tallenj

Project Code

https://github.com/tallenj/si507_w23_final_project

I ended up not using any of my coworkers' code! I did learn some of the basics from him and made improvements where I could, but his application turned out to be very different from what I wanted to do. I learned more from the OSMnx documentation tbh. That said, I did get a headstart in learning folium thanks to his use of CircleMarker but I ended up using PolyLine instead of ColorLine.

Data Sources

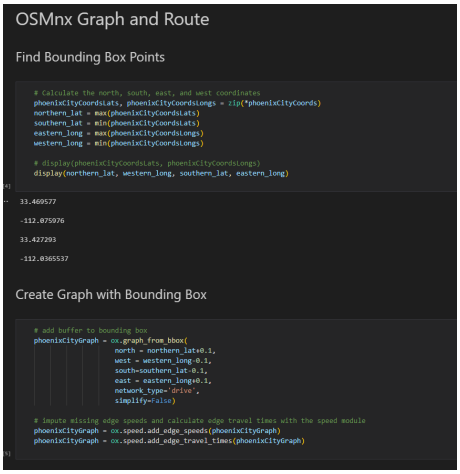
OSMnx

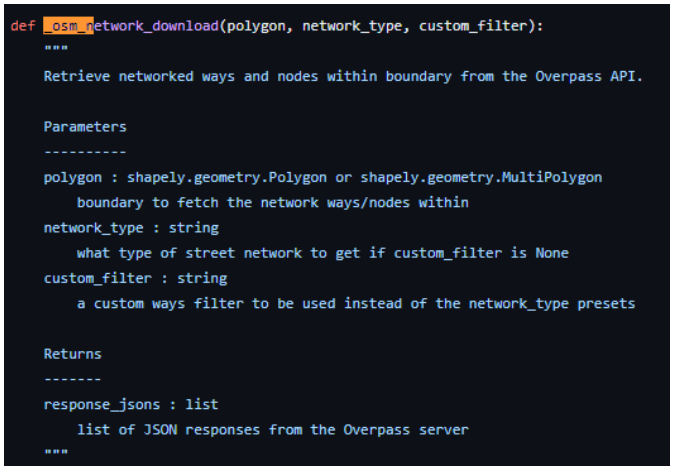
- OSMnx is the main tool I'm trying to learn in the final project. It handles a lot of the grunt work that this project calls for. Once I read the documentation and studied the examples I found that it was fairly easy to get the map data and if I use the Google API it is also easy to get the elevation data. I was able to spend more time on creating the visualizations I wanted thanks to this tool.
- That said, I did have to learn about folium and leaflet libraries too. Learning OSMnx, folium, and leaflet has been the main focus, and with OSMnx I also learn about NetworkX. All in all this project has been a great learning experience so far, this checkpoint is mainly me trying to make sure I'm going to get credit for the project along the way :)
- For data summary, I get a graph from Open Street Maps thanks to OSMnx, that has nodes and edges. I use the 'osmids' of the nodes and edges, the lat and long of the nodes. Once I add elevation data I also use the node elevation and the edge grade.
- I put some screenshots of the code from the libraries below, and a screenshot of the documentation stating that caching is default True.

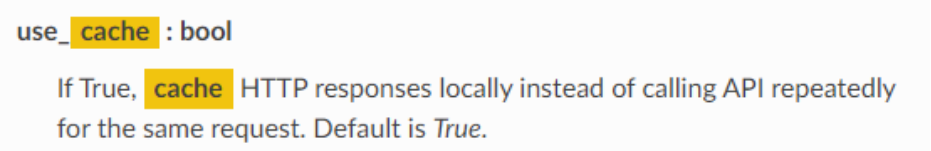
Open Street Maps API

- I'm using the OSMnx library which handles the access and caching of Open Street Maps data for me. Specifically, I'm using the bounding box function where I give four coordinates (that I find from a route) and OSMnx handles the API call, download, and caching:

