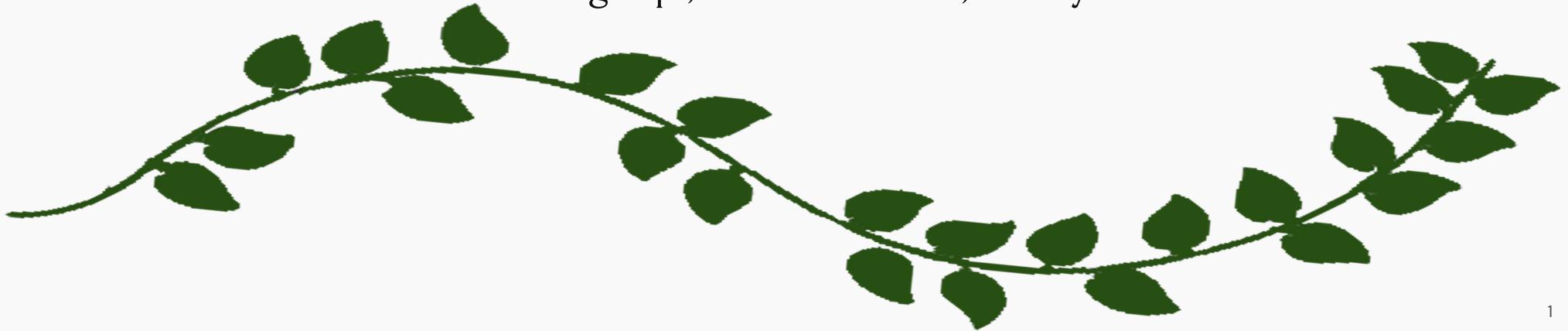


SPROUT UP

Assistive Standing Device

Evan Grelish, Steph Akakabota, Lleyton Elliott,
Darius Nguepi, Michael Rubin, Zhenyu Hu

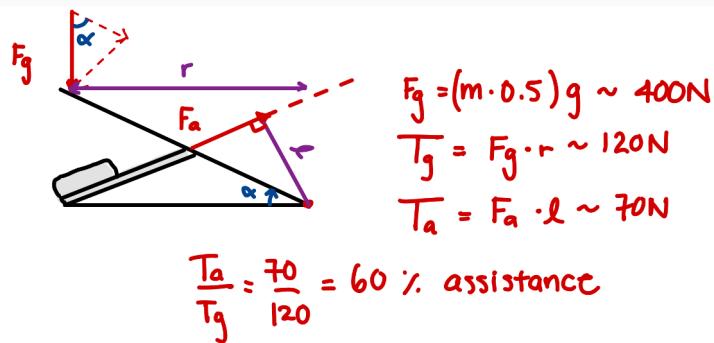
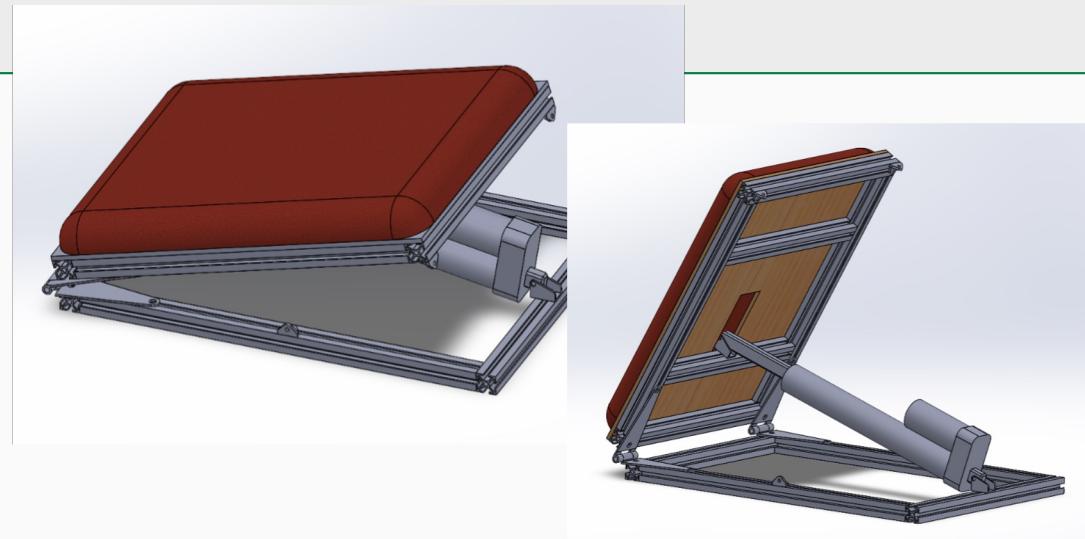


