

Sprint 1 Report

Deforestation Detector

January 25th, 2022

Actions to stop doing:

- Web
 - Stop working towards first person view
 - Requires high quality assets, which is unreasonable with this scale of model and the time we have to complete it
 - Stop using matcap images for lighting
 - Looks bad with rotating camera, top-down view allows for baking lighting information easier since we are not longer up close to the map
- Deep learning
 - Stop generating image mosaic of the satellite images
- Other
 - Overestimating story point estimates
 - We overestimated the task effort estimates last sprint

Actions to start doing:

- Web
 - Work towards a top-down view
 - More realistic goal
 - Use SASS for modular style-sheets
 - Provides better organization and file structure
 - Use proper state-management in the web application
 - Better organization of code and application state
 - Bake shadows in blender and simulate proper lighting
 - Better looking and more realistic than initially assumed, now that doing top-down view
- Deep learning
 - Utilize training on the GPU
 - This will decrease the amount of time spent training
 - Implement distributed training in tensorflow (utilize multiple machines)
 - We're hoping this will improve training efficiency. It is an experimental feature of tensorflow.
 - Optimize model checkpointing by saving weights to RAM during training
 - This will reduce the amount of time between training epochs.
 - Optimize storage and save model weights to disk in google colab

- Currently, the model weights are too large for normal github storage. Github is recommending we use github LFS, but we're more comfortable using google drive as a tertiary storage medium.
 - Plot a confusion matrix
 - Display which labels in particular are confusing the model
 - Try an ensemble network architecture
 - This can potentially lead to a better f1-score
 - Try transfer learning model architecture
 - Additionally, this can potentially lead to a better f1-score
 - Find a proper loss function
 - F1-score is looking good for this, we just want to be sure we've got the best loss function
- Other
 - Closing tasks as they are completed
 - Contributes to a more reliable burndown chart

Actions to keep doing:

- Web
 - Keep building on the 3x3 grid map model in blender.
 - It continues to look good/fit our desired aesthetic, also showcases a good amount of the features that the model can predict
- Deep learning
 - Keep trying different model architectures
 - We're approaching a comfortable f1-score (same metric used in the kaggle competition to grade contestants)
 - Keep improving the deep learning infrastructure.
 - It takes too long to iterate on deep learning model designs.

Work completed/not completed:

- Completed
 - As a user, I would like to see an indication of the loading progress of the page, because large media can take many seconds to load and I don't want to be stuck with a blank screen.
 - As a user, I would like the colors of the website to be fitting to the rest of the experience and aesthetically pleasing, because color can affect readability of text and visibility of other elements.
 - As a user, I would like the fonts used on the page to be readable and fitting to the purpose of the website.
 - As a user, I would like to be able to see more about the experience in an about

page, because it will allow me to understand its purpose.

- Not Completed
 - As a user, I would like to be able to visualize the scope of today's deforestation because it will help me to understand its threat to my future.

Work completion rate:

In this sprint, we completed four of the five user stories. We had an estimated 24 ideal work hours to complete and we completed 11 of them. The sprint lasted for 14 days (including weekends).

This means we completed $4/14 = 0.29$ user stories a day.

This means we completed $11/14 = 0.79$ ideal work hours a day.

Final Burnup Chart: [Online Burndown Report](#)

Burn Up Chart

Story Points vs Time

