

EE/CPR E/ SE Weekly Report 5

Feb March 4 - March 8

Group Number: 08

Project Title: Artificial Intelligence for Requirement Analysis Tools

Client & Advisor: Collins Aerospace & Dr. Simanta Mitra

Team Members & Roles:

Ryan Cerveny: Scrum Master, Meeting Scribe/Facilitator, Project Lead, Communicator

Apurva Patel: Project Lead, Report Manager, Technical Support, Communicator, AI Training Lead

Jonathan Murphy: Testing Engineer, Researcher, Requirement Lead

Takao Shibamoto: Chief Engineer, Researcher, UI Lead

Weekly Summary:

This week our team had to put aside lots of time to midterm exams and projects. In the past week, we have started the design document, began developing the GUI, asked questions regarding how models will be trained, and have been considering approaches for writing our parser

Past Week Accomplishments:

Begin Design Document (Ryan & Apurva)

Ryan and Apurva began outlining and writing the design document this week. This included the introductory sections and laying out and describing components in the block diagram.

Parsing the Training Data Files(Apurva):

Apurva began to look at parsing the csv files using python, and have been thinking on the algorithm as per different requirement and how to overcome it. Started coding on parser.

Design thinking on parsing module and model training (Ryan)

Parsing the requirements files looks more difficult than we expected. We will need to be able to identify and expand any abbreviations in the files (which there are a lot of). On top of this, we must decide if we identify the linked documents in the GUI config form or if they are simply identified by whether or not they have a linking column in the excel file.

As for training the model, we need all of the links to be classified. However, the files we were provided with have no classifications associated with them. Not only will we have to assign classes to each link, but the files are also only examples of good links. This means we will have to mock bad links which could be risky because they might not represent true mistakes that will be encountered in the real world.

Design thinking on training our model using external data (Takao)

- The reason we need to rely on external data is because Collins is unable to provide us enough data for training due to military security concerns. By external data I mean data such as Wikipedia articles.
- It will be more difficult than we initially thought since the requirements include a lot of acronyms that aerospace engineers use like AAA, ABC, etc. The problem is that the same acronym could have different meanings in external data. I have not figured out any automated way to overcome this issue, so what I will do is the following.
- First, develop a crawler that looks for documents containing aerospace related texts.
- Second, we will manually make sure the acronyms are used as the same meaning as used in the requirements documents.
- Lastly, train our model using those word corpse.

Implement GUI design (Jonathan)

Jonathan completed the first prototype of the GUI design, but the content is solely based on the sample pictures that were Jason shared with the team (the design was changed to look “cleaner”). Jason had specified that he would like to see some additional features in the GUI, so Jonathan just recently contacted him to find out what specifically these features were and will implement those, then share the design and ask for feedback.

Individual Contributions:

Name	Individual Contributions	Hours this Week	Hours Cumulative
Jonathan Murphy	<ul style="list-style-type: none"> • Made a few additions to the design document • Completed first prototype of GUI 	8	Approx. 42
Apurva Patel	<ul style="list-style-type: none"> • design documentation • Developing parser for csv files 	11	46
Ryan Cerveny	<ul style="list-style-type: none"> • Design document • Thinking through parser design and model classifications 	7	46
Takao Shibamoto	<ul style="list-style-type: none"> - Experiment with doc2vec - Design thinking on training our model using external data 	7	41

Plans for Upcoming Week:

- Spring break
- Design Document

Summary of Weekly Advisor Meeting:

Met with advisor to discuss questions, progress, and the design document with spring break coming up