

Intellisys - Project Report

13rd June 2021

Progresses

- Created shared folder on the cremers server, where both of us have access (see `/storage/remote/atcremers50/ss21_multiagentcontrol/settings`)
- Started getting into Sumo: now we can use one SUMO in two ways.
- stand alone local installation:
 - Created a custom cross intersection, with flow and re-spawning, Fig 1
 - Collected data of an intersection
 - Saved the collected data in a .xml file
- sumo-carla installation on the server:
 - Using VCN to run the Sumo GUI on the Server
 - Turned carla town4 into a Sumo Simulation, Fig 2
 - Collected data from the entire Town4
 - Saved the collected data in a pandas dataframe

Next Steps

1. Improving data collection
 - (a) Create stochastic flows with re-routing option for Town4: in progress, but not yet working, Fig 3
 - (b) Implement selective data collection to focus only on one crossing
 - (c) Try to get data from the carla sim which is in synch with sumo (maybe - if we miss some parameter)
 - (d) Investigate how to create an accident (maybe - if we get to the RL implementation)
2. Read more about GCN
3. From the data build the mutable graph (with the previously mentioned rules for creating, keeping and deleting edges)
4. Starting with implementing the GCN architecture

Issues/Questions

1. Is the yaw the angle in Sumo?
2. Best way to collect sim data.

Ref material

- [Sumo Website](#)
- [Tutorial for Controlled Intersection](#)
- [Convolutional Neural Networks on Graphs with Fast Localized Spectral Filtering](#)
- [Semantic Graph Convolutional Networks for 3D Human Pose Regression](#)

