SumoWeb3D

Overview:

This document provides the documentation of the project “ Simulation of a transportation Network with SumoWeb3D”. This project was a part of my Bachelor Studies at Frankfurt University of applied Sciences.

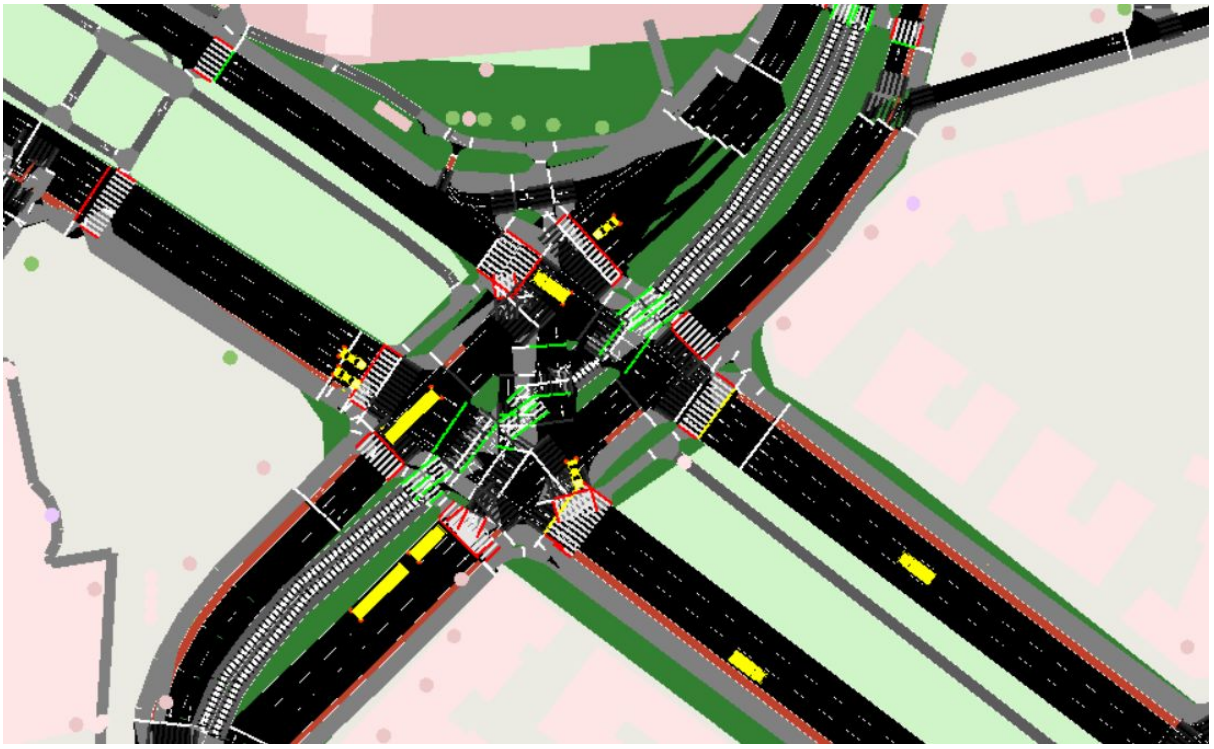

Figure1

Initial Phase:

Two options has been compared to complete this project, these are:

1. Sumo only
2. Unity3D with the integration of Sumo

As the simulation with unity3D is complex and takes too much time, this is why Sumo only is taken for the sake of simplicity and ease of work.

Sumo Installation:

To install sumo on your computer, you have to meet some prerequisites and install some needed software before. These are the requirements:

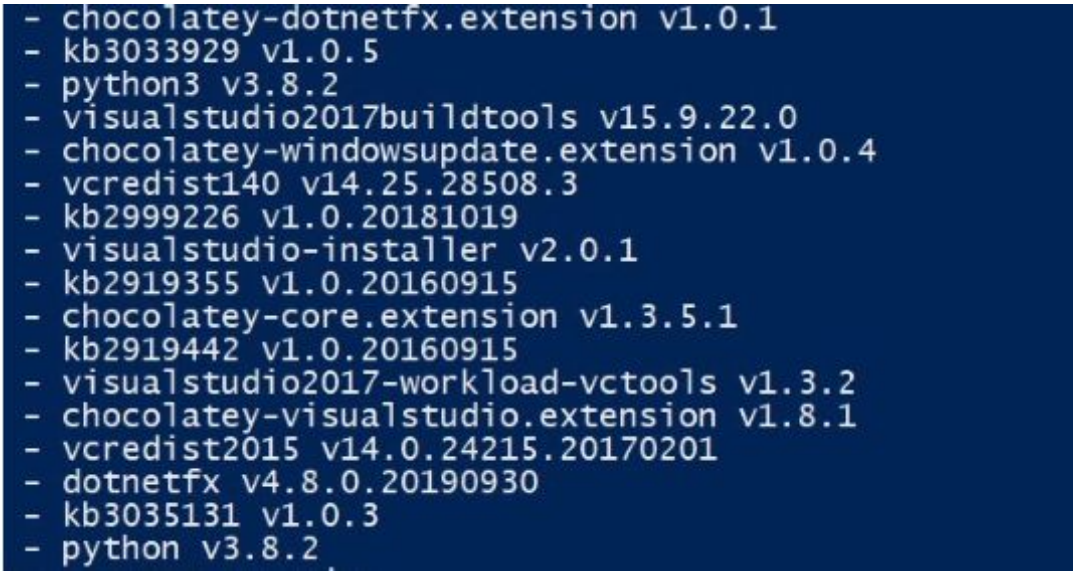

Figure: 2

Note: Please keep in mind that the exact versions of the software mentioned above has to be installed in order to ensure the error-free installation.

