User Manual

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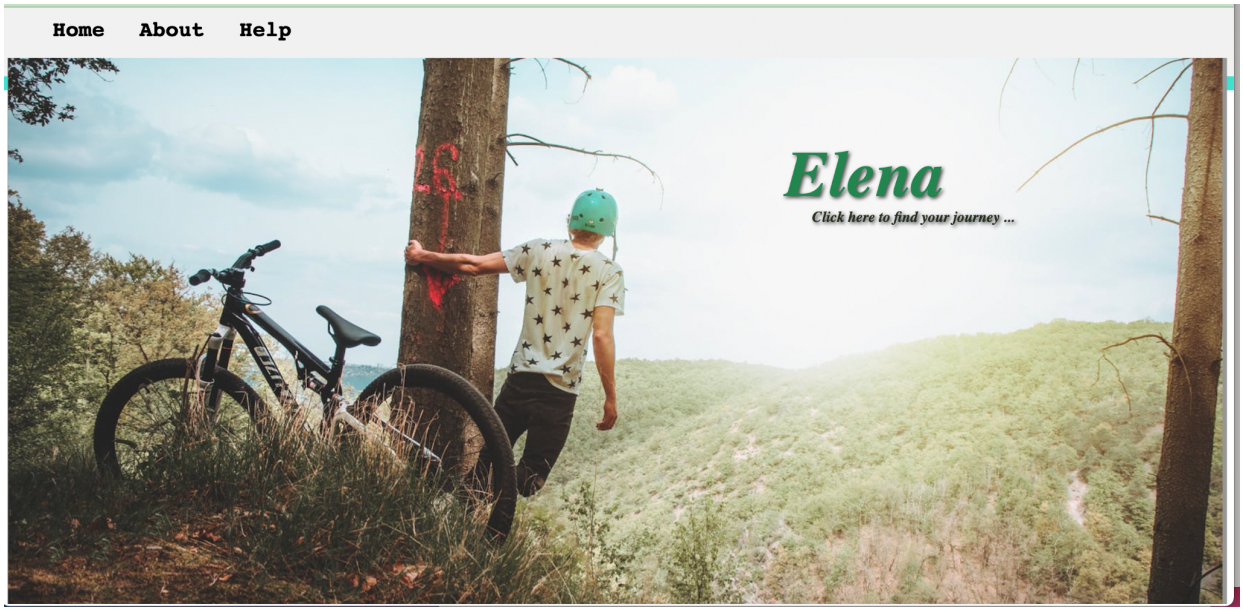
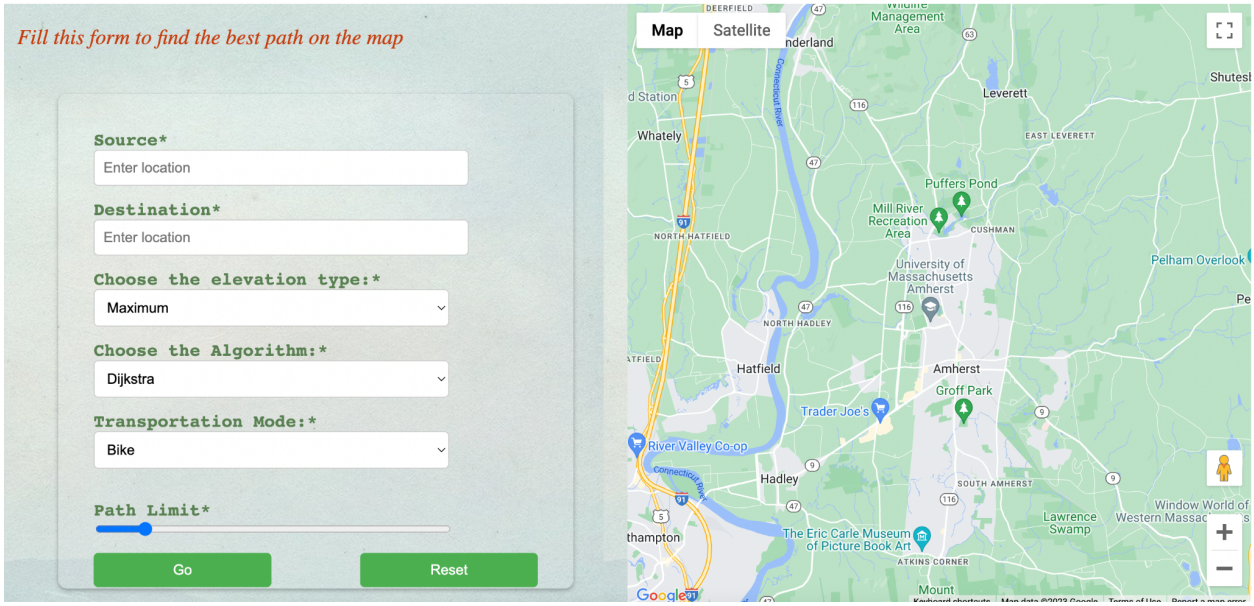
Github link - https://github.com/kavyaharlalka/kashikoi-elena-navigation
Presentation link -
https://drive.google.com/file/d/1kYjDzBjgHvEUk565uJN3MAUknJmqa5kL/view?usp=share_link

This document serves as a guide to any person who wishes to use and run our system, EleNA, which stands for an elevation-based navigation system. This application can be used by bikers, travelers and hikers to find an optimal route between two points considering the elevation gain and the distance as a percentage of the shortest possible distance between the points.

