MATLAB project outline

Project description:

I am implementing a project that tells a user the shortest path going from a place in CU to another place in CU. The project will transform the CUHK map into a undirected weighted graph where each node represents a destination and each edge represents a road. After that I will apply Dijkstra’s algorithm to find the shortest path between the two. Later I will also add some features such as giving alternate paths or tips while travelling through the paths, to suit user’s needs.

User interface design:

* A place for user to type in the starting point
  + A button to show all valid input (e.g. don’t allow Chinese but only English)
  + Narrow the user input by sorting places according to their college (or no college)
* A place for user to type in the final destination
  + Same as above
* Add an option “leaving CU” – display fastest route to leave CUHK
* Image of the CUHK map can be included
* Output
  + Show the paths (e.g. WMY🡪LSB🡪LSK)
  + (maybe display route on map…?)
  + Reminder message of the path (e.g. this path is physically challenging/you might see many bugs on the road)
  + Elapsed time to walk to there
  + “Have a nice trip!”
  + Alternative paths?

Algorithm design and component design

* The first part involves transforming the CUHK map into a undirected weighted graph (incrementality for testing)
  + Nodes can be determined by building locations
  + Edges can be determined by map
  + Weight has to be calculated by google map/ other devices
  + Store this graph into a separate function
  + Return a graph component
* The second part: Dijkstra’s Algorithm