Design Review 1 Meeting Notes

2/25

General

- Can use EE Lab in Fitz 2nd Floor

1. Why we chose the ESP32 S3 for our board
    - 8MB memory good enough
    - Dual Core good
2. Go over each major subsystem
    a. Power
        1. 2 cells for 7V, 3000mA
        2. In series, do not have to discharge equally, but need to know if any of them discharge too low
        3. Check what protection is built into the protection circuitry
        4. May want to pick battery, so that Motors can run straight off of battery
        5. Use Diode potentially to just drop 0.7V to get closer to motor voltage. 1W Diode should do it.
    b. Motion
        1. Body Design
            1. C&C machines for Gear, get something on McMaster Carr for model
            2. For Rack and pinion, it might be easier to use non continuously rotating motors: Allows for precise control of the motor.
            3. Put halves together with screws and nuts: From Home Depot or Amazon
            4. Washers to sit the screen back if needed
        2. Motors
            1. Using MOSFET to control motor
            2. MOSFET increases reliability
            3. Need to ensure we have enough current
        3. Movement
            1. How fast it moves should be determined by the Pulse width
            2. Changing pulse widths should make it faster or slower, Clockwise or counterclockwise
            3. Accelerometers might need to have 3 in each piece. Will need I2C, and power
    c. UI
        1. Good proof of concept so far for speaker and Mic
        2. Screen will have to display text
        3. Baud rate will be important for pace of displaying text
        4. Should test screen soon

3. How we are going to demonstrate each subsystem
    a. Power
        1. Demonstrate with paper is good
        2. Show enough Power is going where we need and will not blow up Lithium battery