
EE/CprE/SE 491 WEEKLY REPORT 8
11/1/2024 – 11/7/2024
Group number: sdmay25-15
Project title: Millimeter-wave 3D Scanner
Client &/Advisor: Mohammad Tayeb Al Qaseer
Team Members/Role:
Nathan Reff
Luke Post
James Peterson
Daniel Ripley-Betts

Week's Overview

This week, while momentous, felt less impactful than previous weeks. The bulk of the scanner build has completed, so there are now more complex smaller tasks left with the scanner. Additionally the time has come for some team members to pivot to working on User Interface design, and other components. The big moment came when we powered on the printer for the first time Thursday. Starting with a testing of the 120v PSU we verified the output voltage of 24v was true, then powered down, and reconnected all low high volt wires. Finally we reconnected the external power cord and flipped it back on to much joy and relief.

- **Key Accomplishments:**

- Nate: Finished the implementation of the belts and the physical build of the voron printer
- Luke: Tested the PCB more and helped a small amount with the electrical side of the Voron build
- Daniel: Finished a bulk of the electrical systems for the scanner (voron printer motion system). Interviewed Dr. Tayeb as a user.
- James: Continued build of Voron printer and Starting design for UI.
- Collectively: Powered on scanner for the first time

- **Challenges/Issues:**

- Nate: None
- Luke: We have to create an extension cord in order to wire the x limit switch on the Voron and that was a challenge and I am not sure if the solder will hold.

- Daniel: Numerous questions have arisen with the completion of the scanner/frame/voron. We need some cable management solutions
- James: None

Individual Contributions

Name	Individual Contributions	Hours this week	Hours cumulative
Nate	Started on the implementation of the electronics and connection to voron build	5	36
Luke	PCB testing, acquiring the software for programming the PCB, helped a small amount on the electronics of the Voron	6	35
Daniel	Finished a bulk of the electrical systems for the scanner (voron printer motion system). Interviewed Dr. Tayeb as a user.	6	36
James	Continued build and start UI design	6	35

Upcoming Week's Plan

- Nate: work on the controller board, wiring, and power inlet. Try to finish build
- Luke: Continue testing the PCB. The next step in that is to program it with the software I need to get from Michael. I also need to get the sensor part of the PCB done and find where the extra boards are located.
- James: Continue to build the printer and begin UI design/development

- Daniel: Delve into endstops and firmware to determine which our project will use, how much flexibility there is in our selection of them. Move the motors with use of the firmware next week.

Advisor Meeting Summary

- **Key Discussions:**

- Where we were at with the scanner body, will we complete before thanksgiving break
- The option for this project to become larger in scope as a general open source interface for toolheads
- Interviewed Dr. Tayeb as a user
 - Who uses the scanner
 - Grad student
 - Dr. Tayeb
 - Post Doctorates
 - Highschool students + ISU students
 - What are the current issues faced by the team
 - Short on scanners
 - Other scanners take a while
 - User interface is archaic and needs to be updated to python

- **Action Items:**

- Review our adherence to the schedule critically