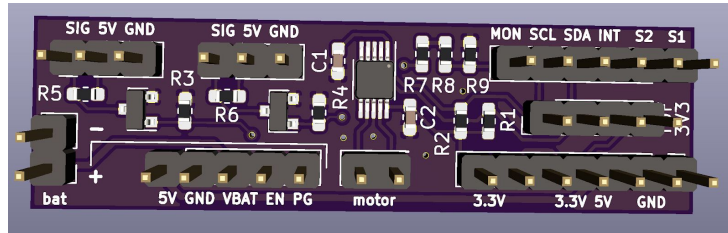


powerglove: milestone 2

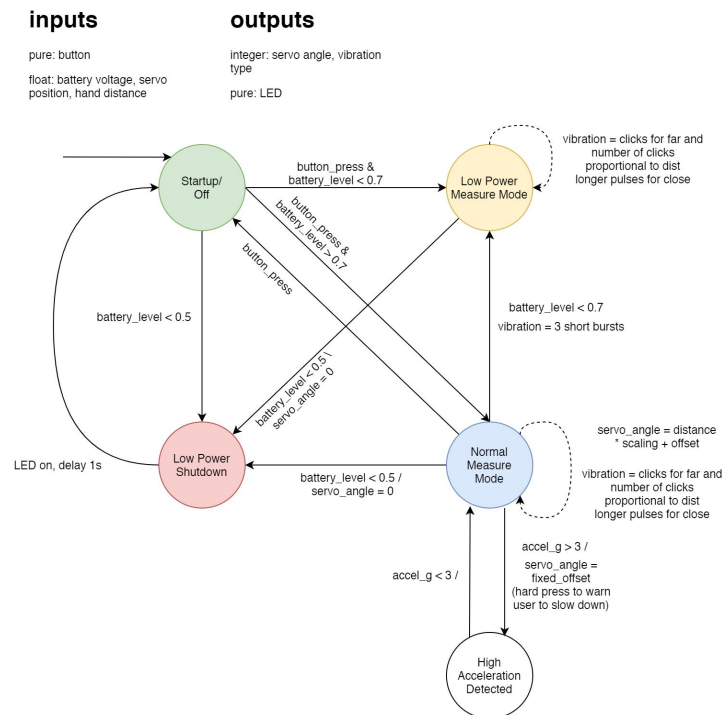
Jeffrey Ni and Leon Wu

Progress

- PCB design done and sent out for fabrication:



