MTRL 467 Week 4 - Meeting Minutes

Date: January 31st, 2020

Room: FF 313

Leader: Isabela

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. Status Update
2. Software update - Catherine

See the separate Software Plan that Cat created.

Cat: When height increases we know a new layer has been formed. Sometimes the extruder moves up and down to calibrate.

Cat: Dimensional tolerances would be an extra thing (too big or too small).

Daan: That might be easy compared to other things we've done.

Daan: It's not actually multiplying (it's repeating) for the arrays at the bottom.

Daan: so in this example the 6 marker is the value that we are looking at.

Cat: the values are z values (in the array).

Cat: Trying to compare height in image to correct height… multiplication to account for different pixel sizes. One of the arrays comes from image- calculated heights and the other is the g-code values (what it should be).

Daan: Couldn't you create your data from g-code on the same scale so you don't have to do all the multiplication. Pixels from image and g-code could be different but they could be the same length. This whole process is trying to get everything on the same scale. 4 on a 5 mm scale and 8 on a 10 mm scale. Talking about the ratio more than anything.

Daan: Makes sense but whether we could pre-do the processing of the g-code?

    3. Go over midterm presentation outline

Introduction:

● Summary of last term or research we have done so far this term

I: Supposed to do summary of last term or what we've done.

J: Summary is hard to do because of time constraints in the presentation.

Daan: What is this prez about for the other groups? How can we adapt our info to that format. What is our problem- what space are we playing in. Problem is defect detection and reduction of waste. High level 2 sentences: highlight what we did last term and what we are going to try to do. Problem that we are focused on is how to make this a robust solution. How to mount camera, how to calibrate. Have system, how do we try to make a product.

J: are gonna have an expected challenges section

Daan: Major selection at this point?

J: Narrowed scope and challenges for each.

Daan: If able talk about some other possibilities like, how would you process this in an automated way. i.e : cut off the power, printcore.py

Problem Definition

● Constraints:
    ○ Non-contact
    ○ Low cost
    ○ Minimum defect size of 150 microns
    ○ Geometry of prusa i3
    ○ Resolution of laser

I: is there any more?

Daan: Think about other constraints about automation, computer. How do we envision this? Sell to machine manufacturer and they would sell as part of their package. Can we set this up so that it runs on arduino or do we need computers? Or is it standalone.

Specification Definition:

No Discussion

Technical Review:

No Discussion

Design Option:

S: only one option

Daan: come up with other possibilities, but this is what we selected.

J: go over different design approaches to the software.

Daan: printcore allows termination of print and tell us why whereas shut off might not give any info.

Daan: in case of stopping print, have a relay where analysis says failed print and then sends to relay to the printer. Don't have time for analysis and implementation of all the solutions more than just a higher level overview.

MTRL 467 Week 4 - Meeting Minutes

J: Talk to Jon about changes in the report

Expected Challenges
Daan: Good to have.

Summary/ Recommendations:
More work- actually do things

LCA:
- Should we use the same as last term or do we need a new one?

Daan: Not sure how you would do a new one? The design on this case is about geometry and configuration and software. I'm not sure this is going to help/ be relevant.
J: Not really relevant
Daan: this was supposed to be altered for us- to allow us to go into different directions. No need to include it in the presentation (Don't need to mention it at all).
C: do we need confirmation to change things in presentation? report?
Daan: Confirm with Jon about report but presentation we should be fine.

Daan: correct the image parallax effect. Is it possible to do a correction on the picture itself- give your image glasses. For things on the side of the centerline will bow out, lines will straighten.
Cat: Every pixel represents a very small amount of space, so hard to have the camera vertical.
Daan: this is almost like a calibration on the line.
Cat: Camera and laser would move together in our setup.
Daan: when you take image you focus in center and as you move out depending on the shape of the lense you get variability in the shape as something in the camera. Mind processes things and assumes that they are straight. But if you look at pixels it might actually bend because of the optics- but we see it as such (mind processes it). But numerically it has some curve to it. Using code to do what the mind does.
Cat: maybe it won't matter cause greater than 150 um
J: dependent on the lense
Daan: depends on camera and biggest issue at the edge of part
Cat: smaller FOV will make it not as bad.
Cat: not gonna be a big an issue rn- more of a scale up issue
Daan: Put it onto a big print system- might be a challenge. Size or width of part could be a constraint.
Cat: Multiplying array lengths- can you explain again?
Daan: We need to come up with test problems that show what we can do works! Show that we can manipulate what is happening. Have a video in the presentation?

Action Items on the following page:

MTRL 467 Week 4 - Meeting Minutes

Action Items:

	Item	Assigned To
1.	Midterm Presentation	All
2.	Midterm Report	All

Next Meeting Time: February 14th 2020