

sdmay19-12: Automatic Solder Dispenser

Week 2 Report

September 10 - September 16

Client: Leland Harker

Team Members

Jason Austin – Software Lead

Justin Wheeler – Mechanical Lead

Zachary Bumstead – Electrical Lead

Kevin Carlson – Mechanical/Electrical Integrator

Trenton Allison – Software/Electrical Integrator

Samuel Willford – Report Manager and Meeting Facilitator

Weekly Summary

This week, we interfaced the Raspberry Pi with the stepper board driver, researched enclosures for our project, studied the mechanical pieces already designed, and researched how to create PCB circuit boards in Eagle and Multisim.

Summary of Progress this Report

- Interfacing Pi with Stepper Motor - Jason
 - Initial control Library created
 - Pi is now able to access stepper
 - Can control rotation
 - Can control direction
- Choose stepper motor driver - Jason
 - Two different drivers exist
 - One where you specify only steps and direction
 - Has a much larger and complicated circuit
 - One where you must send signals to each coil at the right time
 - Much simpler circuit
 - One chip, three capacitors, and an N-MOSFET
- Investigate and learn about software for PCB Design - Trent, Zach
 - Decide whether Eagle or Multisim is better for PCB design
 - Learn how to use the software chosen
 - Trent will focus on Eagle
 - Zach will focus on Multisim
 - Together decision will be made on which is easier

- Draw layout of box - Justin
 - Decide on a box and draw the layout in Inventor
 - Designs may already exist online
 - Box should be around \$50
 - Box should be clear on the top and large enough to fit components comfortably

 - Website Updating and Reports - Sam
 - Figured out how to update our senior design website
 - Uploaded first report
 - Updated Project Members

 - Lightning Talk Slide Preparation - Zach, Kevin, Sam, Justin, Jason
 - Kevin and Zach made preliminary slides
 - Jason worked on 3-minute slide set
 - Sam worked on 1-minute slide set
 - Justin worked on 30-second slide
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Pending Issues

- Solder tube/collector piece design
 - Needs to keep people from grabbing the solder and pulling more out
 - Needs to look nice (No elephant trunk/tail hanging from box)
 - Can't be risky in terms of a clog or jam
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Plans for Upcoming Reporting Period

- Create administrator screen - Jason
 - Should be accessible only when admin card is swiped
 - Admins should be able to be added and removed from admin page
 - Initial admin is whoever swipes card first on program start-up

- Driver Board Layout - Zach, Trent
 - Simplify design if possible
 - Put parts needed in parts list, even if ETG has them already.
 - Design board (this week and next week)
 - Figure out how to get board ordered

- Decide on which guide tube size (if any) will work - Zach
 - Lee gave us different sized tubes for transporting solder from extruder to cutter
 - Tube should force solder to keep a spiralled shape
 - This will make depositing solder to customer much easier

- Design and Draw accumulator - Justin
 - Accumulator will combine the four solder exits and combine them into one.
 - Should be made of aluminum
- Figure out how to get more extruders made - Kevin
 - Extruders for keeping tension on solder need made
 - Currently have 1 made of plastic
 - Need 4 total
 - Should be made from aluminum
- Fit components in enclosure design (this week and next) - Justin
 - Need to make sure components will fit in box selected.
 - Need to know where to place each component.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Sam Willford	Managing schedule, reports, updating website, worked on Lightning Talks	7	15
Jason Austin	Collect Pi and Screen, tested guizero library for GUI, worked on Lightning Talks	6	11
Trent Allison	Learned how to use Eagle for PCB board design, decided with Zach what software should be used	4	8
Justin Wheeler	Worked on Lightning Talks, Started fitting components in drawn enclosure	5	12
Kevin Carlson	Researched enclosures for dispenser, discuss with Justin.	2	9
Zach Bumstead	Learned how to use MultiSim for PCB board design, decided with Trent what software should be used.	3	8

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Gitlab Activity Summary

Action: pushed to, Sat Sep 08 2018

Author: willford

Title: Added Parts List

Action: joined, Sat Sep 08 2018

Author: wheeler1

Action: pushed to, Sat Sep 08 2018

Author: jsaustin

Title: Added stepper pinout file

Action: pushed to, Tue Sep 04 2018

Author: jsaustin

Title: updates

Action: pushed to, Tue Sep 04 2018

Author: jsaustin

Title: Upload of test app and env set

Action: pushed new, Thu Aug 30 2018

Author: jsaustin

Action: joined, Tue Aug 28 2018

Author: carlson5

Action: joined, Tue Aug 28 2018

Author: zrbum

Action: joined, Tue Aug 28 2018

Author: willford

Action: joined, Tue Aug 28 2018

Author: jsaustin

Action: created, Tue Aug 28 2018

Author: sd