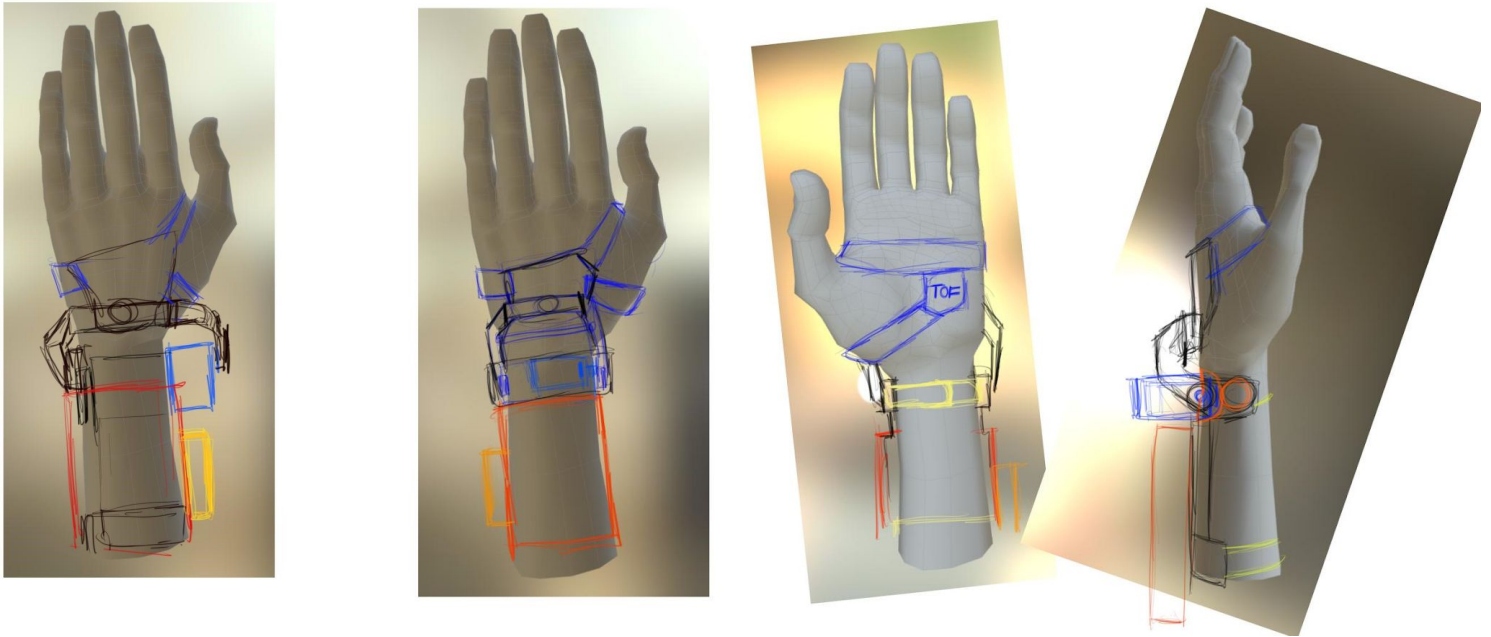
- Toolchain setup for the Buckler and our Custom FW
 - Already have the firmware driver for the haptics ready; just need to test on actual hardware
 - See at: <https://github.com/njeff/powerglove>
 - Initial state machine plan (this may change to include a calibration phase for the hand with the servo feedback):



- Have some initial mock-ups of the mechanical design in cardboard
 - We need to more carefully consider the servo mounting position as well as whether we have direct or indirect actuation.

Changes to Scope

- Single servo palm actuator and vibration motors w/ special drivers for more than just on/off vibration
 - Reduces mechanical complexity and reduces power draw



- How the device will actually operate is still mostly in the air, simply due to the fact that we need to experience the haptics in order to better understand how they should be used

Resources to Still Get

- Hardware is on the way: ordered parts, PCB
 - Already have the vibration motors, jumpers, and battery here
 - Should not need anything extra (hopefully)
- From a code standpoint, we still need to work on porting over drivers for one of the sensors, but the main foundation is there.
- Not so much a resource, but we need to think more about how to mount the servo and the actuation arm.
- Likely need different servo horn

Schedule of Remaining Time

- ~~10/28: Project proposal complete~~
- ~~11/4: Lock down the scope of what kind of haptic actuator/force we want to use~~
- ~~11/6: Milestone 1: Design state machine for this system~~
- ~~11/12: PCB sent out for manufacturing, initial prototyping of the physical layout done~~

- 11/16: Milestone 2: Code for initial haptic movement running; can see movement on breadboard system (parts likely come around now - update: not yet...)
 - Leon: have some preliminary CAD or real-life mock-up design of the actuator
 - Jeffrey: port ToF sensor driver and have servos working
- 11/18: Leon: mechanical mockups on actual arm
- 11/20: Continued refinement, Jeffrey: hopefully receive custom PCB and assemble
- 11/25: Both of us: First full integration on hand, simultaneously work on improving fit and haptic function
- 11/30: Both: Refined hardware working
- 12/2: Continued testing, begin writing report and create video
- 12/9: Both: Finalize everything
- 12/15: Project Expo, report due two days later

Risks

The main risk is still the same one as before: getting hardware working is nontrivial and integration is not that simple, especially when designing for a portable application on the hand. We do now have a fall back though with the haptic motors in case the physical servo drive turns out to be too difficult to get working in time (but at the very least we would have it working on the bench and not on the hand).