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# EE / CPR E / SE 491 - Biweekly Report 05

03/12/2020 – 04/02/2020

**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

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## Biweekly Summary:

- Reformed various program parameters in order to be console inputs from the user. Completed the implementation of the data extractor module. Worked on implementing the core of our program - the machine learning module. Successfully ran the machine learning component and displayed root mean squared error values in a scatter plot plotly graph. Developed the Meta Data component to document the specifications of the specific program's run.

## Past Two Weeks Accomplishments:

- Ian Simon: Worked on implementing a new parameter that determines how to handle missing data. Each column specifies whether it would like to set the missing data to the average of the rest of the column or throw out the row entirely. I adapted what Nathan had created earlier to determine this thorough user input so that now it is automatic and based on uploaded column parameters. I also watched the peer eval videos and created questions for each.
- Jacob Laing: Worked on learning how PyQt works and how we can use it to create a GUI for our app. Started work on designing the GUI as well as implementing is using PyQt.
- Nathan Carter: Worked on implementing the tensorflow component of the project. This takes in data from the data parser module, separates it into testing and training data subsets, and runs it through our machine learning algorithm.
- Samantha Williams: Worked on adding the daily diary processing method to the console parameters entered by the user. This required some reworking of what the program uses in various logic decisions. This also required some reworking of unit tests. Completed the plotly error graph to show the root mean squared error of the machine learning program. Continued working on the meta data module. Added attributes such as start time, end time, total run time, missing data technique, daily diary processing

method, tensorflow version, console parameters, file names, column names, and output logs. This information prints to a file named output.txt.

- Scott Rose: Made adjustments to the program that helped minimize the loss of the machine learning model. Wrote a report that described how our processing of data worked so that our client could review it. Conducted code review on both our missing value replacement component and our machine learning component.
- Aria Sheets: Worked on implementing the Plotly module. Worked on fixing pipeline dependencies to allow the machine learning module to compile correctly on the computer used for the pipeline. Code reviewed pull requests that were for adding the machine learning module, Plotly module, and meta data.

**Pending Issues:**

- Ian Simon: See if we need any more parameters, then I can move on to other parts of the project.
- Jacob Laing: GUI isn't done and needs to be worked on some more so that we have a working GUI by the end of the project.
- Nathan Carter: No pending issues.
- Samantha Williams: Need to complete the meta data module by specifying a print method the data map returned by the data extractor. Also need to edit the start and end times output to be more user-friendly.
- Scott Rose: Finish code review on data logging component and GUI component.
- Aria Sheets: Need to add more functionality for the Plotly module. Need to improve the GUI that is used to input data.

**Individual Contributions:**

<u>Name</u>	<u>Individual Contributions</u>	<u>Past Two Weeks Hours</u>	<u>Hours Cumulative</u>
Ian Simon	parseTSV update merge requests. Missing values parameter.	12	51
Jacob Laing	Learning how PyQt works, designing GUI, starting work on implementing the GUI	14	56
Nathan Carter	Machine learning module. This method currently has one function machineLInput.	12	54
Samantha Williams	Added daily diary processing parameter as a console input. Completed plotly error chart. Made additional progress to the meta data module.	13	52

Scott Rose	Add adjustments that help minimize the loss of the machine learning model. Wrote a report that details data processing in our program so that it can be reviewed by our client. Conducted code reviews.	14	57
Aria Sheets	Worked on implementing the Plotly module. Fixing pipeline dependencies to allow the machine learning module to compile correctly on the computer used for the pipeline. Code review pull requests.	13	56

**Comments and Extended Discussion:**

- Team meetings have shifted to be completely online now. There is continued consistent communication with the team using emails, Slack, and video conferences.

**Plans for the Upcoming Two Weeks:**

- Ian Simon: I will take a look at the peer eval questions and come up with some responses. Additionally I will see if there are any other parameters we need to add and if not I will start work on another aspect of the project.
- Jacob Laing: Works on continuing work on the GUI to hopefully have a semi working interface by the end of the week and a fully implemented GUI within 2 weeks.
- Nathan Carter: Works on finishing up the machine learning component. This includes adding evaluation, breaking up the code into smaller/ more module functions, and making the code more generic so it works in more cases since it currently is only hard coded to work for our specific data
- Samantha Williams: Complete the meta data component. Write print method for the data map. Once that is completed, aid in other modules that need additional work, such as the GUI.
- Scott Rose: Switch from working on the data extraction team to the machine learning team. Help transition the model from just using the training set to using both the training and testing set.
- Aria Sheets: Need to add more functionality for the Plotly module. Need to improve the GUI that is used to input data.