sdmay19-03: 3D Metal Printer - Phase II

EE/CprE/SE 491 Weekly Report 5

October 22 - October 29

Client/Advisor: Dr. Bigelow

Team Members

Thomas Waters — *Team Lead, Computer Engineer*
Ariel Rizshky-Yakobson — *Computer Engineer*
Alvin Rymash — *Electrical Engineer*
Jacob Gosse — *Electrical Engineer*
Armand Hernandez — *Software Engineer*
Carter Cahill — *Software Engineer*

Summary of Progress this Report

During this report, we finally got all the necessary software installed on the computer we will be mainly working with. We focused on fixing the code to match the port names that is on the computer. Once the codes were fixed, we were able to finally connect the software and the 3D printer together and get the 3D printer to work using the software. The software is also able to connect to the stepper motors and have it move precisely according to the user.

Pending Issues

There are a few pending issues for us. First of all are the camera and the sensors. Secondly, is the print bed that will be put on the 3D printer. The print bed is mainly a time issue as we are working with the mechanical engineers to get this working.

Alvin Rymash and Jacob Gosse (Electrical Engineers): The electrical engineers had a few pending issues that is caused by the desired camera that will be placed in the vacuum chamber. The camera needs to be able to withstand a low pressure vacuum and a high temperature at the same time. This is an issue for the electrical engineers as they have to look up the specification of the cameras we are interested in and making an accurate guess on whether it is able to withstand those conditions. Furthermore, the sensors will also need to be able to withstand those conditions.

Thomas Waters: The issue here is that we are working with the mechanical engineers on the print bed (the bed that will be putting out steel powder). Without this piece, the computer and software engineers are not able to work on the software connecting to the print bed.

Plans for Upcoming Reporting Period

Our plans for the upcoming reporting period include working on the sensors, getting the camera picked and ordered, and talking to the mechanical engineers regarding the print bed. We will be setting up a meeting together to get all of this worked out. Furthermore, we have to talk to Dr. Bigelow regarding the camera we have picked and get that ordered immediately. The computer engineers will have a meeting with the mechanical engineers to get the print bed done.

Computer Engineers:
Thomas Waters: Meeting with the mechanical engineers to work on the roller and print beds. Continue to look at codes for the sensors that will be placed in the vacuum chamber.
Ariel Rizhsky-Yakobson: Assisting Thomas with the roller and print bed .

Electrical Engineers
Alvin Rymash and Jacob Gosse: Have a set of cameras in mind to discuss with Dr.Bigelow that might potentially work in a low pressure and high temperature environment and have that ordered as soon as possible.

Software Engineers
Carter Cahill and Armand Hernandez: Continue to make improvements to the software controlling the 3D printer, like controlling the power of the laser, etc.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Thomas Waters	Worked together with the software engineers to get the software up and running and making sure it can communicate with the printer.	14	52
Ariel Rizshky-Yakobson	Worked alongside Thomas and the software engineers to get the printer to work through the software.	10	43
Alvin Rymash	Continued to look at the cameras that could potentially work in a vacuum chamber. Also continued to look up parts needed to ensure the 3D printer is in a safe environment to operate in.	15	52
Jacob Gosse	Worked with the other electrical engineer to pick the right camera and researched on getting the sensors to work.	13	56
Armand Hernandez	Worked on fixing the codes to make sure that the software is able to communicate with the 3D printer.	14	44
Carter Cahill	Assisted the software engineer in fixing the codes to get it up and running	13	52

Gitlab Activity Summary
Nothing to report.