

# CprE/SE 491 Weekly Report 19

Dates: 10/5/2017 - 10/11/2017

## Dec1709 - ALVINN

### Autonomous Vehicle Mission Processor with Machine Learning

<b>Team Leaders:</b>	Bijan Choobineh Darren Davis	<b>Advisors:</b>	Dr. Jones & Dr. Zambreno
<b>Communicator:</b>	Tracy La Van	<b>Client:</b>	Josh Bertram - Rockwell Collins
<b>Key Concept Holders:</b>	Jesse Luedtke David Schott	<b>Email:</b>	<a href="mailto:dec1709@iastate.edu">dec1709@iastate.edu</a> <a href="mailto:alvinn@iastate.edu">alvinn@iastate.edu</a>
<b>Webmaster:</b>	Robert Stemig		

#### Weekly Summary:

The team has been granted HPC cluster access and is in the process of getting the needed software installed on those computers. The team has worked with debugging the OpenCV errors and may be close to being able to stream video with GStreamer.

#### Past Week Accomplishments:

- **Darren, Tracy, & Jesse:** Worked on trying to debug OpenCV, TX1's camera, and GStreamer errors that are showing up. Met with the other team - Dec1710.
- **Darren, Jesse, & Bijan:** Worked on getting a video stream into the network and changing the network to detect planes instead of people.
- **Bijan Choobineh:** DetectNet network able to detect planes and identify them with boxes in processed images. It can output confidence levels with these images as well if desired.
- **Darren Davis:** Have install instructions for SSD and YOLO networks if we need to try one of them. Installed YOLO on home computer to try. Worked on video stream at home. Started working on homework assignment 0.
- **Jesse Luedtke:** Using GStreamer's API for integrating our video stream directly into the C++ program which executes our neural network.
- **David Schott:** I worked on installing Caffe + PyCaffe on the board and HPC computing cluster. In addition to this, I tested the correct installation by running the make tests.
- **Robert Stemig:** Worked with GStreamer video pipeline as well as learning more about the OpenCV for Tegra, updated website information, worked on running Linux shell on personal computer for ssh'ing to TX1

**Pending Issues:**

- **David Schott:** Caffe on the Nvidia Jetson TX1 board complains about insufficient memory. On the HPC cluster, the Protobuf dependency is causing problems when attempting to compile Caffe.

**Plan for Coming Week:**

- **As a Group:** Need to work on 492 homework assignments this next week.
- **Darren Davis:** Working on getting video stream into the network.
- **Jesse Luedtke:** Continue working on receiving a GStreamer video pipeline and extracting the latest frame.
- **David Schott:** Completing Caffe installation and working through those issues.
- **Robert Stemig:** Working with GStreamer video stream to network.

**Individual contributions:**

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours This Week</u>	<u>Cumulative Hours</u>
Bijan C.	Video stream, detect net, HW0, HW1	5.0	21.0
Darren D.	Video stream, SSD and YOLO networks, Homework 0, Meeting with other team	15.0	52.0
Tracy L.	Meeting with other team, tried helping debug OpenCV errors	5.0	30.0
Jesse L.	OpenCV errors and GStreamer	13.0	45.0
David S.	Working on the Caffe installation on the board and HPC cluster + setting up the environment	7.0	37.0
Robert S.	OpenCV for Tegra, GStreamer pipeline, website info	11.0	27.0
Totals:		56.0	212.0

**Summary of Weekly Advisor Meeting (10/6/2017):**

Zoom: <https://zoom.us/j/7680301181>

- Absent: Dr. Zambreno, Bijan C.
- Need deadlines in place
  - Sub 20 hours this far (prior to this week's addition) into the semester is not good for 492
  - Priority List needs updated and dates need assigned

**Summary of Weekly Team Meeting (10/9/2017):**

Zoom: <https://zoom.us/j/393292249>

- Absent: Bijan C., Robert S.
- Blockers:
  - Darren & Jesse - Still trying to get GStreamer to process video on board
  - Tracy & Bijan - N/A
  - David - Waiting for HPC to install Caffe (they're in the process)
- New Deadlines Assigned (including 492 Hw) - See [Priority List](#)

**Summary of Meeting with Dec1701 (10/5/2017):**

- David contact Alex (aorman@iastate.edu)
  - Switch node when starting
  - Use info from Jones' email
  - Can use multiple nodes of a cluster (will average back together)
  - Runs as batch job - careful with # hours (default is low)
- Darren will keep in contact with the other group