



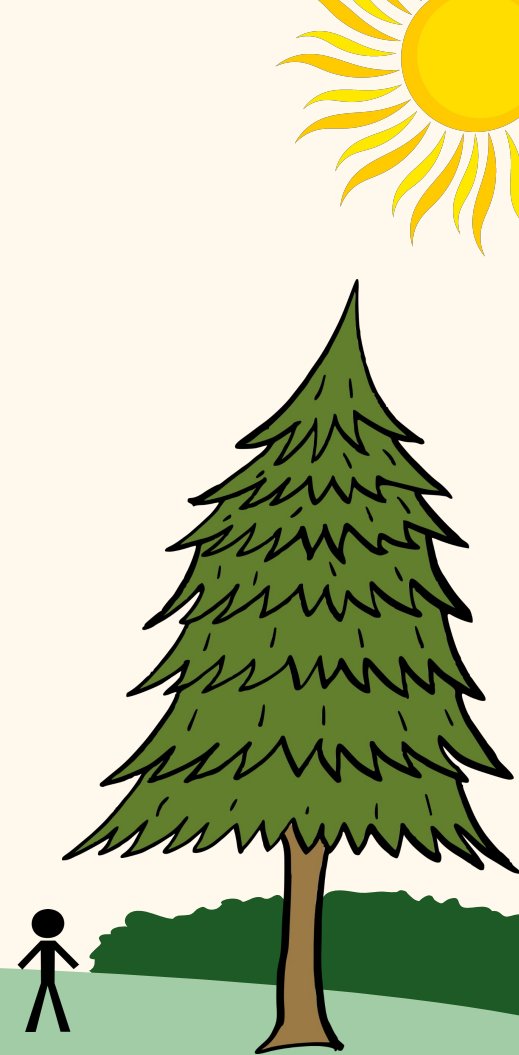
Dendro Dawgz

Team Members:

Zachariah Derrick, Nile Roth, Niklas Kariniemi, Asa Henry

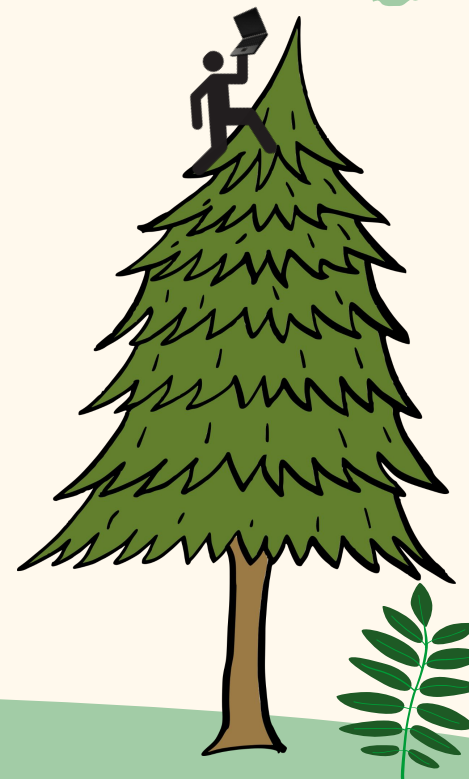
Team Mentor:

Italo Santos



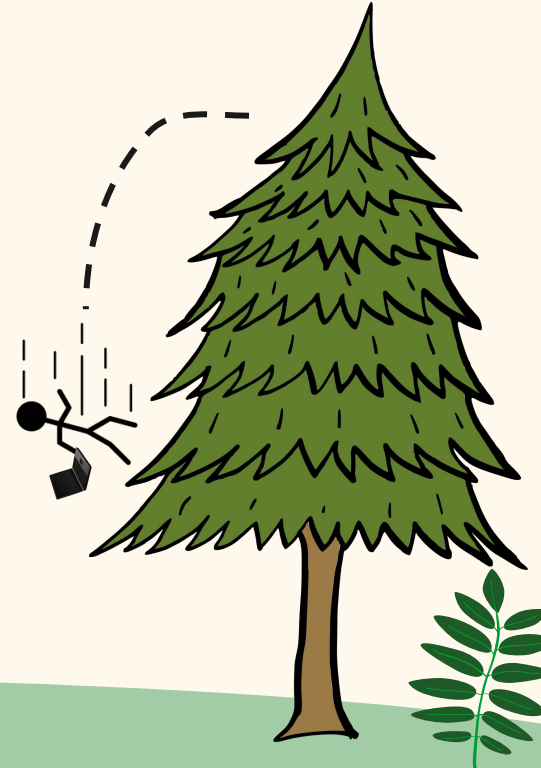
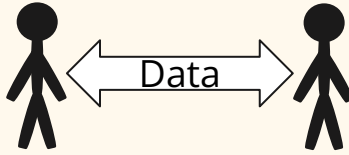
Clients

- Dr. Andrew Richardson
- Dr. Mariah Carbone
- Dr. George Koch
- Austin Simonpietri



