Scientist Meeting 1

Team: Team-Traffic

Scientist: Kuilin Zhang

Date/Duration: 1/23/2020, 30-45 mins

Location: In person at Dillman 301i

Attendance: Anthony Chavez, Aaron Lyons, Adam Reichanadter

Items Discussed: As follows:

Questions asked:

1. **What is the purpose of the app?**

   This is a routing app. The functions given will allow us to calculate the length of time it takes to get from origin to destination.

   a. **What is the lesson to be taught?**

      In the future, instead of people choosing a route to their destination, this will be handed over to the automobile. The lesson is how the automobile will make this choice.

   b. **How is the "game" supposed to play out?**

      1st app description:

      Students get randomly numbered and each get an OD (origin, destination) pair in a graph network. The students will choose in-order which route to take to get through the network to their destination that would take the least time (ideally).

      Once a student chooses, the "load" on each path through the network is updated so the next choosing student can determine whether to take a different route to get to their destination quicker.

      Once all students have chosen their path, this is one iteration through the "game". The same order is kept for the next iteration (OR ANOTHER RANDOM ORDER), with the first student now instead of seeing an empty network, can see the chosen paths of everybody else (THROUGH SOME GRAPHICAL DISPLAY). The student then re-chooses a quicker route, if one exists, through the network (with the same OD pair as before), and the network is updated. Each student does this same thing again until the last student chooses, ending the next iteration.

      The goal is to reach a "Nash Equilibrium" where given the opportunity to change their route, each student would not as they have their travel time optimized.

      2nd App Description:

One Professor and a number of students (ie 20). The students will be able to access the website with their email address. They will be assigned an order. Possibly change user's screen to tell them when it is their turn.

Each student are given their origin and destination and will pick which path they would like to take. Each student will rerun their same path iteratively (multiple times until a determined amount of times is reached). After the previous student picks their path the next student in order will select theirs. This next student may be able to see the congestion from previous students (could use numbers or colors to describe how many cars are congesting the area). Choosing paths will continue through all students.

The instructor will be able to view all the students running through, while the students should only see their own choices (and probably the same congestion as when they started). Instructor would like to save the games. He would like to be able to replay them (and go through them step by step, each step would be adding a car). He would also like to be able to download them. Instructor can restart the game (maybe kill some car's paths)

2. Since this is a game, does the user need to get a score?

No, not like a conventional “game”. Game in the sense of game theory They will receive times based on a function given to us

3. Who will be using the app?

a. Will there be different roles or views?

Students have user view, Professor/Scientist has master view w/ controls Potentially lock students out of choosing/controls while another student is choosing their path

b. How technologically literate will the users be?

Mostly Civil Engineering Students

c. How many people will be using the app?

“Super user”, any number of regular users

d. Will multiple students use the app concurrently or sequentially?

They will use the app concurrently but each student will run sequentially

e. Will users need to make an account to use the app?

No, just log in with their email. Store each user uniquely by .mtu email

4. Do you have any ideas already in place for how you want the app to look

5. What devices will use the app? Desktop, Phone, Tablet?

Desktop and phone. Students will most likely be using their phone while professor controls from desktop

6. How available are you for communication this semester?

Available by email

7. Is there anything important we should know that we didn't ask?

Scientist/Professor stressed ability to download/replay games to recap to class how/why choices were made

Network: The professor has his own network that he can provide

We also discussed doing our own using google maps, leaflet, or street view. (Openstreetmap: open source maps)

This would be a lot of extra work and we would have to make our own networks

8. Next meeting time?

Check his google calendar to find a meeting time He is available at 3:30 on Thursday unless he is out of town

PhD student can help if he's out of town