

## sdmay19-37: Are Cross Country Courses Avoiding Hills?

Week 9 Report

November 11 - November 24

### 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*

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### Summary of Progress this Report

With the ground truth team now having completed all aspects of their study of the ISU XC course, they turned to focus on finding and contacting other courses that have changed their routes in recent history that we can obtain LIDAR data for. We also kicked up our research on runners' paces' reactions to hills with the goal of implementing some of our research findings into our course scorecard rating algorithm. Finally, the software team focused on getting a working demo of the web app with the goal of demoing it at our final presentation. While we have run into some issues getting the back end to work properly, we are optimistic that we'll have things ready to go by the time dead week comes around.

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### Pending Issues

We are having trouble getting the back end set up. Our environment is not configured correctly or something, but for some reason not building once we integrate with the Django framework. The reason we need to do this is so we actually host our back end and communicate with it, but it has been a struggle so far.

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### Past Week Accomplishments

- Connor
  - Returned ProMark 2 differential GPS equipment
  - Analyzed ISU XC course study results
- Thomas
  - Made contact with associate director of IGHSAU while cold emailing Iowa cross country officials.
- Jacob
  - Started work on creating a demo for our web app.
- David
  - Completed getting the front end of our app working with angular, shoutout to Andrew for helping a bit.
- Andrew
  - Made a python script for reading xy coordinates and extracting the elevation data from a raster. Also helped David a bit with the frontend.
- Ryan
  - Researched for studies relating to the difficulty of going up the hill and how runners react to rolling

hills

- Looked into Jack Daniel's Formula but turned up no concrete evidence to determine effects
  - Read a study relating to design of XC courses
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### **Plans for Upcoming Reporting Period**

- Connor
    - Analyze the University of Kansas XC course
    - Further correspondence with NCAA and IAHSAA XC officials
    - Focus on prepping for end of semester presentation and editing Project Plans and Design Documents
  - Thomas
    - Preparing for final materials at end of semester
  - Jacob
    - Finish setting up back end for the demo of our web app.
  - David
    - Work on improving the website by creating a homepage and begin getting chart.js working.
    - Work on setting up communication between our back end and front end, but need to wait for the back end to be set up because it's a headache.
  - Andrew
    - Need to make sure my python script can interpret the right format of coordinates when extracting elevation data. Work on connecting the frontend and backend of the website.
  - Ryan
    - Preparing for presentation and final documentation for the project
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**Individual Contributions**

<b>Team Member</b>	<b>Contribution</b>	<b>Weekly Hours</b>	<b>Total Hours</b>
Connor Smith	Equipment return and analysis of survey findings	4	57
Thomas Chambers	Researched Iowa cross country courses and officials	3.5	37
Ryan Hilby	Read various studies to come up a formula/algorithm to rate difficulty of hills	7	37
Jacob Feldman	Worked on setting up servers for demonstration	4	41.5
David Kirshenbaum	Completed getting the front end of our app working with angular.	10	41
Andrew Mumm	Worked on getting Python set up, installing raster analyzing packages, and writing a script to extract elevation data	10	34

**Gitlab Activity Summary**

Nothing to report.

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