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Final Project Proposal

Summary:

I would like to build a website that summarizes my fieldwork experience all in one place as a visual resume of sorts. Until now, I have never created something that addresses them all together, and I hope to make something that I can use to visually share my experiences, or even incorporate into a personal website.

Abstract:

I have participated in fieldwork, fieldtrips, and mapping projects, which all have a spatial component that can be represented on a map. The homepage will feature a large Leaflet map with markers that will display where I have done such work, as well as some basic info in a popup (title, image, date, and caption). Some points will also be able to redirect to information specific to that project by clicking. Layer control will allow different background maps and overlays, as well as different categories of points to be turned on and off. Perhaps I can make a time line that will allow viewing by time category (college, and grad school, other) as opposed to project type. I can imagine several ways of making this work, so I will have to play around with it.

The subpages will offer more detail on the individual projects. A few can be further explained with more detailed Leaflet maps. These will mainly be maps of a smaller area containing GPS points where measurements were taken. One of the field sites includes a DEM that we created using LiDAR, which can serve as a base map. Some of the measurements include orientation of certain features, which can be represented using arrows as symbols. Other subpages will contain images, descriptions, and hand drawn maps instead of a Leaflet map.

Tools

* Leaflet: basemaps and overlays, geoJSON, point clustering, legends
* QGIS for Banff map, and possibly Switzerland maps (see data details)
* Highcharts or Tableau to create charts that will accompany some of the subpages

Data

I will have to compile my own data, which is just information to accompany each location detailed below. This will be stored in a geoJSON file. I will also have images stored as jpegs on Github. Some of the individual projects will have their own geoJSON files with further detail. Here I list what I imagine being associated with each project:

* Fieldwork
	+ Switzerland: At least one Leaflet map with many photos and gps points with associated measurements at 4-5 field sites
	+ Banff: A Leaflet map with DEM and gps points with several measurements. Lots of information and figures to share in this subpage.
	+ Iceland: My data from this project is less spatial, though I do have gps data from where I collected samples. For this subpage, I will focus on the spatial aspects of this project that can potentially be included in a map. This probably means drawing polygons on a Leaflet map to identify the walls of the quarry we were working in, in addition to the gps points, photos, and a summary of the project.
	+ Emerald Lake, MT: I do not have any data from this project because I was simply volunteering as a field assistant. All I have are photos and words that I could use to annotate a map.
* Mapping Projects: All of these are hand-drawn geologic maps (If I can find them all!).
	+ Painted Hills, CA
	+ Flock Hill, NZ
	+ Kaikura, NZ
	+ MN terraces
* Fieldtrips: These will consist of points and pictures with notes. Some more detailed than others. Generally, popups with a brief description will suffice without full subpage.
	+ Switzerland: include a detailed page about the day I lead the trip above Zermatt (drawing from ex 2).
	+ New Zealand
	+ Black Hills/Badlands
	+ Duluth
	+ Bariboo
	+ Taylors Falls
	+ Ozarks
* Education: Popups only, unless I go down a rabbit hole.
	+ SEHS
	+ Carleton
	+ ISU

Challenges:

 I think the main challenge will be keeping everything organized because the volume of points and associated data is so large compared to every other project. This is why I have opted to use external geoJSON data. I anticipate having the most difficulty with coding exactly what I want to happen when I hover/click on marker points, because again, I think it will be more complex than it was previously. To address these hurdles from the beginning, I will work on one step at a time, making sure everything works as I progress, and save many versions of my code. I will also try to be as organized as possible and thorough with my annotations.

Example:

 I had a really hard time finding examples, but this story map website has a similar idea of popping up images and text when a marker point is clicked on. I don’t think I want to include the automatic zoom on the map. Instead, there will be a link to redirect the viewer to a separate page, or the content at the bottom half of the page will change (depending on what I prefer). <https://storymap.knightlab.com/>