

sdmay19-47: NSF Lab furnace control system

Week 10 Report

April 13th - April 22nd

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

The GUI now has a retry-or-cancel message window that pops up, preventing the GUI from being interacted with if the arduino is not connected to the GUI. The code can also now be relatively easily packaged into an executable. Fixed arduino reset issue on serial port open by soldering caps across reset and ground.

We created a function to find the microcontroller and open a serial port to it when the GUI starts and when it gets disconnected. We added functions to the API to allow it to interact with two different OTC's. We changed the API functions to directly return data rather than through callbacks because serial transactions are blocking, not non-blocking as was originally assumed. Direct return makes it easier for the GUI to call the functions. We also added enumerated error reporting to the API so the GUI can easily report serial transaction errors to the user. We made the 'set' API functions turn out of bounds entries into the max and min for the field, respectively.

We began to integrate the API, the GUI, and the always-on display. This showed us timing errors in the Arduino code. We made the serial transaction code on the Arduino robust to multiple serial calls, and removed redundant calls between the always-on display and the GUI. We also removed the auto update feature of the GUI because it was bogging down the system and we realized it is not necessary if the always-on display has that data already.

Pending IssuesProject complete

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Adam Matthews	<ul style="list-style-type: none">● API work	20	54
Kevin Lang	<ul style="list-style-type: none">● PCB schematic/soldering	3	30
Jeremy Hartl	<ul style="list-style-type: none">● GUI development<ul style="list-style-type: none">○ Finalized design○ Debugged any remaining errors○ Final testing● Final presentation and document prep	12	51
Christopher Pohlen	<ul style="list-style-type: none">● Added a retry window that prevents usage of the GUI if the arduino is not connected, figured out how to relatively easily turn the code into a single executable	17	58
Nick Brylski	<ul style="list-style-type: none">● Embedded coding● Hardware testing● Fixed serial reset issue	15	55

Gitlab Activity Summary

Nothing to report.
