

sdmay19-47: NSF Lab furnace control system

Week 7 Report

October 27- November 2nd

Team MembersAdam Matthews — *Software/Hardware Engineer, Report Manager*Kevin Lang — *Electrical Engineer*Jeremy Hartl — *Hardware Engineer*Christopher Pohlen — *Software Engineer/Gitlab Moderator*Nick Brylski — *Systems Engineer***Advisor/Client**Dr. Gary Tuttle

Summary of Progress this Report

During this reporting period, the two DACs that we ordered from Texas Instruments came in. We then acquired break-out boards and spent time soldering them together. Soldering was a difficult challenge. Along with only having access to basic soldering equipment, the DACs were very small TSSOP design. After several different test trials we were able to devise an efficient soldering method for this task. Having our DACs conveniently on a break-out board allows us to easily test and configure them. We then spent time debugging and learning how to use the DACs.

Advances on our Python GUI were also made. A Gitlab sharing folder was created and the initial code has been added. The current code has little functionality at the moment, but has some components to it that are applicable to our GUI for the future. This is a good start that we will be able to quickly build off of next reporting period.

Pending Issues

Now that we have the DACs soldered and ready to use, we need to successfully interface the DACs with the Arduino. This requires writing the correct interfacing code on Arduino as well as gaining the proper understanding to correctly set up the DAC on a hardware level.

Plans for Upcoming Reporting Period

Our plans for the next reporting period is to set up and test the DAC. This will mean connecting all the pins up to the arduino and then sending commands over SPI to set the voltage outputs. To verify that everything is working we will connect the outputs up to a DMM.

The test case for the GUI is coming along, and because the reference material is very good, the next week will likely a fair amount of improvement. We will be building onto our nascent code

and be able to incorporate our designs into our code.'

We will also be picking up some hardware for our client, the arduino Mega.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Adam Matthews	<ul style="list-style-type: none">Performed Soldering of the DAC to break-out boards	3	32
Kevin Lang	<ul style="list-style-type: none">DAC configuration	3	24
Jeremy Hartl	<ul style="list-style-type: none">Soldered DAC Breakout boards with pinsPython GUI research and self learning, then incorporated that into writing some simple GUI test code on Python with Tkinter	5	33
Christopher Pohlen	<ul style="list-style-type: none">Read through some more of a reference book we found for using the Tkinter library.Added some new widgets and things to a test GUI	6	30
Nick Brylski	<ul style="list-style-type: none">Soldered DAC breakout boardsBegan writing code to interface arduino with DAC	5	45

Gitlab Activity Summary

Nothing to report.
