

EE/CprE/SE 492 Bi-Weekly Report 01

August 20th - September 9th

Group Number: 18

Project Title: Object Detection and Identification with Sensor Fusion

Client: Danfoss (Michael Olson)

Advisor: Dr. Wang

Team Members/Role:

Tucker Creger - Project Manager

Eric Bishop - Software Developer

Kellen O'Connor - Deep Learning Architect

Clayton White - Hardware Design Engineer

Mitch Hagar - Radar System Lead

Nihaal Sitaraman - Hardware Developer

Weekly Summary:

Over these last three weeks we have been regathering our team from over the summer, and scheduling proper times for our weekly meetings. We made a schedule for the next few weeks, which the main goals right now are to build the harness for the radar so we can properly test the data, and get ideas on how to best integrate the camera feed, and radar data. Then we are also looking more into the software specifics of gathering the radar data into the Jetson TX2, and then also gather more info on how to best build our machine learning design.

Past week accomplishments:

Tucker designed the wiring harness for the radar module and Jetson TX2. We ordered parts for the harness and will start building that.

We also had an issue sourcing one of the pins for our connectors, but we were able to work with our client to get that part from them directly to prevent a delay in building the harness.

We gathered more info and researched into the software needed into the Jetson.

We also have designed the PCB board, and just need to build it in Altium, or another PCB builder.

Pending Issues:

- Installing drivers for our Kvaser Leaf Light 2.0 CAN adapter and PCAN USB to CAN adapter.

- The Jetson TX2 ran out of RAM when testing the public SSD. This is good motivation to use transfer learning and a simpler SSD.
- One of the pins for the connectors in our harness is out of stock at Digikey and Mouser so we will need to source these from our client or another company.

Individual contributions:

Name	Accomplishments	Hours This Week	Hours Cumulative
Tucker Creger	Designed wiring harness, created BOM for wiring harness, ordered parts for wiring harness, picked up new radar from Danfoss. I also worked with Kellen and Eric on some of the software development on the Jetson TX2.	8	8
Eric Bishop	I looked into drivers that will work properly with the kvaser so we can read example data from the Radar on the jetson so we can start properly writing code. I have also been working on the website	9	9
Kellen O'Connor	I worked on ensuring Keras, Tensorflow, and OpenCV work on the Jetson, which required reflashing it with JetPack. I finalized the publicly available data labeling tools we'll be using for the Single Shot Detector. I worked with Eric and Tucker on getting a publicly available pre-trained SSD	10	10

	working on the Jetson.		
Clayton White	Looked into appropriate designs for the required PCB. In the process of familiarizing myself with Ultiboard.	5	5
Mitch Hagar	Worked with Nihaal and Clayton on Multisim and Ultiboard to design a PCB for the CAN Transceiver. Met with Dr. Tuttle in order to get the circuit checked.	5	5
Nihaal Sitaraman	Worked with Mitch and Clayton on Multisim and Ultiboard to design a PCB for the CAN Transceiver. Met with Dr. Tuttle in order to get the circuit checked. Attended a couple lectures on PCB design given by Dr. Tuttle in order to learn more about how to use the program.	6	6

Plans for next two weeks:

Mitch, Clayton, and Nihaal will be working on the PCB design for the CAN controller and getting a PCB fabricated for that. Tucker and Kellen will be working on building the wiring harness for the system. Kellen, Eric, and Tucker will be working on some of the early stages of software development and integrating the radar module with the Jetson TX2.

Advisor/Client Notes:

We met with our advisor on 8/30 and our client 9/6. We discussed pending issues and our plans for the next few weeks. Our next advisor meeting is on 9/13 and our next client meeting is on 9/27. The 9/20 meeting time will be allocated for a presentation in class.