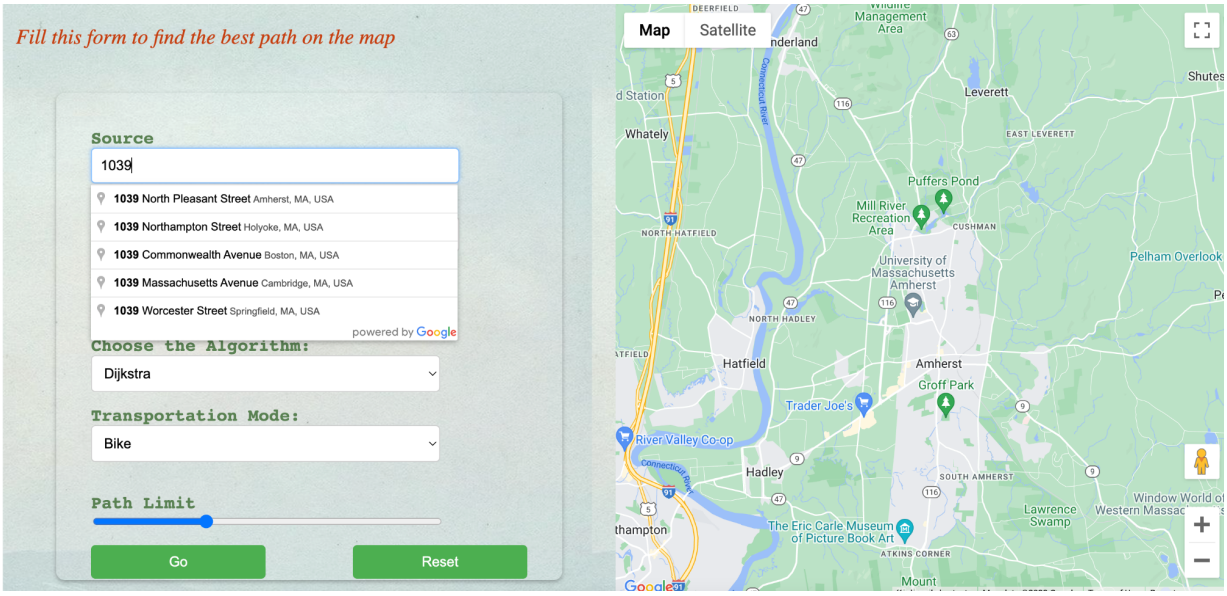
The screenshots of our application (with instructions) are given below:

1. This is the homepage that is visible to the user when they launch the application. There are text boxes to enter the source and destination addresses according to the user's preference. These boxes have been equipped with an autocomplete feature to assist the user in entering addresses. There is also a dropdown box to select the elevation type which can be either of maximum or minimum. There is an option to choose the algorithm of choice and the transportation mode as well as select the desired options.

