

MTRL 467 Week 2 Meeting Minutes

Date: January 24th 2020 @ 11 am

Room: FF 313

Leader: Catherine

Secretary: Sofia

Attendance:

Individual	In Attendance
Catherine Greenwood	Y
Jenna Moledina	Y
Clement Asiedu-Antwi	Y
Isabela Taketa	Y
Aleisha Cerny	Y
Sofia McGurk	Y

Agenda:

1. Go through the table of tasks (Shown at the end of the agenda)
 - a. Any comments, concerns or suggestions from Daan

Cat: week 4 is making cad and how to extract dimensional data, choose tools.

Daan: Midterm is the proposal for most people, do we know our marching orders

Cat: MT is talking about what we will do and what we have started doing

Daan: Yes- MT contains summary of different options and some start at an analysis of what you could do with it.

Cat: After MT is actually printing, purchasing and software creating.

Cat: Ambitious plan

Daan: Hard to see what can happen in parallel with the formatting the way it is. Week 10- arms on printer needs to be tested earlier cause if it doesn't work then we would be screwed. Hard to see where we might find efficiencies- maybe a Gantt Chart would be more productive so we can see what can happen in parallel and what work needs to go together. Free software for Gantt Charts available.

Daan: Worried a little about the progression of the software. Have to think about what each software task entails (subtasks). Break it down into individual tasks, what does it mean? What pieces do we need to make it work? Some will become more clear as we go on, but we need to think about how we are going to achieve things (steps). Not that it has to be done exactly as such.

2. Discuss layer surface data extraction

- a. Last week Daan suggested we get this data from the STL file, but we don't see how this is possible unless we use a slicer. Are we missing something?
- b. Should we extract the data from the G-code instead?

J: STL only gives us information on the surface of the STL

Daan: slicer takes STL, (we don't need to write our own slicer!!!!)... can you interface with the slicer and interpret not the G-code but the layer split STL? The tools do this anyway- why can't we do it?

Cat: easy to say that we can interface with the slicer before the g-code but how do we do it?

Daan: Slicer preps and generates the g-code. When the uploaded STL gets sent to the slicer triangle data is provided (from tessellation). Need to determine if the packages (in slic3r) change STL or just pass info on that came directly from the STL? When you output g-code from slic3r program it includes parameters that are specific to the printer... preamble at the top of the g-code that is a list of the printer specifics.

3. Discuss how to interact with G-code

- a. To pause the print
- b. To initiate laser camera system
- c. If Daan doesn't know, where should we start?

Daan: It's not too fancy- there are specific codes that trigger specific things (speed, move, etc).

Daan: We need to read the preamble on the g-code as it describes the commands and what actions they trigger.

Cat: E is the amount of filament to be moved.

S: can you tell what line we are on from g-code?

C: Yes tells us what layer we are on on the screen

Daan: Movements are indicated by an increase in speed but will not extrude.

J: can we tell what layer we are on from this?

Daan: Some editors will let you know what line number we are on

Cat: Possible to write a script that after each layer it stops print and calls something else

Daan: Simplify or simply 3D- allows you to add a piece of code to before each layer or in the preamble... could add a pause or a code that moves extruder head without extruding

I: once defect detected how do we edit g-code

Daan: can't edit the g-code once the print has been run. Most simple thing to do is link system to power and shut it off- defect found = kill power. Add another wire to arduino that turns one of

the pins high and shuts it down. Would have to compile into controller something that says if this goes high then stop.

J: High level

J: can more people get training for the 3D printer?

Daan: Yes but i'd ask Will- he will find out from Chad. I don't see why not.

C: can we get access to the room? Daan will let us in...

Table of Tasks

Task	Week	Completed by	Comments
Reflection	1	All	Milestone
Reflect on last term to decide the direction of this term	1	All	Done individually and then discussed as a group
Determine problem definition	2	All	Milestone
Discussed problem definition	2	All	
Discussed problem definition with Daan to finalize the scope of the project	2	All	
Proposal report Due	3	All	Milestone
Technical Review	3	All	Done separately and then discussed in a meeting prior to writing
Report writing	3	All	To be divided equally
Software and hardware plan	4	All	Milestone
Preliminary CAD model for system stand	4	Clement & Sofia	
Determine how we will extract dimensional data	4	Catherine, Isabela, Jenna & Aleisha	It may be done using the G-code or the STL file
Choose laser	4	Clement & Sofia	Cost and function analysis
Choose camera	4	Clement & Sofia	Cost and function analysis
Start writing report	4	All	To be divided equally
Write dimensional data extraction software	4	Catherine, Isabela, Jenna & Aleisha	
Midterm report and presentation	5	All	Milestone
Write report	5	All	To be divided equally
Prepare and practice presentation	5	All	Sofia and Isabela will present
Continue software development and collect materials for prototype	6	All	Milestone
Order laser and camera	6	Clement & Sofia	Following approval from Daan
Print stand	6	Clement & Sofia	Following approval from Daan
Write software to compare dimensional data to laser image	6	Catherine, Isabela, Jenna & Aleisha	
Free week for any task overflow	7	All	Milestone
Continue software and start to build prototype	8	All	Milestone
Integrate software with printer	8	Catherine, Isabela, Jenna & Aleisha	
Build prototype	8	Clement & Sofia	

Continue software and finish building prototype	9	All	Milestone
Test and debug software	9	Catherine, Isabela, Jenna & Aleisha	We expect this step to be difficult and take numerous weeks.
Test prints with prototype	9	Clement & Sofia	
Continue software and finish building prototype	10	All	Milestone
Test and debug software	10	Catherine, Isabela, Jenna & Aleisha	We expect this step to be difficult and take numerous weeks.
Any needed work left for the physical prototype	10	Clement & Sofia	If problems were found during testing in week 9, they will be fixed
Start bringing software and hardware together	11	All	Milestone
Combine software and hardware then test	11	All	
Begin writing final report	11	All	To be divided equally
Bring software and hardware together	12	All	Milestone
Fix any issues with the system	12	All	
Continue writing report	12	All	To be divided equally
Final presentation and report	13	All	Milestone
Write report	13	All	To be divided equally
Prepare and practice presentation	13	All	Clement, Catherine, Jenna & Aleisha will present
Turn in final report	14	All	Milestone

Action Items:

	Item	Assigned To
1.	Submit Proposal Report	All
2.	Check out printer: See if we can extract sliced STL from Slicer	All
3.	Create a more detailed plan of how we are going to proceed with the software- create subtasks within all of our larger tasks.	All
4.	Start working on the CAD arms for the printer	All
5.	Determine what tools we need	All
6.	Get access to simplify 3D software	All

Next Meeting Time: January 31st at 11 am