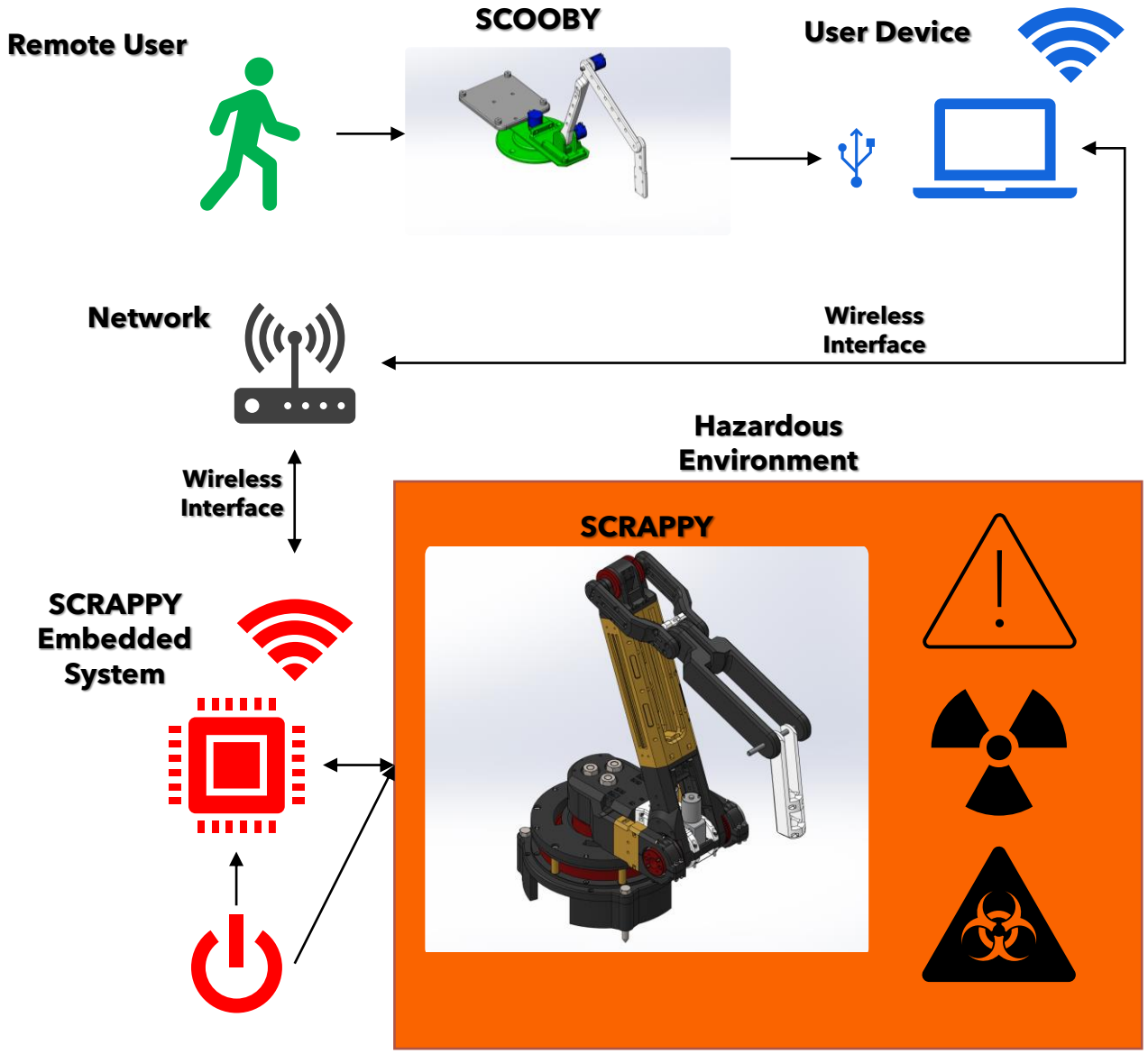
Project SCRAPPY

A remote operated robot arm.

