Secure and Remote 3D Printing
Milestone Progression

Tiffanie Petersen - tpetersen2018@my.fit.edu

Isaiah Thomas - ithomas2018@my.fit.edu

Carl Mann - cmann2013@my.fit.edu

Nick Contrell - ncontrell2019@my.fit.edu

Sponsored by

Dr. Siddhartha Bhattacharyya - sbhattacharyya@fit.edu

Client

Mike C Newton

Progress of current Milestone (progress matrix)

Task	Completion %	Tiffanie	Carl	Isaiah	Nick	To do
1. Implement, test, demo front end of the web application	80%	40%	0%	40%	0%	Add in links to all the new web pages
2. Implement, test, demo user features for uploads and creating accounts	100%	25%	65%	10%	0%	
3. Implement, test, demo Admin account abilities	100%	0%	100%	0%	0%	
4. Host Web Application on Raspberry Pi	80%	0%	0%	0%	80%	Test that the docker image works (website hosted)
5. Rework of the github	100%	25%	25%	25%	25%	

Note: A lot of this milestone was spent trying to fix the database that was broken during the rework of the git hub. Since the user data, files, etc are stored in the database having it broken was moved to be a number 1 priority along with figuring out how to interface with the raspberry pi. Dr. Sid asked us to focus on the raspberry pi interfacing during the last milestone's meeting so user permissions were pushed until everything else was figured out.

1. Discussion (at least a few sentences, ie a paragraph) of each accomplished task (and obstacles) for the current Milestone:
    - Task 1: The css style file has been added to the github repository to change the look of all the pages attached to the web application. Linking the style to the already created web pages was difficult because there was a problem in the file paths from the original django framework.
    - Task 2: Added a restriction to only allow ".gcode" files to be uploaded. This is to ensure that the queue does not encounter errors and the printer will be able to print the next project once the project bed is clean. Other

data such as the title input is also cleansed before being saved to the database.

- Task 3: There is an admin view of the web application which allows the admin to see what files were uploaded, a list of users, and groups. Created two groups authenticated user and admin to give permissions for the web application through django.
- Task 4: Hosting the web application on the raspberry pi should be fairly easy once the docker image can be installed. The docker image has been created, so all that is missing is access to the lab and testing that the server is working as intended. To upload the docker image to the raspberry pi we should be able to ssh into the pi and then run commands to install our created docker image. If that does not work we will have to figure out a way to put the image on a usb and install it while physically near the raspberry pi.
- Task 5: Reworked the github to allow for different text editors to interface better. It now requires the virtual environment to be run locally so as to not flood the repo with unnecessary files.

2. Discussion (at least a few sentences, ie a paragraph) of contribution of each team member to the current Milestone:
   - Tiffanie Petersen: Tiffanie has added a style css to the web application to keep the look of the web pages the same. She also has tried to limit the type of files that users can accept, but found that the database was broken somewhere between the last milestone and this one. To fix the database her and Isaiah sat down and walked through to see where the problem was, it is still buggy during some cases but it is being worked on. She also was very helpful in setting up the document and trying to communicate with the team to keep meeting deadlines. Most of the document has been written/edited by her. She also created the presentation and helped with recording the demos.

   - Carl Mann: Carl worked on the implementation of user account registration on the website. He also created a system of permissions on the website, restricting access to views based on user type. Worked on integration of Javascript with the web application.

   - Isaiah Thomas: Primarily worked on the web application. Isaiah improved the method for users uploading files, worked on styling, and created the demos for milestone 2. The file upload system was fixed as it did not always properly store the users upload to the application. Our team's initial site was very bland so some of the goals set during this milestone were style focused. Demos for uploading, user permissions, and styling were conducted.

- Nick Contrell: Nick mostly focused on creating the docker image and researching the best way to host the web server on the Raspberry Pi. He found that our Raspberry Pi should be able to run both the docker image and octoprint at the same time. He is still researching all that will be needed on the raspberry pie to support both the docker image and octoprint.

2. Plan for the next Milestone (task matrix) or [skip if this is for Milestone 6]

Task	Tiffanie	Carl	Isaiah	Nick
Implement, test, and demo the remote printing of a gcode project through the web application.	Testing and also helping with implementation. It cannot be tested until we get access to the raspberry pi in the lab.	Help with the demo	Testing	Implement the remote printing of the gcode (interface with octoprint)
Implement, test, and demo edge cases for web application usage and printing.	Help with the demo and implementation	Testing	Implementation	Help with the demo
Implement, test, and demo queue system for current projects.	Help with the demo	Implementation	Help with the demo	Testing

3. Discussion (at least a few sentences, ie a paragraph) of each planned task for the next Milestone or "Lessons Learned" if this is for Milestone 6

- Task 1: Our first and most important task is hosting our web application on a raspberry pi alongside octoprint. A docker image has already been created in order to test this procedure. From here we need to make sure that the printer is receiving the files from the queue and not getting caught in between the website and the raspberry pi.
- Task 2: The second goal is to establish a connection with octoprint API and create a demo/proof of concept for printing a gcode model. Octoprint has a very well documented API that we will use to transfer gcode files to octoprint and monitor models as they are being printed. Ensuring the stability of this connection and implementing methods to provide relevant data to the user will be the goal of this demo.
- Task 3: The final goal is to implement the printing job queue to be displayed on the web application. As described in the previous design document, printing requests will be stored in a queue based on who requested and was approved for printing a model first. Admins should have the ability to manipulate the queue and users should only have access to their personal data. The queue will be tested in later milestones once a proof of concept print has been completed.

4. Date(s) of meeting(s) with Client during the current milestone:
   - None

5. Client feedback on the current milestone
   - The client will be met once the project proceeds further. Depends on when Dr. Siddhartha Bhattacharyya decides the product is ready.

6. Date(s) of meeting(s) with Faculty Advisor during the current milestone:
   - 11/1/21

7. Faculty Advisor feedback on each task for the current Milestone
   - Task 1:
     - ➢
   - Task 2:
     - ➢
   - Task 3:
     - ➢
   - Task 4:
     - ➢
   - Task 5:
     - ➢

- Request raspberry pie

- Create a higher level systems diagram which better conveys the interactions of the user, raspberry pie, octoprint / web application, and the printer.
- Services/software deployment diagram allocating software to a device

Faculty Advisor Signature: _____ Date: _____

Evaluation by Faculty Advisor

- **Faculty Advisor: detach and return this page to Dr. Chan (HC 214) or email the scores to pkc@cs.fit.edu**

- Score (0-10) for each member: circle a score (or circle two adjacent scores for .25 or write down a real number between 0 and 10)

Tiffanie Petersen	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Carl Mann	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Isaiah Thomas	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Nick Contrell	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10

Faculty Advisor Signature: _____ Date: _____