

Team Meeting #17 Agenda, 1/26/21

- Discuss Client Meeting Details
 - 5:15p on Friday
 - Updates/Discussion Questions for Hiller
- Prototyping
 - Completed circuit schematic
 - Problems with tooling and actuation fork assembly
 - Drill bits
- Lucas
 - Completed Expo registration
 - Massage gun notes/findings
- Ryan and Maclean
 - Tooltip design incorporation
- Should we meet this Thursday?
 - Final assembly and tuning of prototype
 - Testing

Team Meeting #17 Minutes, 1/26/21

- Client Meeting
 - Circuit demonstration without output shaft
 - How much pressure is applied when using tool for testing?
 - What is the average surface area that you shave in surgery?
 - What animal tissues should we start with for cartilage and bone shaving?
 - Do you have any grit recommendations to start?
- Prototyping/Testing
 - We might start testing with a Dremel to get an idea of what our rotational contribution to shaving is
 - For testing, we might want to consider choosing 3 speeds for the motor/solenoid, and then using three different grits
 - If we wanted, we could model in MATLAB or use a high speed camera during testing to simulate the paths our random orbital sander will take
 - **Lucas** will research how last year's team tested their device
 - We may end up trying a few finer grits due to our aggressive shaving platform
 - **Lucas** will follow up on acquiring animal bone from the Vandal Meats shop
 - When Jett tested the prototype earlier this week, there was so much friction generated between printed parts that they melted together. Thus, a solution was needed
 - We discussed putting a bushing over the plastic output shaft, but that was going to be difficult as the 3D print would need to be paused, and then resumed
 - We discussed using a metal tape on the interface, but decided that excess heat would still be an issue
 - We discussed sourcing a metal shaft and then using face collars and clamps to attach the parts we needed to print, but we thought that it would be difficult to attain a tight enough clamp

- In the end, we decided to 3D print the shaft with the key on the end and then use aluminum face collars and a bushing at the interface. The actuation fork would then be printed as usual, and lubrication would be applied to decrease friction.
 - Lucas and Dr. Perry sourced and ordered face collars and bushings, \$25 total
- Tooltip incorporation
 - We chatted with Ryan about a few designs, and decided on using a collar attached to the output shaft to interface with the internal shaft
 - A set screw will secure the two components with an inset
- Theragun Research
 - Theraguns are complex; they use a piston, cylinder, worm gear, and cam to achieve high speeds
 - The design is not possible due to time and size constraints

Action Items

- We are currently waiting on parts to incorporate into the prototype. Once they arrive and they are verified to work we will begin testing on animal tissues. Lucas is working on sourcing tissues and Jett is incorporating the new components. Ryan and Maclean will create the interface for the tooltip and we will use it (hopefully) next Thursday