

CS CAPSTONE PROGRESS REPORT

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SLIDE SENTINEL

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Abstract

This document provides an overview of the Slide Sentinel capstone teams work over the past term. This includes an overview of what problems we have encountered and how they have/will be solved. Images included show off alpha level functionality.

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1 PURPOSE

The Slide Sentinel system is a networked system of nodes and a single hub which tracks and sends data which the nodes relay to the hub. The position tracking of the nodes achieve sub centimeter level accuracy through the use of RTK correctional data that the hub constantly broadcasts for nearby nodes. The collected data readings are sent through satellite communication over a set period and printed out in a spreadsheet for viewing. The data collected can be used and analyzed by professionals to track any land movement in the area no matter how slow a change it might be.

2 GOALS

The senior capstone team for Slide Sentinel is focused on building out the networking and cloud infrastructure for both Slide Sentinel and LOOM. We are also concerned with integrating some of Slide Sentinels networking components into LOOM particularly the Freewave radio and the Rockblock. Otherwise we are set to help out the rest of the Slide Sentinel team in building out their project and identifying any bugs in the system.

3 WHAT IS NEXT

For the Spring term we are looking to finish the current versions of the networking and visualization software. Before the engineering expo we want to get a working beta build of our new integrated data visualization website which glues all our networking software into one site for handling, parsing, and displaying information. Integration of the Freewave radio and Rockblock are also high on our list of priorities of things to get done but we are waiting for a more final version of the hub software as well as LOOM 2 being ready and stable.

4 PROGRESS

Early this term Kamron and Kevin worked to test and identify problems and bugs in the system. Among the problems found were some oddities with messages rolling over into the next wake cycle and the inactive unloading of Azure applications casein Rock7 to redeliver a message once or twice. The spreadsheet has been finalized and with POSTproxy, completes the networking applications needed to get data from the Rock7 servers to Google spreadsheets in a readable form. During the second week of the term we proposed and began work on a cloud site which integrates all our work together into one place to view and see pertinent data. This site is being designed for Slide Sentinel first but with intentions of integrating it into LOOM in a more general version. I have been looking to integrate my code from POSTproxy into the API for the site and the spreadsheet into the front end for displaying the data in the correct formats.

At the start of this term James worked on adding a small feature for the map client and preparing for re factoring the web client into a more feature rich model. For the map client a legend was added and some variation to the data in order to include multiple series. After this James began working on setting up a shared work environment for the team to develop the new version of the web client. Most recently James has been looking into reusing a d3 visualization project that a previous capstone team created.

At the start of the term Lucas worked on some odds and ends for the capstone class requirements. After the decision to work on the cloud site, Lucas was tasked with working on authentication and user sessions. Initially we planned on using JSON Web Tokens for user authentication and user sessions. After some research Lucas has found that there

are some drawbacks to using JWT's and has been researching these drawbacks as well as alternative mechanisms for authentication and sessions.

5 INTERFACE DESIGN AND FEEDBACK

With the spreadsheet being finalized, the interface and formatting of the spreadsheet got a face-lift. Feedback from users showed that being able to see the headers of columns would be something to see at all time, especially so with the number of fields being shown. The header bar was frozen and stays on the page at all times.

The first version of the map client is largely considered complete and allows users to retrieve and visualize data. After using the web client the team has decided to re-factor the web client into a more feature rich platform. This new web client will include user login(s), a new visualizer mode, and possibly more features.