Journal Report 18

3/2/20 - 3/8/20

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Daily Log

Monday March 2

I created a 10x10 Manhattan style map that had similar properties to my previous 5x5 Manhattan style map. The speed limit (25 mph = 11.176 m/s) and block sizes (80 m x 270 m) are similar to the ones in New York City. Unlike the 5x5 map, I wrote a script to create this map's input file. This makes my city-style map creation process more scalable.

Thursday March 5

I ran the 10x10 Manhattan style map with my simulation code at a high car spawn rate. It took 30 minutes.

Timeline

Date	Goal	Met
2/3/20 - 2/16/20	Visualize input data on web server without running the program	Yes
2/17/20 - 3/1/20	Research how to import real maps from OpenStreetMap	Partially, still need a lot more research to use the OpenStreetMap API
3/2/20 - 3/8/20	Create larger maps that account for more scenarios	Yes
3/9/20 - 3/15/20	Improve website GUI for larger maps	
3/16/20 - 3/22/20	Continue to improve GUI for larger maps	

Reflection

The 10x10 Manhattan-style is the most computationally intensive map that I will be testing. Although it may not be the largest in terms of width and height, it will have the most cars on the map at any given time. The current bottleneck in my program is the car-to-car communication, which runs in $O(n^2)$. The other large maps that I plan to test will be larger in terms of map size, but have fewer cars on the map at any given frame, so they will run faster than the 10x10 Manhattan-style map. Although the current run-time for the Manhattan-style map is 30 minutes (when run at a high car spawn rate), I believe that the current speed of my simulation is sufficient for my testing purposes. More importantly, I want to fix my graphical user interface since it does not display large/dense maps very effectively. As a result, I will change my short-term goals to improving my website GUI.