SCRAPPY does what SCOOBY Do…



Applications

Specialized

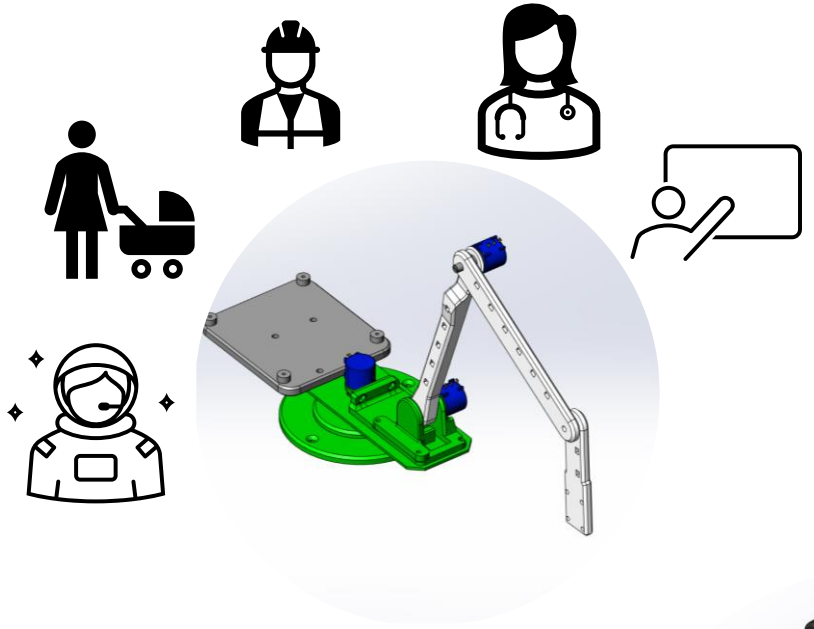
- Hazardous Lab work
- Remote Surgery
- Bomb Defusal
- Space EVA

Commercial

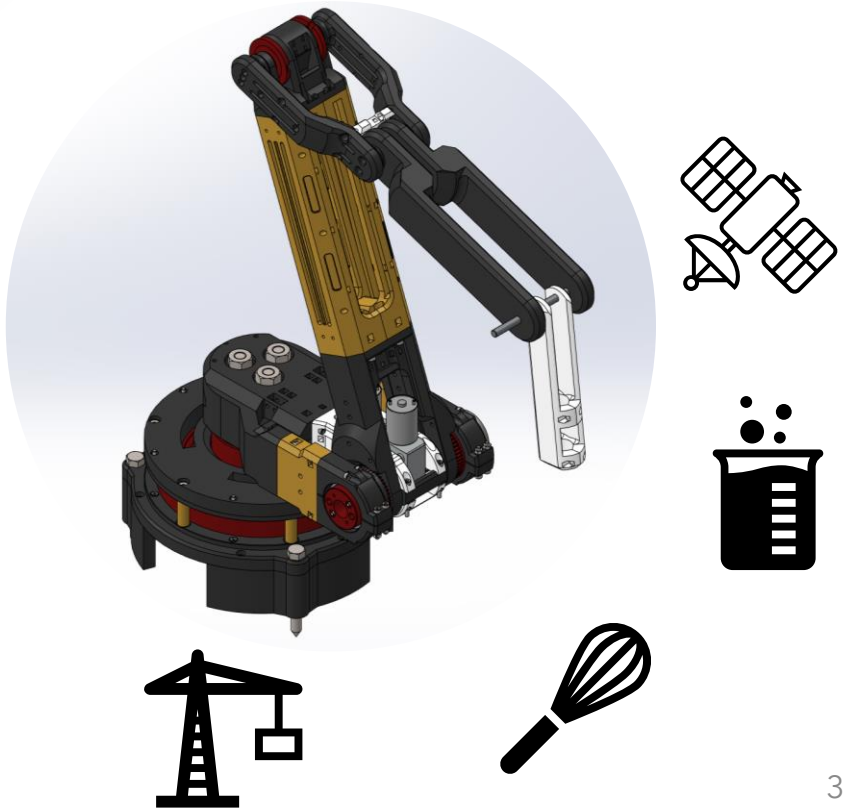
- Meal Prep and Kitchen Support
- Remote Educational Instruction
- Integration with IoT
- Coding-Free Repetitive Task Automation
- Remote work interface
- Ultimate Organizer

