
EE / CPRE / SE 491 - Weekly Report 02

09/28/19 – 10/12/19

Group number: sdmay20-41
Project title: Machine Learning for Understanding Aging
Client &/Advisor: Dr. Julie Dickerson
Team Members/Role:

- Ian Simon / Chief Engineer
- Jacob Laing / Chief Engineer
- Nathan Carter / Test Engineer
- Samantha Williams / Meeting Scribe
- Scott Rose / Meeting Facilitator
- Aria Sheets / Report Manager

Weekly Summary:

- This week we focused on getting Python and TensorFlow installed on our machines. This was followed by finding TensorFlow projects to install and compile on our machines to get familiar with the library. We had a discussion in our weekly meeting about aging, the effects of it, and all parties interested in aging. We came up with a modular design for our projects and set deliverables for us to strive for.

Past Week Accomplishments:

- Ian Simon: Worked on installing and learning about TensorFlow. I also spent time learning more about machine learning. I looked at some of the data we were going to be working with and read one of the codebooks to see if it would help me to understand the data more.
- Jacob Laing: Worked on installing and looking into some tutorials for TensorFlow. I also looked into the data that was provided by our contact and started looking at how we could apply that to some of the examples I had seen. Finally, I looked at some examples of Python to refamiliarize myself with the language as it has been a while since I have programmed in Python.
- Nathan Carter: This week I worked on researching which tool our team will use to develop our machine learning program. The team came to the decision to use tensorflow over pytorch. I continued work on researching machine learning algorithms and design. I also worked on setting up tensorflow on my personal computer and started working on small tensorflow examples to get accustomed to the framework.
- Samantha Williams: This week I worked on setting up TensorFlow on my system and also read one of the codebooks provided with the data we received. I also worked on the problem description for our project. This will allow us to better understand the problem we want to solve and decide on the best design to solve that problem.
- Scott Rose: This week I installed tensor flow on my personal computer. To get more experience with TensorFlow, I worked on 3 projects that would introduce the library to

me. I created clothing recognition project, a digit recognition project, and an image classifying project in TensorFlow. We also had to create a lightning talk powerpoint, and I helped create slides for the team lightning talk

- Aria Sheets: I worked on creating the design of the project. We needed to make sure the design had important properties: it had to be modular, it had to be easily unit testable, and contributions to different modules had to be easy. I also worked on installing Python and TensorFlow on my machine and researched how to use the TensorFlow library. Using the TensorFlow website, I read up on different TensorFlow projects and tutorials to help correlate those projects to ours (<https://www.tensorflow.org/tutorials/>). This website goes into depth and links you to projects that can be compiled and ran online (<https://colab.research.google.com/>)

Pending Issues:

- Ian Simon: Figuring out how to read in data from the studies will be difficult. After looking at a few codebooks, it is clear that no study can be read the same as another. Many columns also seem to depend on others so a lot of manual labor may be necessary when we decide how we want to compile the data.
- Jacob Laing: Figuring out how to set up Tensorflow to work on my system was a bit of an issue. This week I will be looking into it more so that I can get started on some of my own examples. The old data was very confusing but now that we have some better data we can start to really look into how to apply that to our project.
- Nathan Carter: There are no pending issues for me this week.
- Samantha Williams: I had some issues setting up TensorFlow on my system. This week I am going to restart the set up in hopes of a smoother set up. The codebooks were a tad bit confusing, but in our meeting we decided on a different source for data which has a more uniform codebook format, so this should not be an issue.
- Scott Rose: Need to finish making SQL table design for our data. We have our data in tsv form, so we just need to decide which format the data will be stored in, and we can start working on loading the data into a SQL database.
- Aria Sheets: Installing TensorFlow took a bit of time, especially because I installed the GPU version of TensorFlow. This version has to be very precise with its installation. I also struggled to read the codebooks when we were first given them. We tried to understand them for a week until last meeting with our client, which we then decided to use a different data source.

Individual Contributions:

<u>Name</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>Hours Cumulative</u>
Ian Simon	Installed TensorFlow. Read one of the codebooks for the data we have used. Watched videos on TensorFlow.	Week 3: 5 Week 4: 3	13
Jacob Laing	Worked on installing Tensorflow, researched python, looked into the new data sources, and researched some examples on Tensorflow and Python	Week 3: 3 Week 4: 4	13
Nathan Carter	Researched python and the tensorflow framework. Installed tensorflow on my pc. Researched more into machine learning. Began working with tensorflow.	Week 3: 4 Week 4: 4	14
Samantha Williams	Read into the data we were planning on using. Installed TensorFlow and attempted to set up an example on my laptop. Looked into one of the codebooks of the data we were planning on using.	Week 3: 4 Week 4: 5	15
Scott Rose	Installed tensor flow on my personal computer. Read through codebooks for data. Created clothing recognition project in tensor flow. Did a digit recognition project in tensor flow. Did an image classifying project in tensor flow. Helped create slides for the team lightning talk.	Week 3: 4 Week 4: 4	13
Aria Sheets	Created the project design. Set up some deliverables with reasonably allocated times. Downloaded and installed Python and TensorFlow on my computer, following with research on projects that use TensorFlow. Watched videos and read tutorials that explain how to use TensorFlow. Compiled and ran TensorFlow code online to get a better understanding of the syntax and common use of TensorFlow. Organizing team documents on our team website.	Week 3: 4 Week 4: 4	15

Comments and Extended Discussion:

- Meeting with a Gerontology professor provided us with more insight about what problems researchers hope to solve and how our project could help. She mentioned items that are fundamental to human well-being, and how specific data may relate to those items. This allowed us to explore topics that might be of interest to our client.

Plans for the Upcoming Week:

- Ian Simon: This week I would like to start brushing up on python. I would like to practice reading and manipulating the data so that I will be prepared for when we start building that component of the project. I also need to begin coding in TensorFlow and continue research into machine learning.
- Jacob Laing: I will be working on getting Tensorflow setup completely and start working on some examples using the new data source. I may also look into how we can automatically read in the data from the source so that we can use it with our project effectively. Finally I'll be looking into getting a server so that we can store the information we parse into a database.
- Nathan Carter: In the upcoming week I plan on working more with tensorflow examples. I will also be doing more research on machine learning and tensorflow. I will also begin to look at the data we will need to need to read in and process for our machine learning program.
- Samantha Williams: I'm planning on adding more details to our project problem description as well as our plan to solve this problem. I will also try to read in some of the new data we are using and look into the code books for this data. Once we do this, we will have a better grasp of the information or patterns we might be able to receive from the data.
- Scott Rose: I plan on having a first draft for the design of the SQL database for our project. I also want to create a plan for how we are going to host this database, and hopefully start on reading the data in.
- Aria Sheets: I plan on revising our design based on discussion and reviews. I possibly plan on setting up our Slack to use over Hangouts. I plan on doing more research on machine learning, with focus on deep learning. I also plan on getting some TensorFlow projects compiled and ran on my machine, rather than compiling and running them online.