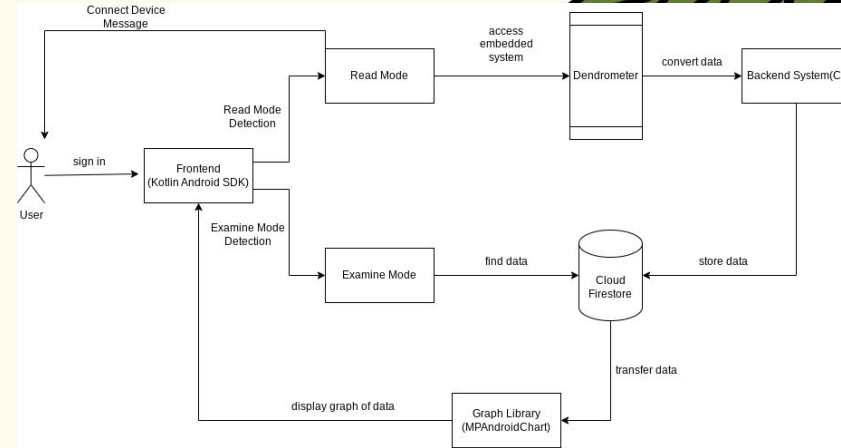
Problem statement

- Must use a laptop while in a tree (sometimes a Redwood; the tallest tree on Earth)
- Software does not reliably run on Windows, yet is limited to the OS
- Can only view one dataset at a time
- Data is improperly formatted for statistical analysis
- Users are forced to share data via Email or Google Drive - 8 hours is the recorded time to upload data



Solution Overview

- Collect data from dendrometer using the FTDI API
- Use metadata to make data more parsable and add identification for what dendrometer collected the data
- Use MPAndroidChart to create interactive ways to visualize the data
- Ability to have two or more datasets to compare and analyze simultaneously
- Ability to upload the data to the cloud, specifically in Cloud Firestore, to increase ease of sharing

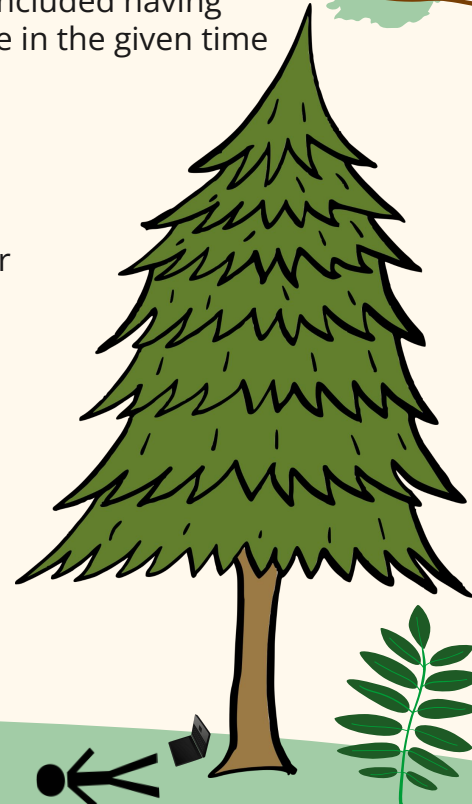




Key requirements

We met with clients multiple times to flush out the requirements for the project. This included having discussions out what they wanted out of the project, and what we are able to complete in the given time period

- Application will be implemented on the Android platform
- Include a backend that is capable of reading in data from a TOMST dendrometer
- Include a frontend that initiates the data reading from the dendrometer and stores the data in the correct location
- Frontend will include a GUI that displays the data
- Application will support metadata creation and a method of grouping files together
- Application will implement a cloud export and sharing system



Functional Requirements

Data Visualization

Multi-Layered Graphs

Data Reading

Saving Created Graphs

Data Selection

Sharing Created Graphs

Data Storage

Deleting Created Graphs

User Authentication

Non-functional Requirements



Swift Rendering Speeds

Interactive Graphs

Simple & Aesthetic

Secure

Reliable

Environmental requirements

- A wired connection is necessitated since the dendrometer does not have a receiver for wireless connection
- The use of an FTDI chip necessitates using the C version of the FTDI library



android

Risks

¿, "ßα®»°!



Corrupt Data

Database Failure

Massive DataSets

Severity Level:

Two

Three

Four

Concern:

Transferring & Translating
Data must not be skewed

Network or system failure
Temporary inability to obtain data

Excessively large data sets
must be handled

Seamless rendering despite
size of set

Mitigation:

Test multiple edge cases
Identify suspicious I/O

Cloud Firestore (Firebase)

AChartEngine

Feasibility

To prove feasibility for our application, we analyzed the four main challenges, and investigated solutions to mitigate these risks

- Reading in data from the dendrometer
- Creating a frontend for a mobile application
- Exporting and sharing data using the cloud
- Computing and displaying statistical analyses



android 



Firebase

MPAndroidChart



Conclusion

Our clients want a better solution to the current way they collect dendrometer data. Having to carry up a big, heavy laptop makes the process harder and more dangerous




We will create a mobile application on Android that will have the ability to read in data, store that data, visualize the data, and share the data

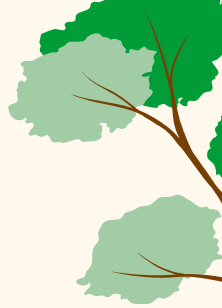
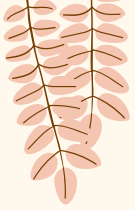
We took a look at what our functional requirements, non-functional requirements, and environmental requirements are

We also completed a risk assessment which includes taking a deeper look into corrupted data, massive datasets, and database failure

We took a look at what are our four major problems and how we plan to solve them

After this we plan to focus on finishing up our prototype so we can start to show what we are actually building





Thank You

Any Questions