Industrial

- Assembly and Repair
- Controllable crane and industrial equipment

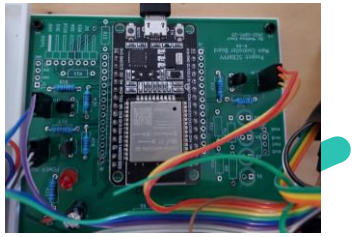


***SCRAPPY**: Your hands where your hands can't be..*

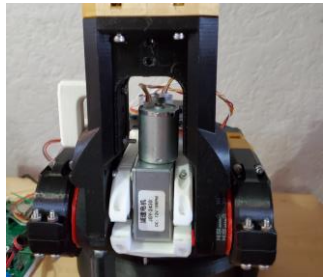


SCRAPPY

ESP32 Microcontroller
- 240MHz Dual Core Processor
- Wi-Fi and Bluetooth enables
- GPIO, PWM, DAC Capabilities
- *Cost: 10$*

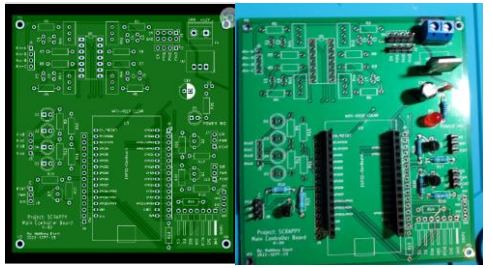


12V Brushless DC Motors (3x)
- 25kg/cm
- 18 rpm
- Speed Control
- Built in Pulse Generator
- *Cost: 15$ ea*



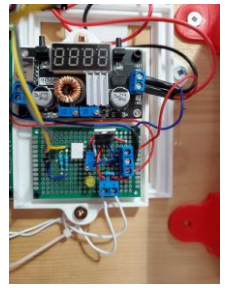
3D printed frame (>90%)
- 600mm reach
- Customizable
- *Cost: 30$*

Custom Printed Circuit Board
- PWM inversion
- Power management
- Signal amplification
- LED indicators
- My name on it
- *Cost: 5$*



Software Controlled Electromagnet
- Up to 3A (theoretically)
- Potential 3kg lift power
- *Cost: 20$*

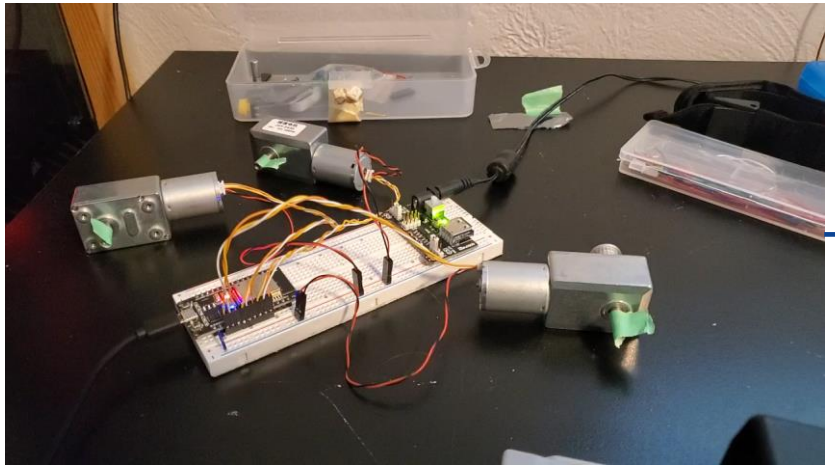
Regulated Power Supply
- 12V, 30A
- *Cost: 30$*