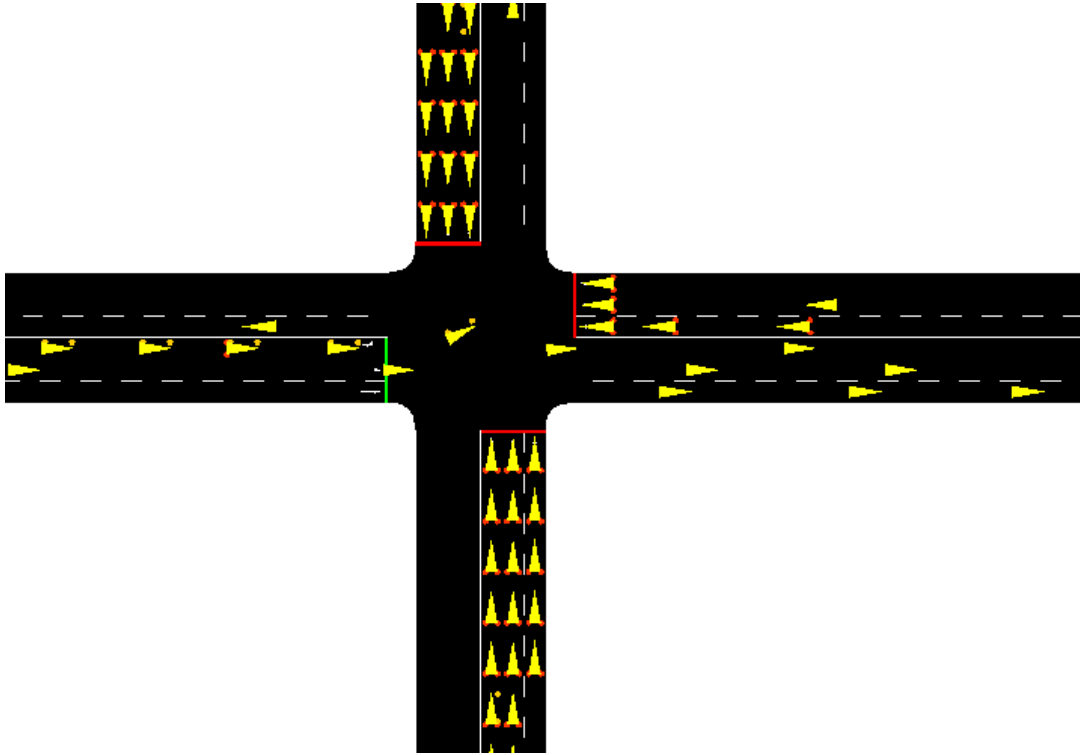


Figure 1: Snippet of the Sumo GUI of at custom intersection

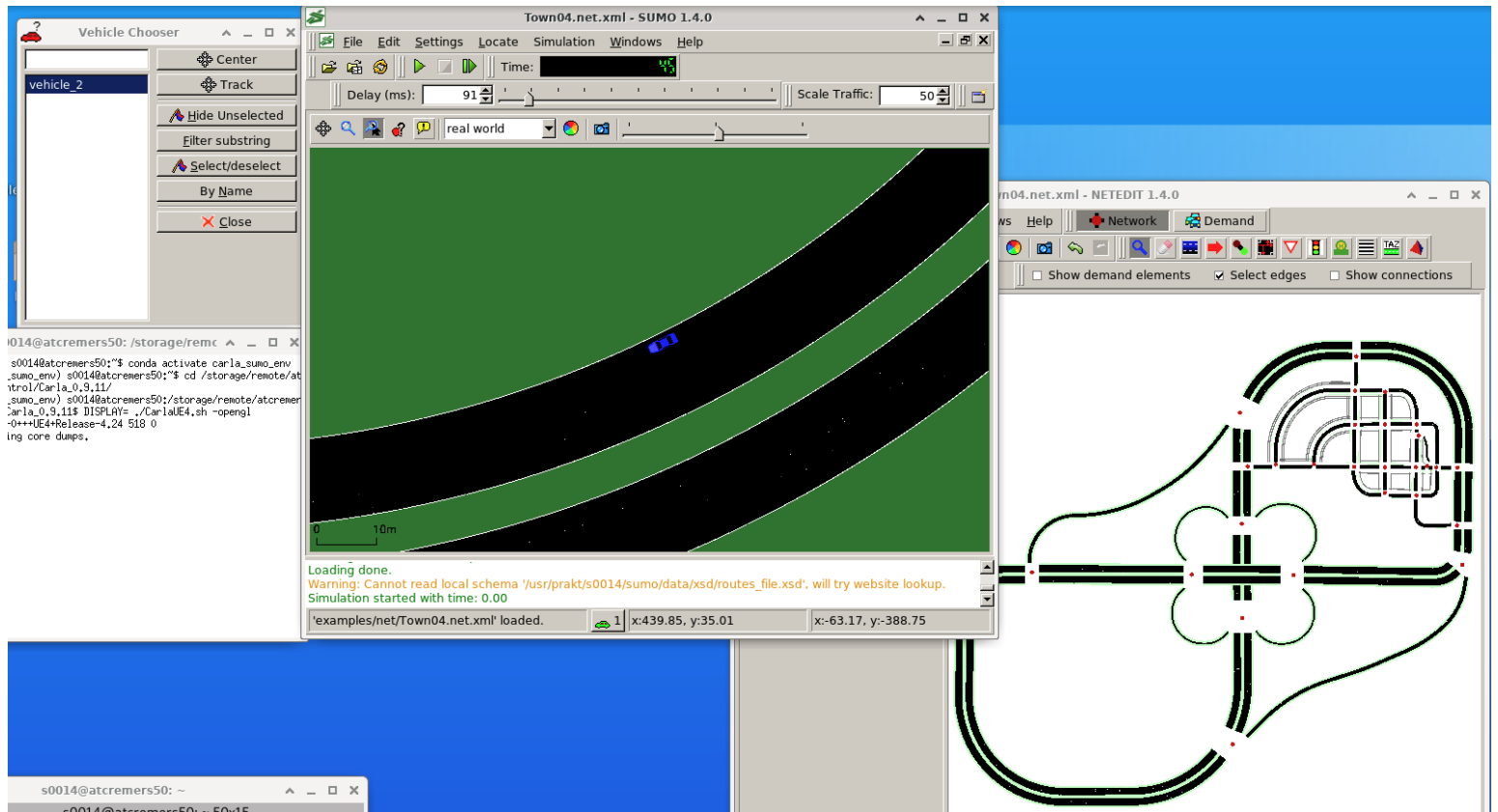