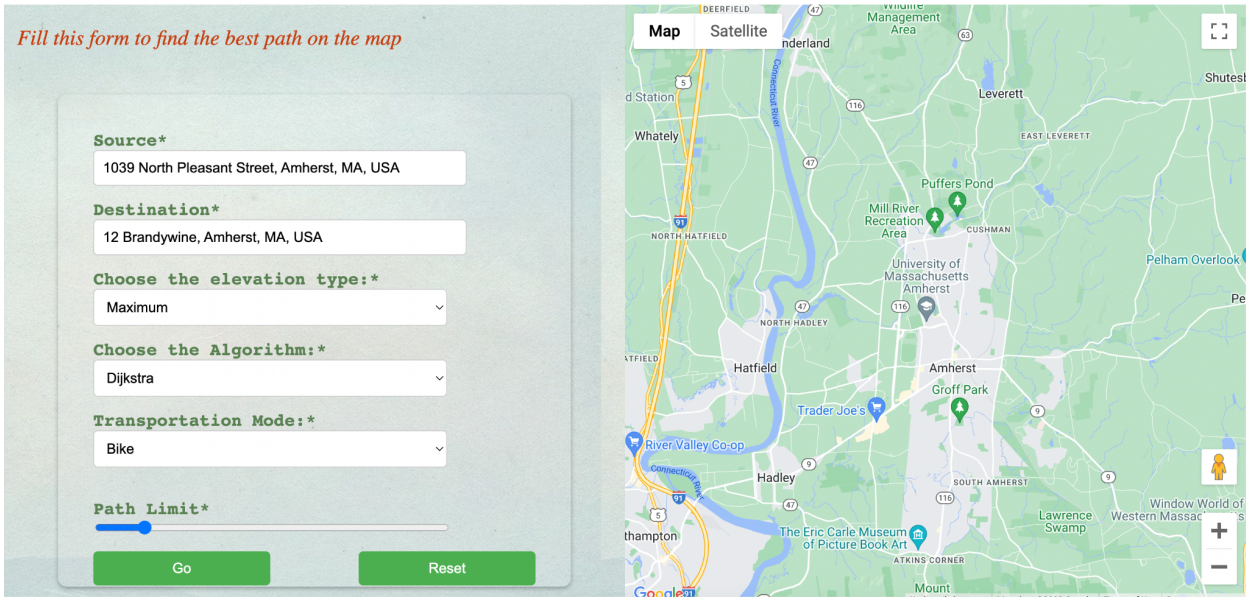




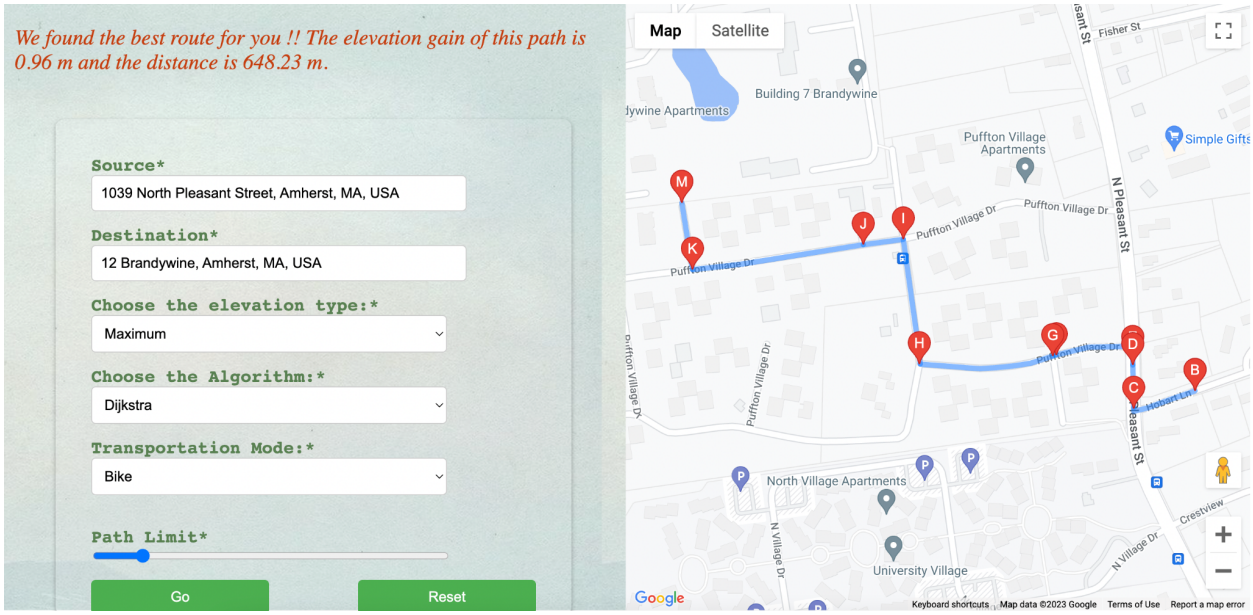
2. While Filling the source and destination locations, the autocomplete feature will help the user to write the full and correct address quickly.



3. The user can enter all the values in the fields above as shown and then press “Go”.



3. This will result in a map as shown on the right in the figure above.



4. Users can press the Reset Button to reset all the fields and the map.

To use the application, follow the steps given below:

1. The user can select a source as well as a destination point using the text boxes. These boxes have been set to autocomplete and the points must lie somewhere within a 30 kilometer radius around Amherst.
2. The user can select the algorithm they want to use as well as if they want to minimize or maximize the elevation gain.
3. The user can select the transportation mode based on if they want to bike or walk from the source to the destination address.
4. The user can use the slider for Path Limit to set a constraint on the paths as a percentage of the smallest distance between the two chosen points.
5. Once all fields are filled, the user can press “Go” to see the optimal route. The application will process the information and once a valid response has been received from the server, a map will be rendered on the UI showing the optimal route according to the user’s preference.
6. The user can also visualize the total distance as well as the elevation gain.
7. In the case that there is a crash or error, appropriate error messages are shown to the user.

Minimize/Maximize Elevation: This is a choice between finding a path with more or less elevation. If the user chooses “minimize” elevation gain, the system will attempt to find a route that has the least elevation gain during the entire route. On the other hand, choosing “maximize” elevation gain refers to finding a route that has the maximum amount of elevation gain within the routes that satisfy the other constraints between the two points.

Path Limit: This is a choice on the constraint that the user wants to set on the possible routes that the system considers while calculating the optimal route between the two points. The Path Limit can be a number (or a percentage between 100 to 200) which is a distance between 1*SD and 2*SD where SD refers to the shortest distance between the two given points. For example, setting a path limit to 150% means that the system will consider those routes that have a distance between the points less than or equal to 1.5 times the shortest distance between the two points.