Mechanical Design: Seat & Actuation

SPROUT UP

Priorities:

- **Weight:** 3kg
- **Power:** 60%
- **Speed:** 4 sec
- **Battery:** $2 \times (80g, 35A, 1Ah) = 20 \text{ cyc}$
- **Prototype Cost:** <\$150
- **Manufacturability:** Off the shelf parts

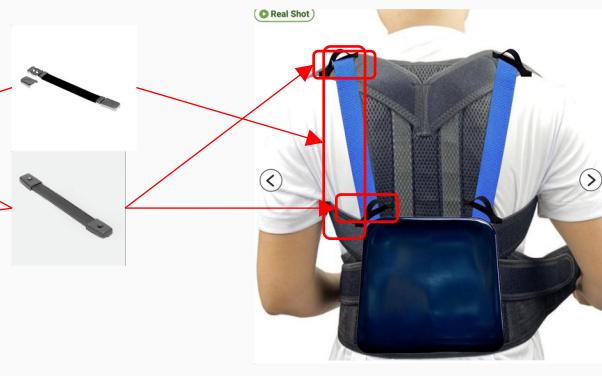
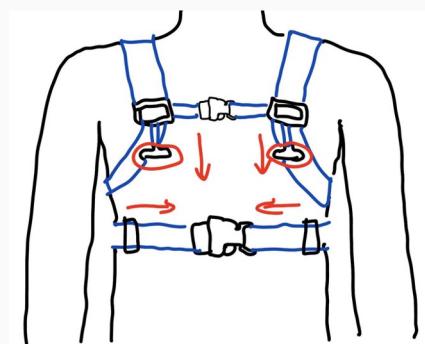
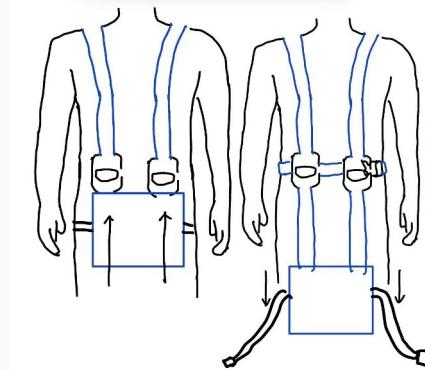


Next Steps:

- FEA analysis
- Order and Assemble Prototype
- Production Design
- Reduce weight & size