Figure 2: overview of Sumo GUI and Netedit working on carla Town4

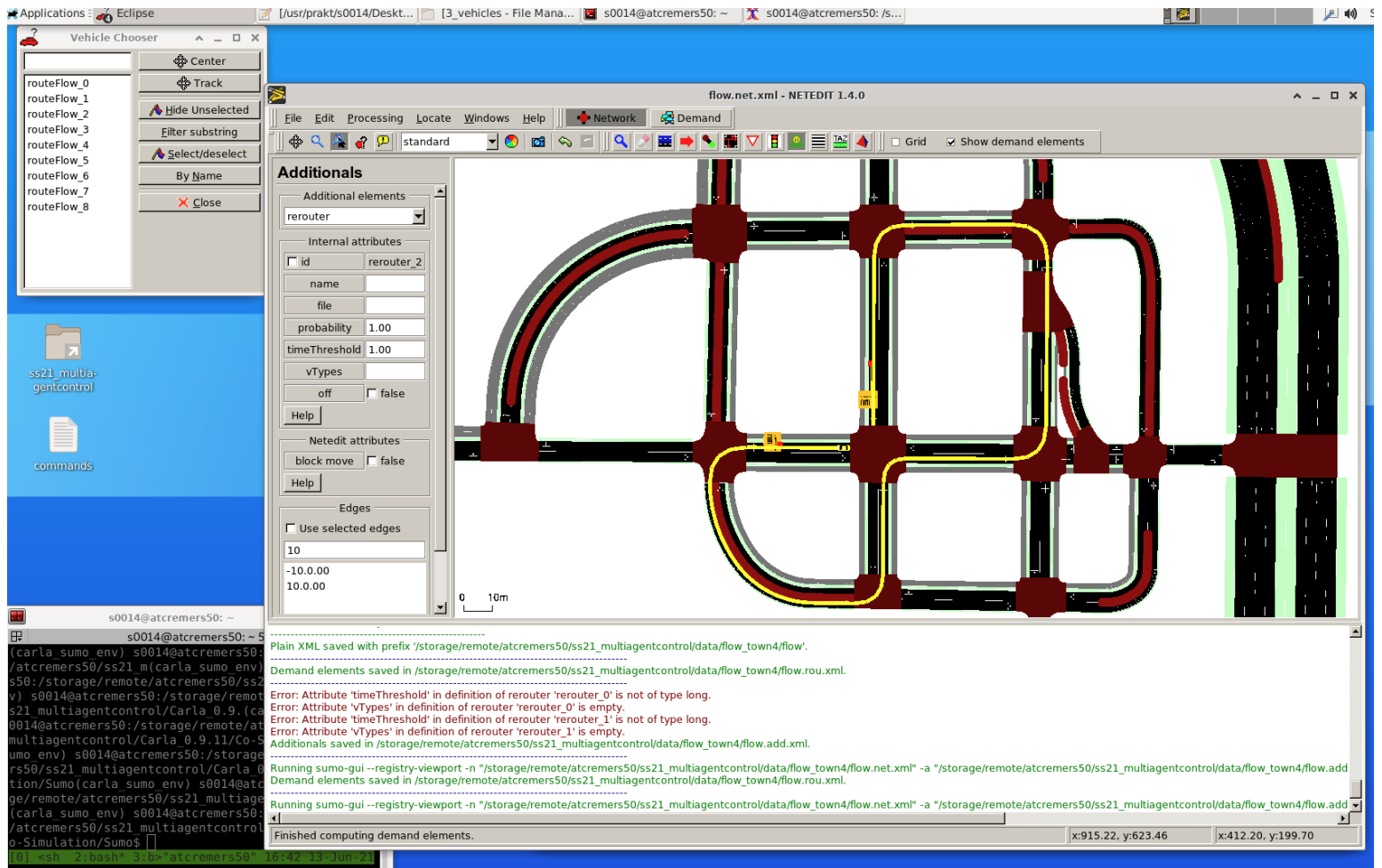


Figure 3: re-routing process