano and finished the project with it
- Debugged the program and the circuit, then mounted the components



Results

- We succeeded in moving the servo, and learned a lot about using a Launchpad.
- We got all three ultrasonic sensors to work together to detect the person around.
- Our servo can turn according to the distance value measured by the three ultrasonic sensors, but it has problems in dealing with some tricky cases.
- If more than one person come near the portrait, our program cannot distinguish which person to follow. (After all, it's a person-following portrait, not a *people*-following portrait.)

The GB Experience

Our Experience

- This project has taught us about servos and sensors and a lot about problem solving. Even though our project does not work as well as we wished it to, the process of trying to find the problems and fix them taught us a lot.
- Also, we have gained much experience with teamwork and project management.
- We have made a prototype person-following portrait!