

CprE/SE 491 Weekly Report 6

Date: 2/23/2017 - 3/1/2017

Dec1709 - ALVINN

Autonomous Vehicle Mission Processor with Machine Learning

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

Weekly Summary:

Met with advisors to discuss ideas regarding the project. Based on the feedback received, worked on narrowing down objective more as well as doing more research on neural networks and computer vision to understand the feasibility of some objectives. Also continued work practicing using neural networks and computer vision.

Past Week Accomplishments:

- **As a Group:** Met with advisors and client. Presented to advisors our project pitch. Completed version 1 of the project plan.
- **Bijan Choobineh:** Due to MidTerm exams this week, my productivity was rather low. Worked on project plan as well as setting up a Tensorflow environment. Working on Tensorflow and integrating it with OpenCV.
- **Darren Davis:** Outside of the project plan and advisor presentation I didn't accomplish as much as I wanted do to illness. I setup up to do bulk image downloads of pictures and download a group of images containing an X for the first stage. Watched a few more tutorials.
- **Tracy La Van:** Worked on surviving midterms. Put a good portion of the PowerPoint pitch together.
- **Jesse Luedtke:** Shared example TensorFlow code on Github for a basic NN. Getting more familiar with TensorFlow and Python.
- **David Schott:** Shared previous facial detection + recognition project using Python and OpenCV with team.
- **Robert Stemig:** Due to midterm exams i wasn't able to make very much progress this week, continued tutorials and experimented more with TensorFlow to gain better background

Pending Issues:

- **As a Group:** Need to decide how to break up work for design document.
- **Bijan Choobineh:** Midterms all happening atm so productivity was rather low. Need to practice using tensorflow and OpenCV together for image detection.

Plan for Coming Week:

- **As a Group:** In the next week, the group will begin work on the design document and continue education. The team needs to meet and determine who will do what on the design document.
- **Bijan Choobineh:** Post completion of the series of midterm exams, will continue working on learning TensorFlow and start integrating OpenCV with Tensorflow.
- **Darren Davis:** Outside of the design document I want to get Python and TensorFlow working at home and finish up the tutorial I have been watching.
- **Tracy La Van:** Will work on more education - review Python and look further into OpenCV and TensorFlow.
- **Jesse Luedtke:** Work on detecting an "X" in an image with TensorFlow
- **David Schott:** OpenCV / Tensorflow. Specifically, I'd like to explore to what extent feature extraction using OpenCV is needed in order to feed data in a Tensorflow-compliant way.
- **Robert Stemig:** more in depth tensorflow examples on basic image processing , and working with opencv

Individual contributions:

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours This Week</u>	<u>Cumulative Hours</u>
Bijan C.	Project Plan, Open CV with images, Tensorflow setup	4.0	30.5
Darren D.	Presentation, project plan, images, tutorial	3.0	32.0
Tracy L.	PowerPoints, Project Plan	2.0	23.5
Jesse L.	Github, TensorFlow and Python	4.0	29.0
David S.	Gitlab, OpenCV	3.0	17.0
Robert S.	tensorflow/opencv	4.0	26.0
Totals:		20.0	158.0

Summary of Weekly Advisor Meeting (2/23/2017):

- Present: Drs. Jones & Zambreno, Bijan Choobineh, Darren Davis, Tracy La Van, Jesse Luedtke, David Schott, Robert Stemig
- Went over pitch PowerPoint
- TODO
 - Have a few slides that shows the structure of how components of a Computer Vision project that is making use of Machine Learning would fit together. This will require you to read up on Computer Vision and Machine Learning/Deep Learning so that are familiar with the components of such a system.
 - Read documents Dr. Jones sent out in his email 2/20 "Neural Network Textbook Pages"
- Zambreno recommends OpenCV (maybe have a Matlab wrapper)

Summary of Weekly Client Meeting (2/23/2017):

- Present: Josh Bertram, Bijan Choobineh, Darren Davis, Tracy La Van, Jesse Luedtke, David Schott, Robert Stemig
- Cleared up scheduling confusion
- Shared vision PowerPoint with him and asked for feedback
- Update on hearing back on NDA? (If he's been able to ask Rockwell and hear back yet)
 - Sent forms over 2/22 and waiting to hear back
- Matlab
 - Up to us on how we want to run the project (due to GPU, etc.)
- Send us sample video?
- Drone model they use