tallenj

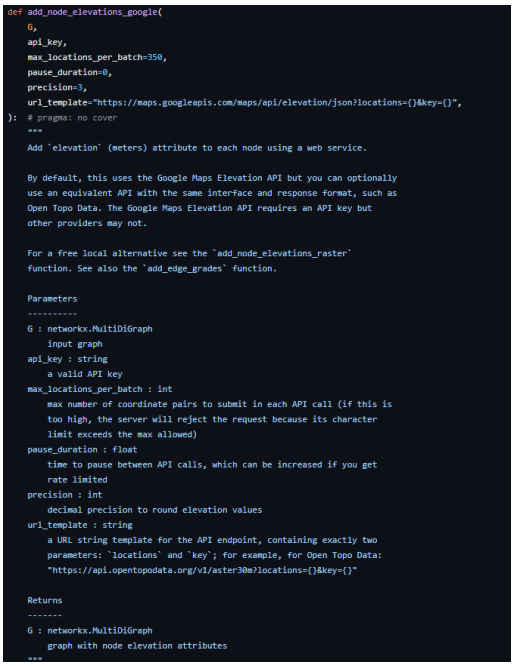


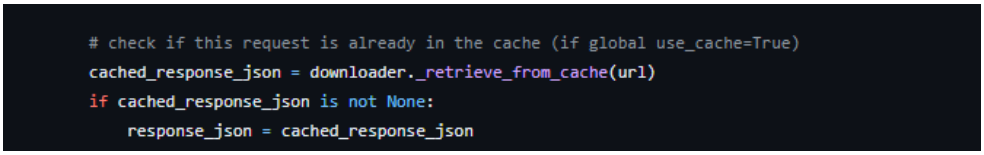




- The above images should hopefully show that caching is being used for the Open Street Maps data. In my dev notebook I'm using a small route, my final submission will be a 80+ stretch of highway which will have more nodes until I filter by the route.

Google Elevation API





- OSMnx has a function that accesses the Google API for me and it utilizes caching by default. I created an API key and tested it in my dev notebook. I am currently downloading elevation data for every node in the graph but for my final submission I plan to make a graph of only the route nodes and just get that elevation data.
- OSMnx checks the cache and creates a networkX graph for me with the added elevation data using the graph I passed in from the original Open Street Maps as the original.

Data Structures

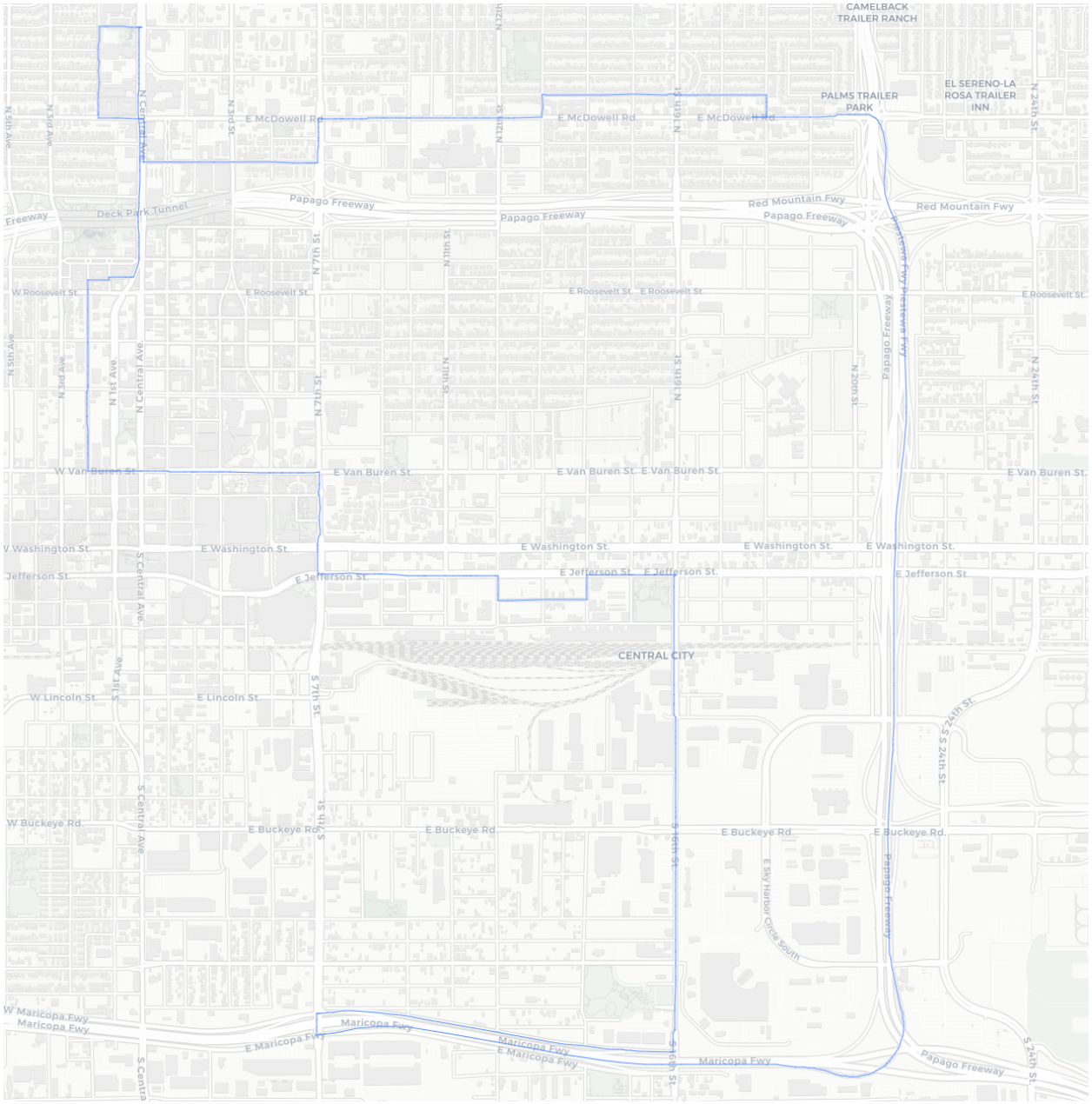
- OSMnx already created the graph for me.
- The interactive html in my github link should show progress :)

