

sdmay19-37: Are Cross Country Courses Avoiding Hills?

Report 6

March 3rd - March 9th

Team Members

Connor Smith — *Ground Truth Engineer*

Thomas Chambers — *Ground Truth Engineer*

Ryan Hilby — *Data Handling Engineer*

Jacob Feldman — *Data Handling Engineer*

David Kirshenbaum — *Data Analysis Engineer*

Andrew Mumm — *Data Analysis Engineer*

Summary of Progress this Report

This reporting period was one of substantial progress, as the analysis team was able to move beyond the MATLAB prototyping phase and convert all code to Python for final integration with LIDAR database. Jacob, David, and Andrew worked hard to improve the performance and speed of all aspects of data handling. Most notably, dramatic progress was made in parallelizing the LIDAR upload process to our AWS MySQL database. Andrew also developed an interpolation algorithm for the instances when we have “missing” points in the database, giving us a more accurate estimate of the true elevation at these instances rather than just lumping them together with the next closest point.

Pending Issues

While the analysis team has finished the Python conversion, they still need to sit down with the data handling team for a code walkthrough and finish the integration process before we can move on with our post-spring break testing agenda.

Past Week Accomplishments

- Connor
 - Completed Matlab-Python code conversion
- Thomas
 - Completed Matlab code conversion
- Ryan
 - Completed Python code conversion
- Jacob
 - Finished upload of Story County. In doing so, fixed the bugs in the upload code, so an entire county can be uploaded in around 6 hours.
- David
 - Worked with Andrew on getting front-end integrated with back-end
 - Worked with updating the front-end to receive actual values and statistics
- Andrew
 - Worked on an interpolation algorithm that allows us to enter points that are not an exact match in the database, and we will get an elevation result that is unbiased. Worked on improving the connections between the front end and the lambda function. Worked on connected the big climbs

script. Started connecting the other python scripts and doing some refactoring so that the report builder is more modular and easy to read.

Plans for Upcoming Reporting Period

- Connor
 - Prepare ground truth study results from 491 for inclusion in final report/presentation
- Thomas
 - Continue work on Rolling Hills and help begin new phase.
- Ryan
 - Help with documentation
- Jacob
 - Find a way to reduce the storage requirements of a single county in any way possible because, currently, adding more counties will exceed the storage limit of the free tier of our AWS database.
- David
 - Get the website demo-ready by having all statistics shown and course profile printed.
 - Try saving to pdf time-permitting
- Andrew
 - Trying to finish connecting the other python scripts and verifying that the results are what we expect. Adding comments and documentation so that it is easy to tell what everything does.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Connor Smith	Matlab-Python code conversion	5	31
Thomas Chambers	Matlab-Python code conversion	4	26
Ryan Hilby	Matlab-Python code conversion	4	25
Jacob Feldman	Fixed upload code and finished uploading Story county	8	43
David Kirshenbaum	Getting website ready to print statistics	6	28
Andrew Mumm	Lambda function improvement. Integration of python scripts. Connection to the front end.	16	37

Gitlab Activity Summary

All new Python analysis scripts have been uploaded.