

# SE 491 WEEKLY REPORT 4

Date: 2/27/2017

Group Number:

Dec1704

Project Title:

Danfoss Visual Inspection System

Client &/ Advisor:

Radoslaw Kornicki and Professor Dogandzic

Team Members &/ Roles:

Joseph Elliott – Communications

Evan Woodring – Team Lead

Nicholas Gerleman – Key Concepts

Cory Itzen - Webmaster

## Weekly Summary

This week was a little different than normal. Because of midterms and large projects being due, we didn't have as much time as normal to work. Because of this time constraint, we decided to focus on project planning instead of coding. A majority of our time went into creating the project plan. We decided to put a little more effort into the project plan than necessary in an effort to gain a better understanding of the scope of our project.

We gained a better idea of what'll be in store for us as the first semester reaches an end. For example, we plan on having a functional prototype by the end of the semester. This means that there will be crunch periods throughout this semester, mostly when each of our modules are nearing completion. We further discussed our plans on potentially incorporating another camera into the project. We received the Occipital Structure camera, which may rival the Intel RealSense.

In being given this camera, we also brought about a potential change in resource allocation. Evan is currently working on converting JT files to OBJ files for the point cloud algorithms. However, there is a chance that Danfoss has software that does this already (still awaiting confirmation). If that is the case, then it may be wise to put Evan on the task of working with the Occipital Structure camera.

### Past Week Accomplishments

Name	Accomplishments
Joseph Elliott	Wrote up most of the Project Plan.
Evan Woodring	Proofread project plan. Setup dev environment for the Occipital camera.
Nicholas Gerleman	Finished the backend for the test bench.
Cory Itzen	Developed more on the website. Made the timelines for the project plan.

### Pending Issues

Name	If Applicable
Joseph Elliott	n/a
Evan Woodring	n/a
Nicholas Gerleman	n/a
Cory Itzen	n/a

### Individual Contributions

NAME	INDIVIDUAL CONTRIBUTIONS	HOURS THIS WEEK	HOURS CUMULATIVE
Joseph Elliott	Did most of the project plan so others could focus on programming.	3	25
Evan Woodring	Gave the group a better understanding of the requirements behind the Occipital camera.	2	19
Nicholas Gerleman	Brought the group closer to being able to validate correctness of point cloud algorithms.	9.5	38
Cory Itzen	Gave the group a better understanding of our project's timeline.	3	20

### Comments and Extended Discussion

n/a

### Plan for Coming Week

Name	Accomplishments
Joseph Elliott	Generate an OBJ file from the RealSense custom written code.
Evan Woodring	Explore the Occipital Structure Sensor.
Nicholas Gerleman	Finish the backend for the test bench.
Cory Itzen	Finish the website. Start working with the PCL libraries.

### Summary of Weekly Advisor Meeting

In this week's meeting, we discussed a potential addition to our project to further increase accuracy in scanning an object. The library in question utilizes a neural network to remember what objects were detected as good and bad, then using the history to determine if the next scanned object will be good or bad. We do not think this is a good approach as this leaves room for the neural network to fall behind

when new products are added to the system. To compare with our current vision, a neural network would require training for every new product added. In contrast, we already modularized the input of CAD models to have a 1 to 1 relationship between scanning and validating. This makes using a neural network less appealing to implement.

We further discussed possibilities of running multiple scans where the latter scans focus on potential areas of error. For example, if the first scan notices a problem on the top of the product, the following scans would only scan the top and then compare that top to the top of the CAD model. This poses another problem itself: how do we get the top of the CAD model? For now, we believe the best approach is to continue on the path we had originally set.