Ergonomics & disengaging

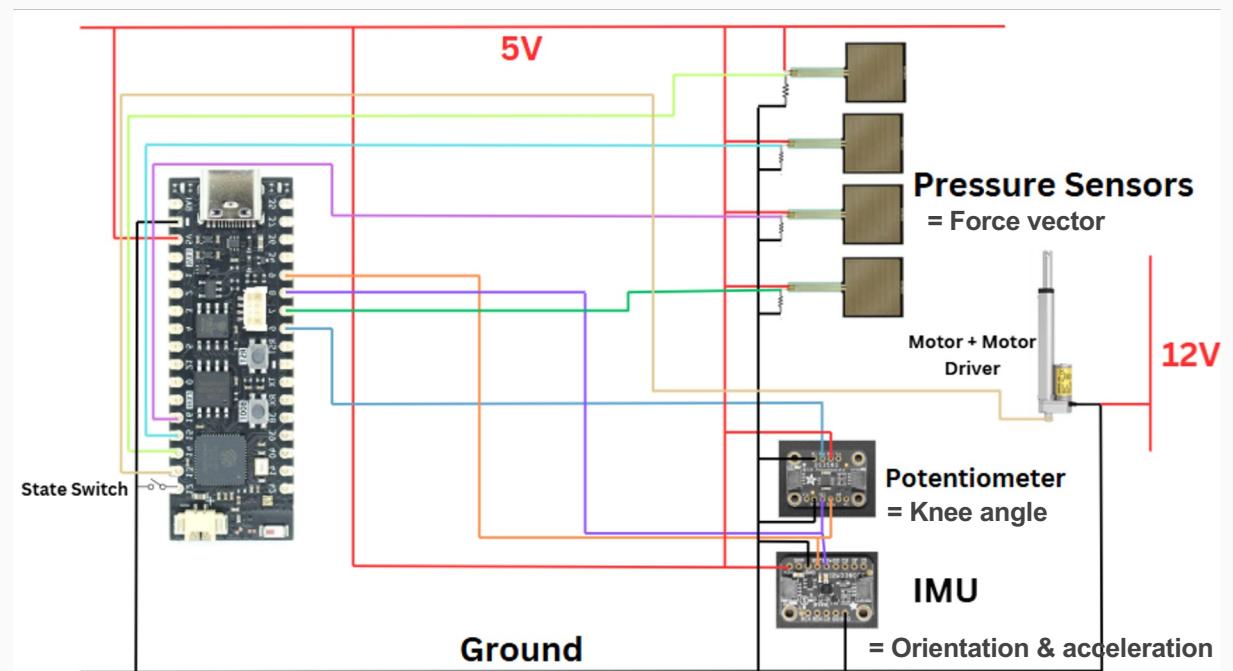
SPROUT UP



Electronics

SPROUT UP

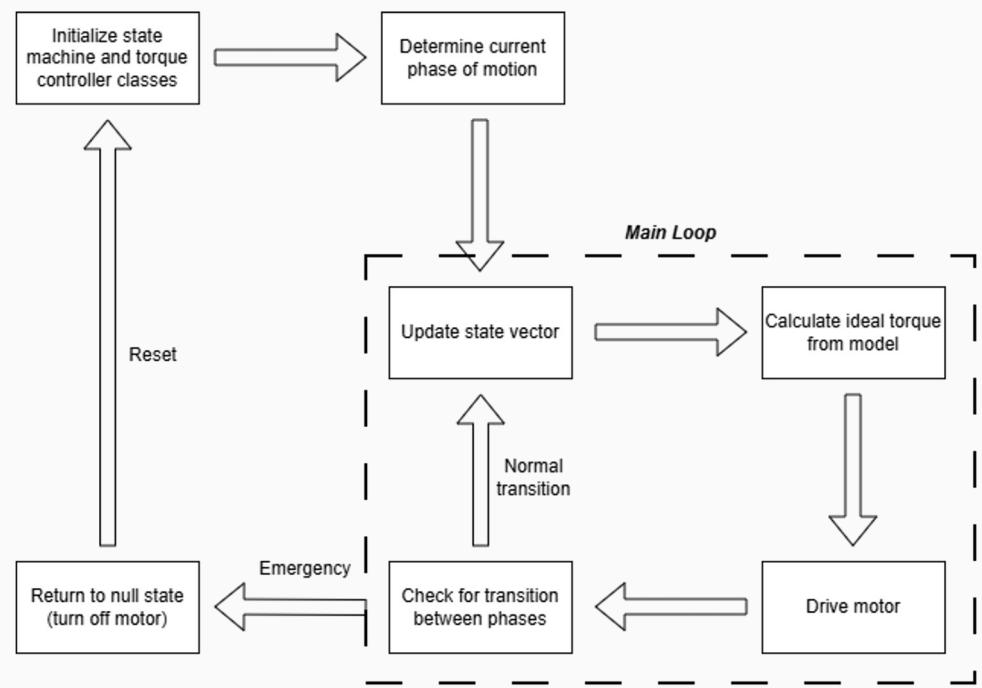
- **Status:** Electronics chosen and specced
- **Risk factors:** Noise and connectivity
- **Remaining work:** Order materials, test outputs, and integrate sensors to control scheme



Logic and Modeling

SPROUT UP

- **Status:** Kinematics and code structure is finished
- **Risk factors:** model robustness + emergency override needed
- **Remaining work:** implement dynamic model, assign phase transition thresholds, write low-level hardware/sensor code



Code block diagram

Project Timeline