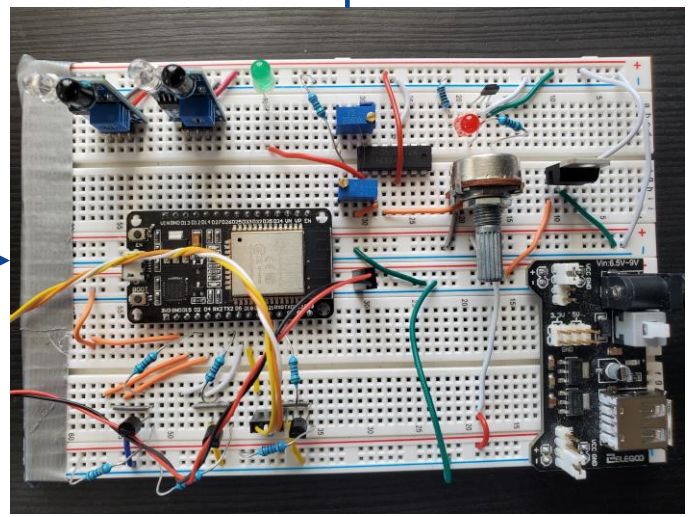


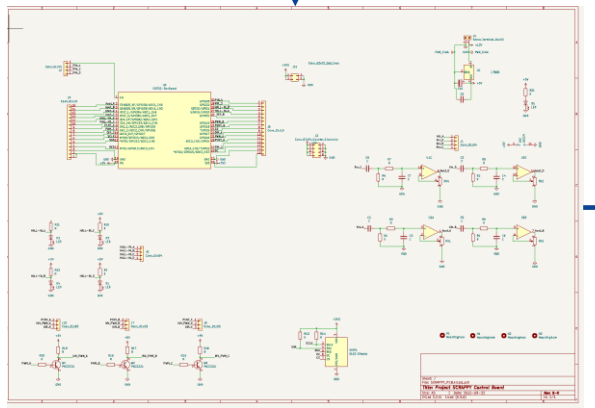
Miscellaneous Hardware
- *Cost: 30$*

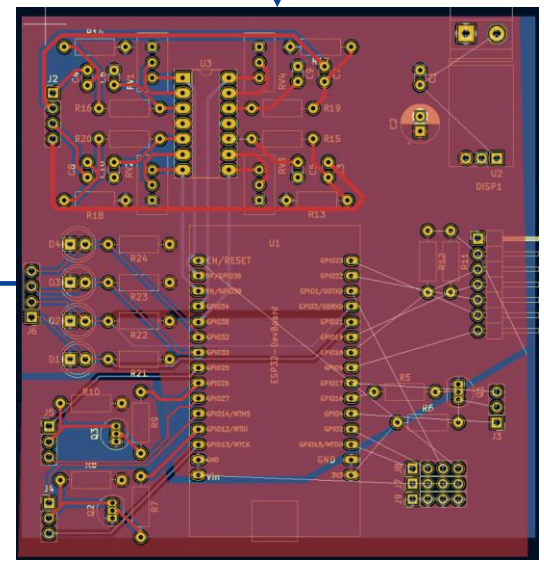
Total Prototype Cost: $170

