

EE/CprE/SE 492 WEEKLY REPORT 4

Feb 25 - Mar 30

Team 48

Allergy Prediction Using Artificial Intelligence

Client/Advisor: Ashraf Gaffar

Client Lead: Joseph Trembley

Team Lead: Noah Ross

Minute Taker: Ella Godfrey

Research Lead: Xerxes Tarman

Quality Assurance Lead: Alex Ong

- Weekly Summary
 - We wrapped up our testing for the models, and shared our conclusions with each other. We also continued some basic work with our frontend and backend such as writing them out and getting the data to flow through the different components in a similar way each time so we can begin tying everything together in the different cloud environments and running integration tests.
- Past week accomplishments
 - Joseph Trembley - Created a random forest model to get a baseline for what our minimum model performance should be, experimented with using aggregates of multiple models, changed input parameters to base on individual words from user input. Also wrote a basic backend to connect our frontend to the model when we begin integrating components together.
 - Noah Ross - Added F1 as a metric of success to our model output. Researched lambda functions and JSON Post requests in React to see how we can connect the model to the front end.
 - Ella Godfrey - Continued experimenting with different ways to improve the model to have a better F1 score. Researched connecting the model and front end together and also looked at different things we could possibly add to the frontend.
 - Xerxes Tarman - I conducted research on hosting machine learning models in cloud environments, with a particular emphasis on deploying multi-label models on Google Cloud. The objective was to identify practical, efficient strategies to ensure these models are scalable and perform optimally in a cloud setting.
 - Alex Ong - Worked on completing a majority of the frontend by adding options of skin conditions for patients to select, making it easier to match to the model input. Began constructing the payload in a JSON format to send to the server via POST

request. Began looking at how to convert the backend from lambda functions to the new tech stack and how to add a keras model onto the cloud.

- Pending issues
 - Joseph Trembley - No pending issues.
 - Noah Ross - No pending issues
 - Ella Godfrey - Just continue to critique the model
 - Xerxes Tarman - No pending issues
 - Alex Ong - N/A
- Individual contributions

Name	Hours this week	Hours Cumulative
Joseph Trembley	24	78
Noah Ross	12	46
Ella Godfrey	10	45
Xerxes Tarman	10	53
Alex Ong	15	53

- Plans for the upcoming week
 - Joseph Trembley - Begin integrating different components together. Update backend to format data correctly for model.
 - Noah Ross - Begin implementation of AWS version, but also research what Google cloud will look like, find out what can be used in place of S3, lambda, and sagemaker.
 - Ella Godfrey - Meet with the team to discuss how we want to further the project in terms of model and whether we need to start connecting the frontend with the model
 - Xerxes Tarman - Deploy a test model onto Google Cloud
 - Alex Ong - Begin iterating on the backend and data transfer between the client and server using REST endpoints. If we get a finalized model, we can begin porting the data from the client to fetch predictions
- Summary of weekly advisor meeting

In our advisor meeting, we demonstrated that we had been using the feedback suggested, namely creating a baseline for our model to improve from, and that we were refining our model. He suggested that we begin integrating everything together now in case there are complications, and if there is time go back and improve the scores, which is our plan going forward.
- Midterm Feedback

Some of the feedback we received related to not knowing our inner processes such as how the model worked, how we improved on it, and why we chose those metrics. In our video, we had mentioned these metrics, but did not have a detailed description of them.

The second major point of feedback we received was how we could ensure that the cost does not become a limitation, as cloud platforms can be expensive. Our primary solution is to use services with free trials and extremely low costs as much as possible.