

# CprE 492 3D Metal Printer

Progress report 6

3/24/18 to 4/6/18

*Client: Dr. Bigelow*

*Faculty Advisor: Dr. Bigelow*

## Team Members:

Ben Pieper - Control Software

Caleb Toney - Sensor System

Jett Ptacek - Control Software

Kevin Oran - Mechanical Design

Rachel Shannon - Sensor System

## Accomplishments during reporting period

- Completed cube g-code generation algorithms
- Placed orders for all materials necessary to do box wiring
- Frame and bracket parts are done. Drawings are nearly ready for shops.
- Completed arduino sensor data acquisition code

## Pending Issues

- Waiting for Velmex slide with damaged limit switch to be replaced
- Waiting for Nitrogen cylinder to be installed in room, EHS has cleared the room but cylinder still not installed
- Need to document software components and Printer Hardware
- Need to configure printer to work with vacuum chamber upside-down.

## Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Ben Pieper	Completed and started testing cube g-code generation algorithms, placed orders for all materials necessary for box wiring	20	57

Caleb Toney	Completed arduino code and added oxygen sensor integration	6	33
Jett Ptacek	Working on completing g-code parsing software and printer control GUI	8	34
Kevin Oran	Completed frame and bracket parts, worked on drawings	12	62
Rachel Shannon	Completed arduino code and added oxygen sensor integration	6	32
	Total Hours		218

## Plans for next work period

- Sensor System
  - Work on wiring sensors into box
  - Integrate arduino code with main code base
- Assembly
  - Complete wiring of printer
- Mechanical
  - Finish machine shop orders.
  - Re-configure vacuum arrangement
  - Vacuum handles
  - Documentation
  - Hardware order
- Software/motor control
  - Finish GUI for cube generation software
  - Finish GUI and control algorithms for printer control software
  - Develop software to interface with sensor system over serial port

## Summary of Advisor Meeting

We only met with Dr. Bigelow once this period as he was on travel. During the meeting, we discussed a number of things. First, he informed us that he sent the broken Velmex slide back, and that a replacement should be coming soon. We discussed some options we had brainstormed for handles on the box with him, and updated him on the progress of finishing the remaining mechanical manufacturing. Finally, we discussed a newfound issue- sourcing enough power outlets and breaker capacity in the lab to power all of the components of the printer.