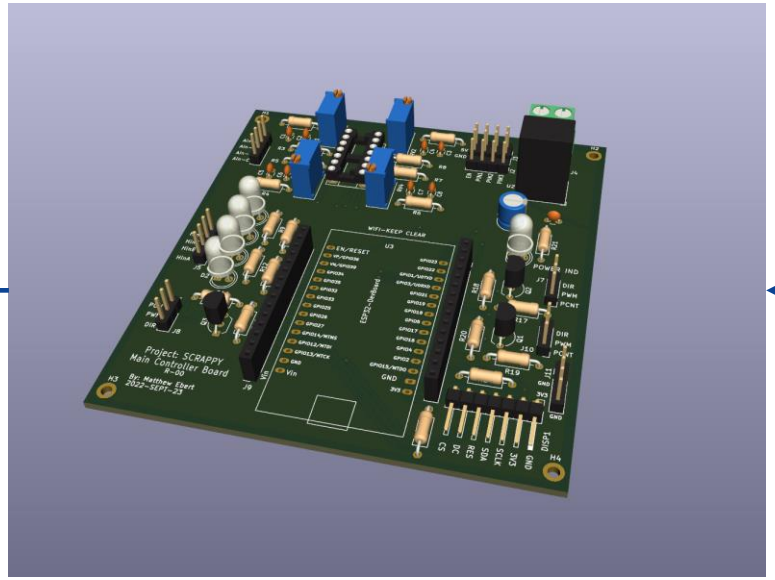
SCRAPPY Design

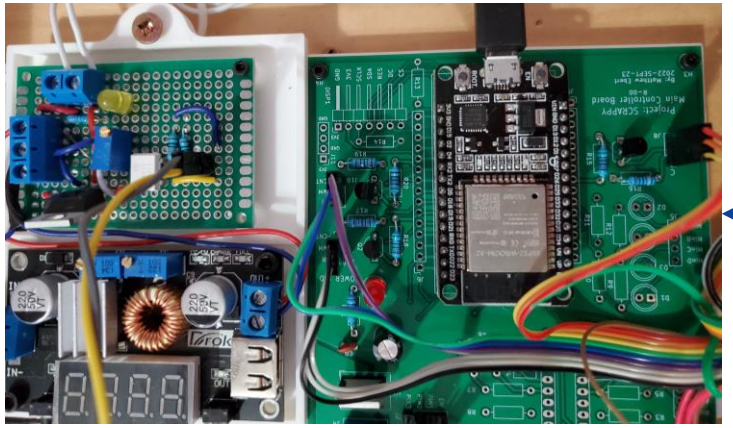




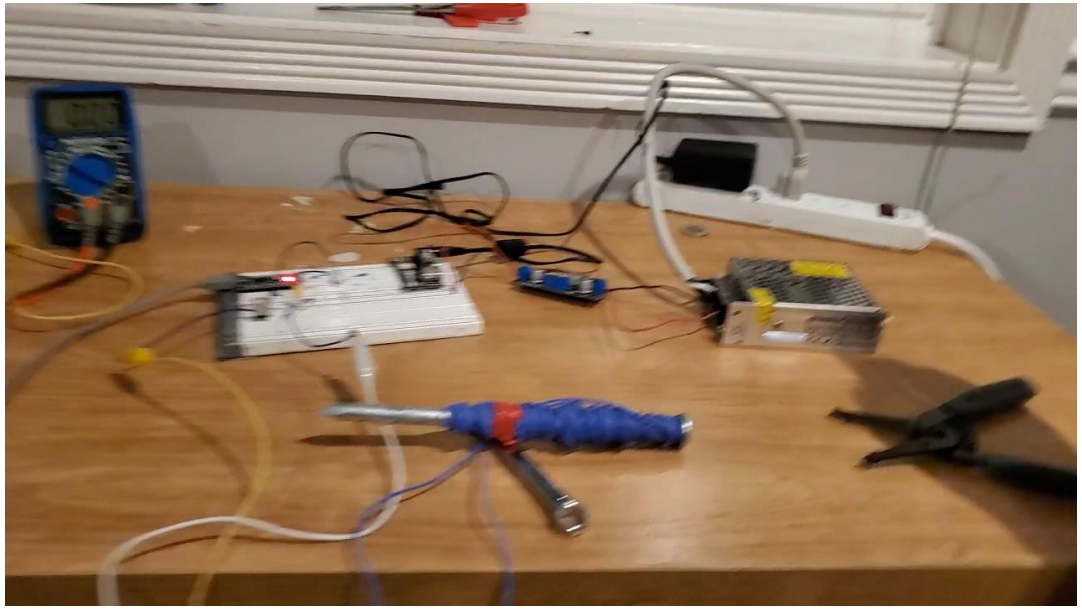


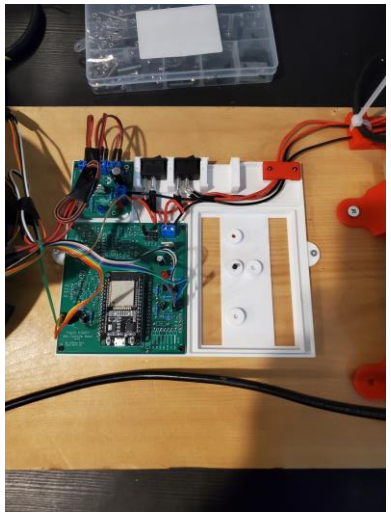