Interaction and Presentation Plans

- The html file in the github shows the vision I had for my display.
- There is a zoomed in map of the area that the route is in, with the default view showing the route.
- There are three other layers, the first adding nodes on the route with their elevation.
- The second shows all of the edges in the route with their grade.
- The third shows a grade filter.
    - This filter is currently coded in the notebook and is locked in for the html.
    - I plan to look into adding a legend and putting the coded filter value into the html output.
    - If my team at work thinks it valuable, I'll make the filter more dynamic, possibly with the leaflet slider control plugin :)
- The checkpoint stops here, but I decided to show screenshots of the html file below. This isn't the final route I plan to use but it shows the functionality is possible and in place!

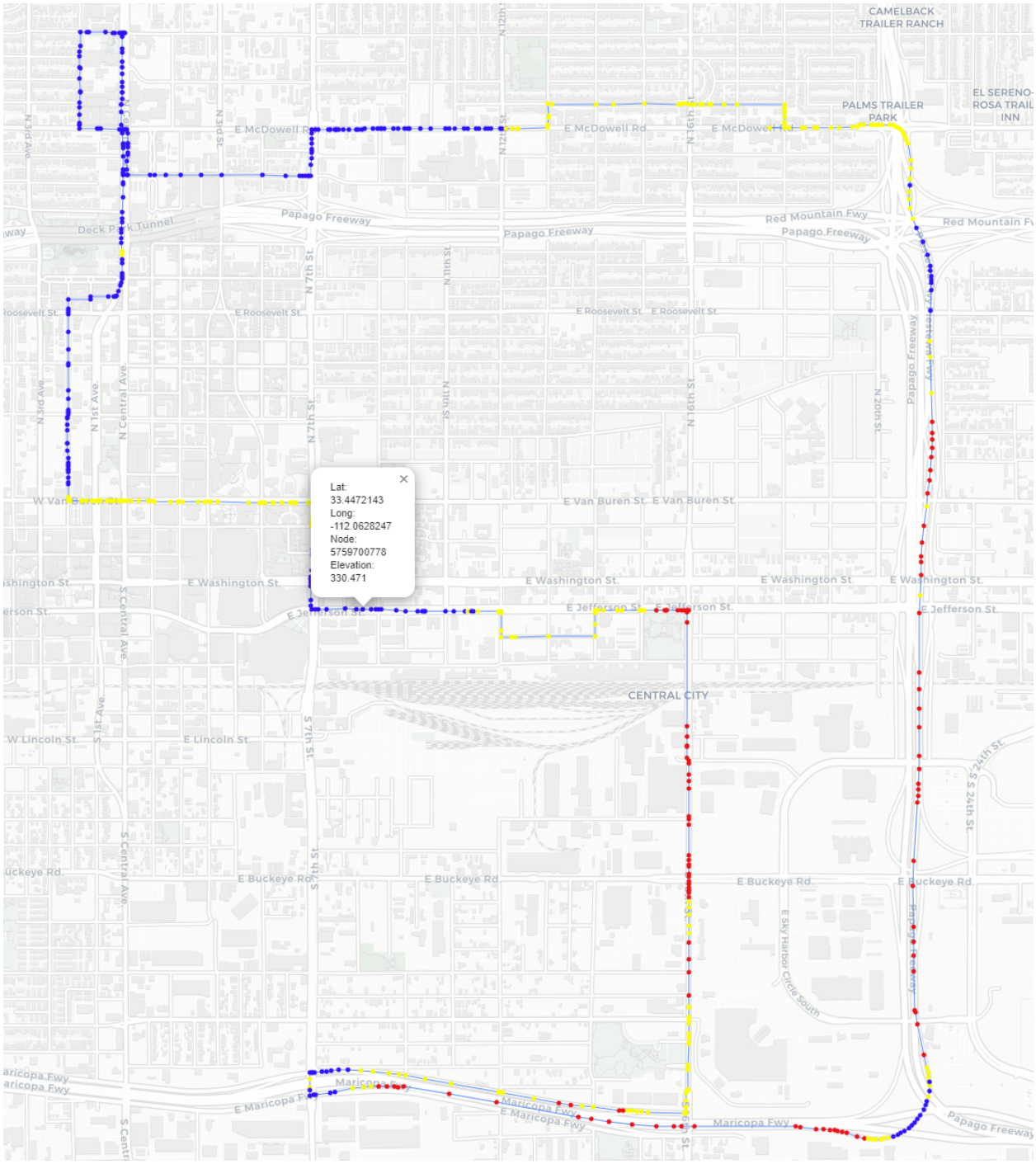
tallenj

Route



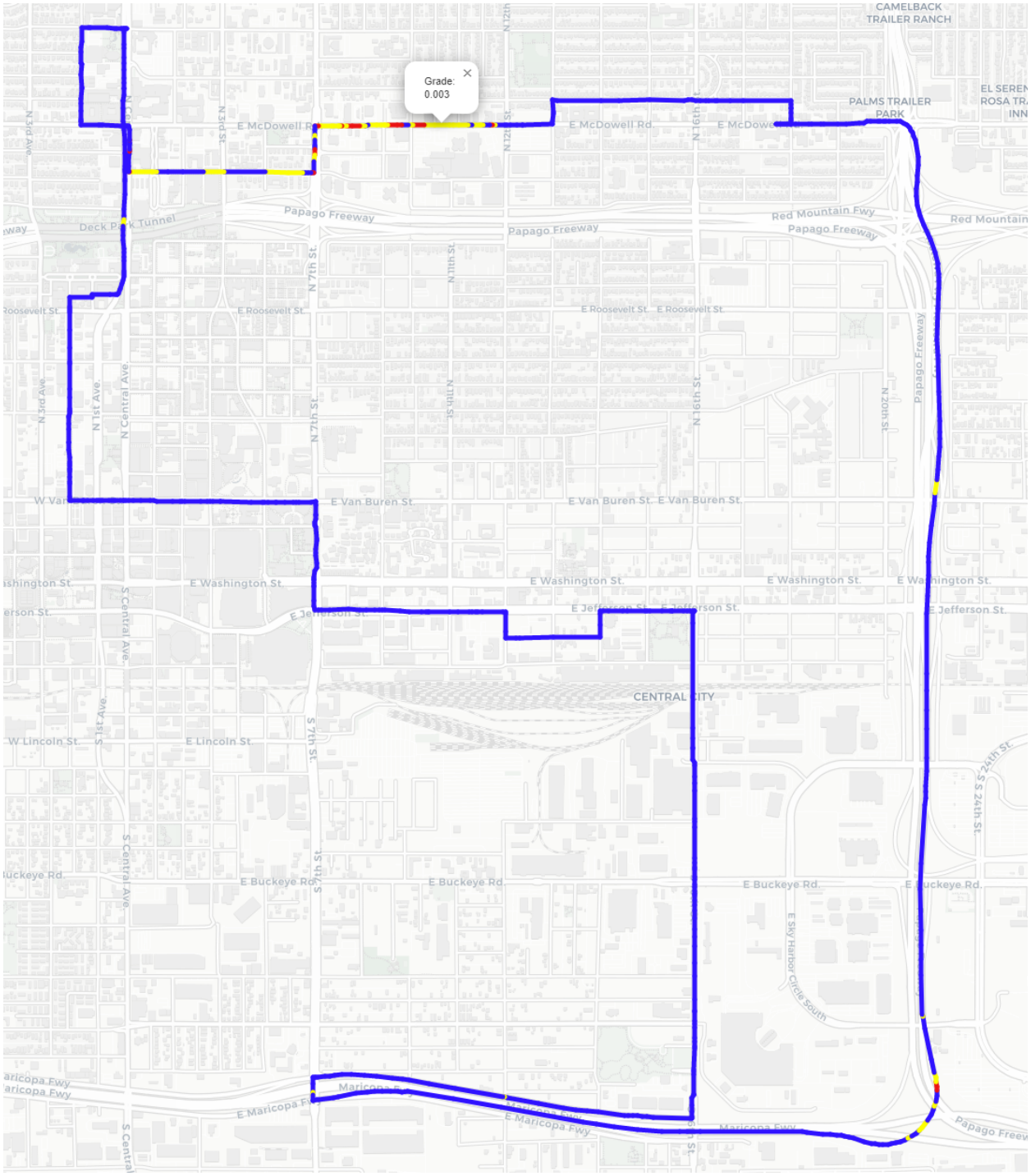
tallenj

Node Elevation



tallenj

Edge Grade



tallenj

Edge Grade Filtered