Final Project  
EleNa: Elevation-based navigation

short line

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# Problem Statement

Elevation-based navigation system (EleNA) Navigation systems optimize for the shortest or fastest route. However, they do not consider elevation gain. Let’s say you are hiking or biking from one location to another. You may want to literally go the extra mile if that saves you a couple thousand feet in elevation gain. Likewise, you may want to maximize elevation gain if you are looking for an intense yet time-constrained workout. The high-level goal of this project is to develop a software system that determines, given a start and an end location, a route that maximizes or minimizes elevation gain, while limiting the total distance between the two locations to x% of the shortest path.

# 1. Introduction

1. Purpose

The objective of our project is to develop a system that takes into account the elevation gain while moving from one location to another. It takes the following input:

1. Start location (Dynamic Dropdown)
2. End location (Dynamic Dropdown)
3. Maximizes or minimizes elevation gain (Radio Button)
4. % increase from shortest path (Circular Spinner)

Based on the input, it outputs the route from source to destination along with elevation gain.

1. Scope

In traditional map routing algorithms we get the shortest/ fastest route from source to destination. But they do not take into account the elevation gain. Let’s say you are hiking or biking from one location to another. You may want to literally go the extra mile if that saves you a couple thousand feet in elevation gain. Likewise, you may want to maximize elevation gain if you are looking for an intense yet time-constrained workout. We have designed our system keeping this use case in mind.