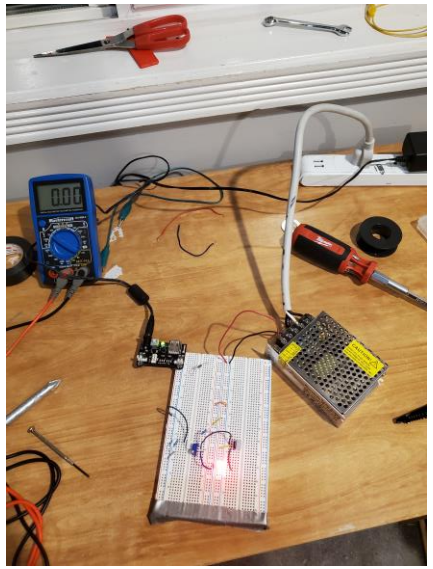


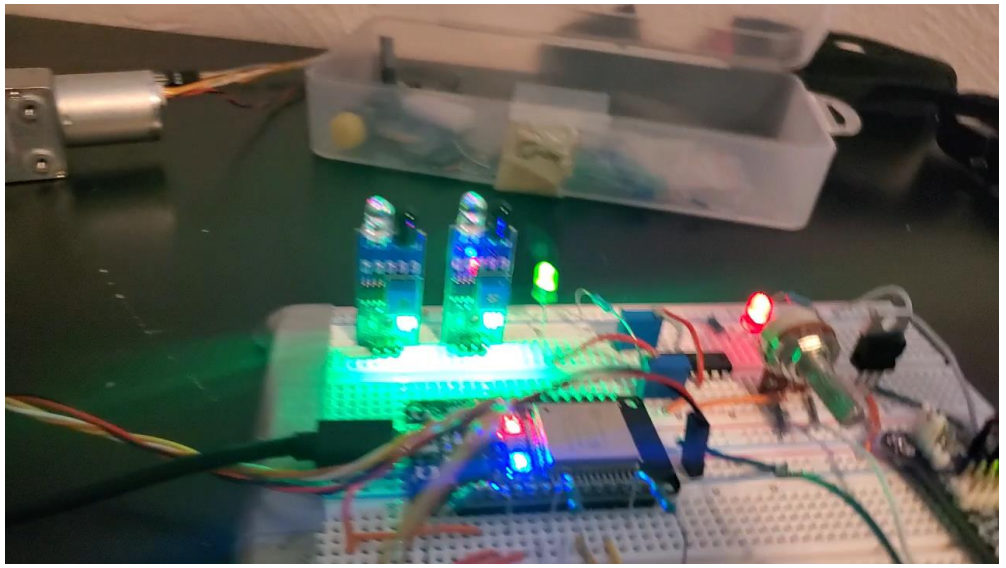


SCRAPPY Design



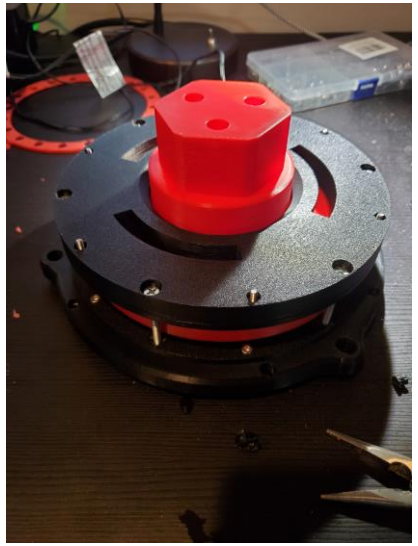


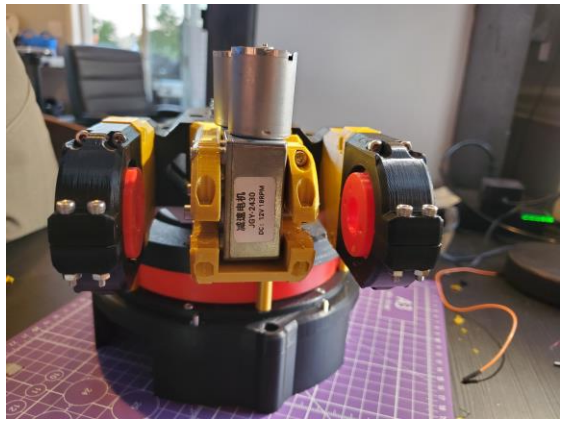