In addition to the software mentioned above, “websockets” has to be installed as well.

Scenarios:

Three Scenarios are created in this project, they are:

1. BahnhofsviertelFrankfurt
2. Nebelungenallee
3. HöchstZuckschwerdstrasse

All these three scenarios can be run and tested in Sumo Simulation using command line interface. For sumo common commands, please check:
https://sumo.dlr.de/docs/Basics/Using_the_Command_Line_Applications.html

Known Errors

1. There might come errors during the installation and creation of scenarios in Sumo. A very common error could be a compatibility problem between different prerequisite software required for sumo. This problem could be avoided by installing the exact versions of the software as shown in figure 1.

2. Another common error could be " traci has no attribute traffic lights" as shown below:

Figure3

This problem can be solved by carefully looking at the python scripts and updating and adding the required transportation-attributes to the related scenario.

3. Sometimes, some additional information appears on the created scenario which actually does not exist in reality. This is just wrong information which could be ignored or you can update and omit this information with the help of a Sumo tool called netconvert. This tool can be used to edit scenarios.

Recommendations for Future

I have implemented the scenarios in "Sumo only" format. For future students, it will be advisable to implement the same scenarios in a web browser and to improve the graphics quality. For example, the example below shows the difference of graphics if the scenarios are implemented in a web browser:

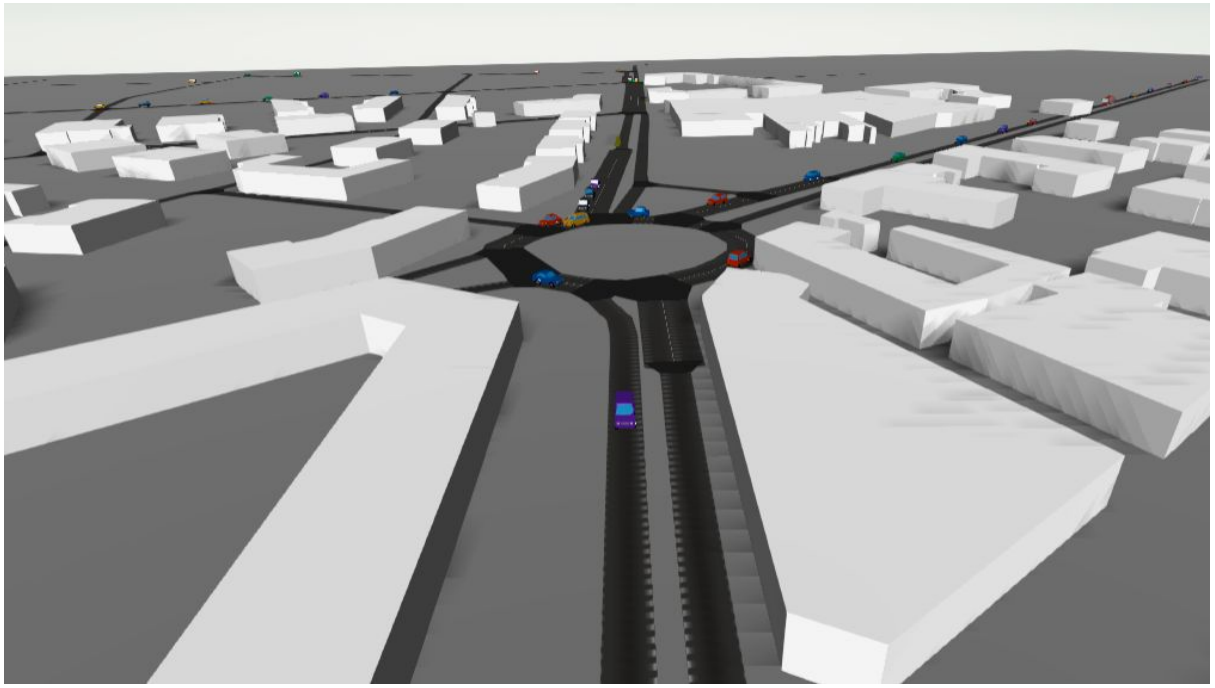

Figure4

Sources:

1. https://sumo.dlr.de/docs/Basics/Using_the_Command_Line_Applications.html
2. sidewalklabs/sumo-web3d: Web-based 3D visualization of SUMO microsimulations using TraCI and three.js.