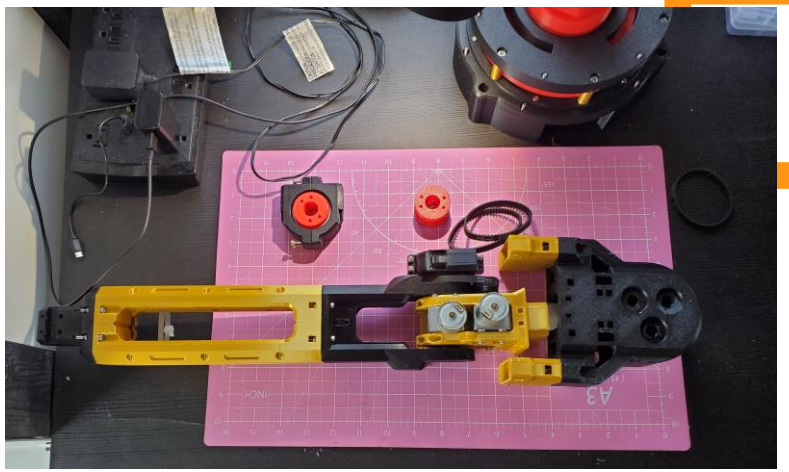


SCRAPPY ASSEBMLY

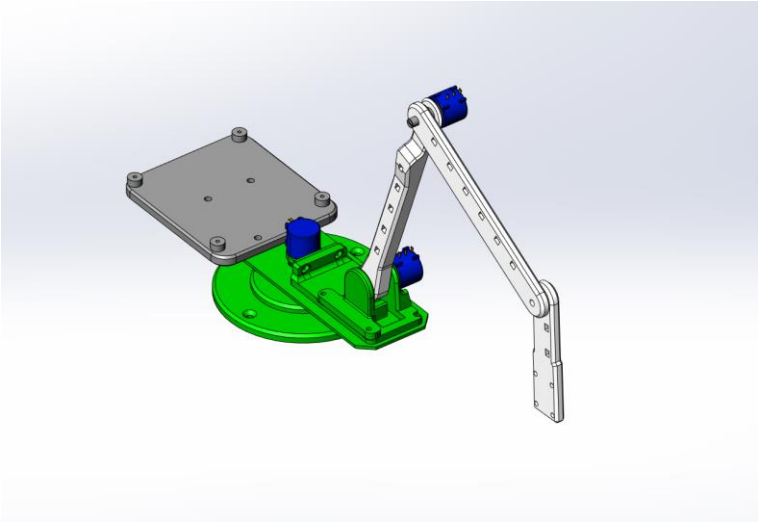
3D printing: *Like drawing or writing – Almost anyone can do it.*

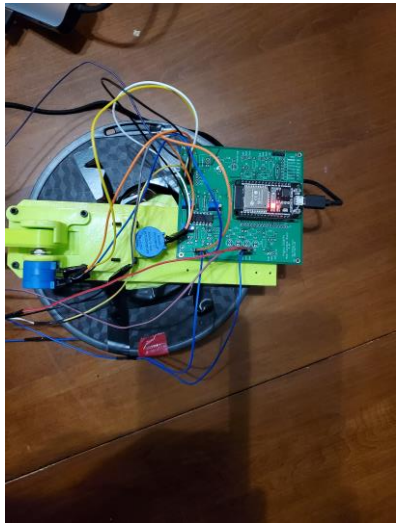


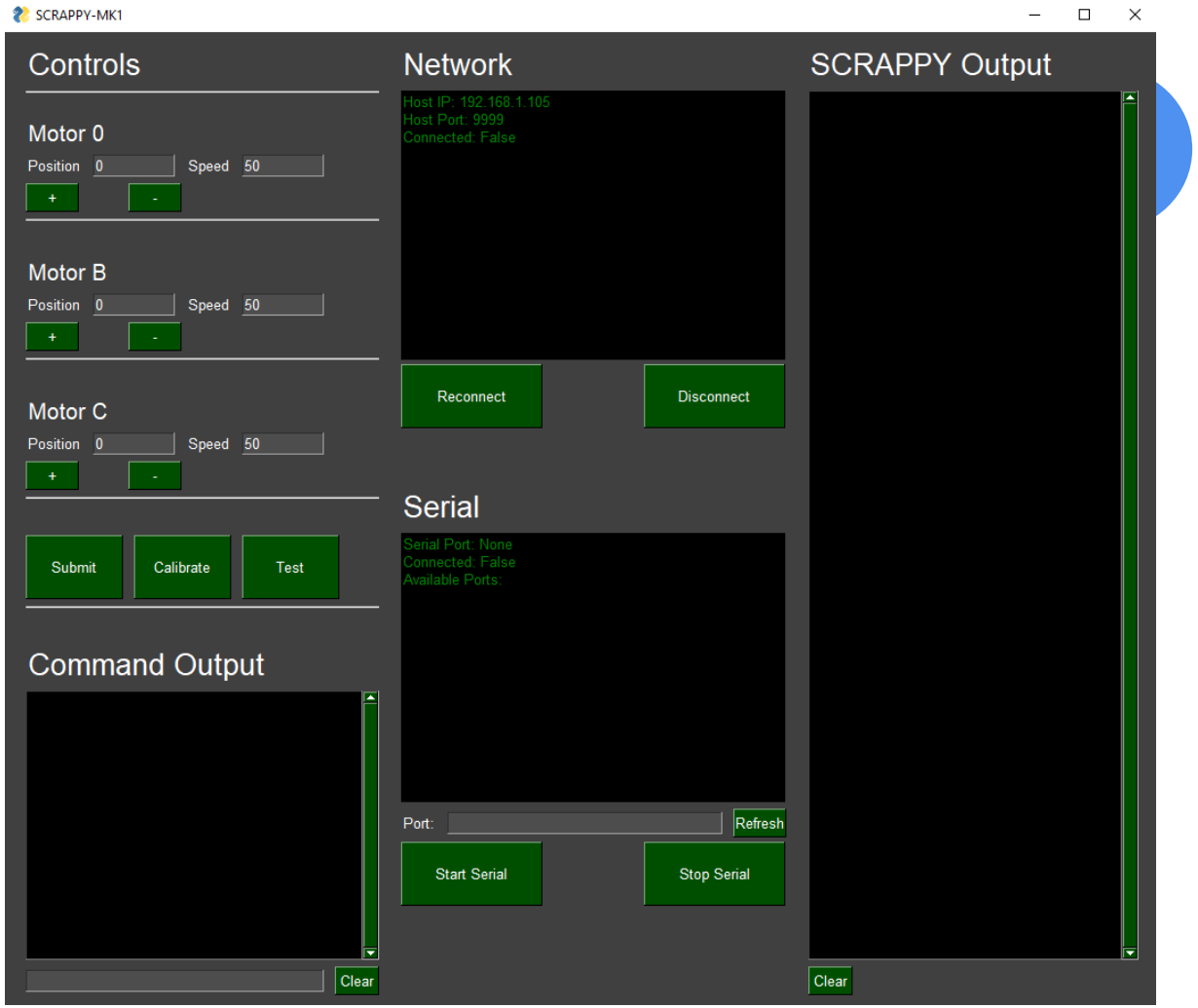




User Interface: SCOOBY







SCRAPPY and ECE

Mechanically, Scrappy isn't that interesting.

- Very little mechanical analysis needed
- 3D printed makes design simple and fast

This is the easy stuff - no background knowledge required…

Mecha-tronics is mostly 'elec-tronics'

- Microcontrollers
- Embedded Programming
- Motor Control
- Power Management
- Signal Amplification processing
- Control theory

This is the important stuff- SCRAPPY doesn't do anything if this isn't done right.

At some point “Engineering is Engineering”

What do you want to learn…

- Microcontrollers and digital design
- Control theory
- Circuit analysis
- Motors and Power electronics
- Signal Processing
- Material Properties and Quantum Physics (if you are crazy).

THEN

What do you want to do with it…

Thank you for hearing about Project SCRAPPY

SCRAPPY will be on GitHub Soon at : **ebertmx**

Question, Comments, and Feedback Welcome.