Intellisys - Project Report

27th June 2021

Progresses

– sumo simulation

- Limit the max number of vehicles per timestep to 3-5 cars (this can be verified by the correspondent plot "simulation overview", which collects per each time step the number of vehicles and the number of collisions)
- increase the number of scenarios: more connections, different probabilities.
- Align output for xml and traci dataframe and decide which parameters to keep
- The vehicles are now spawned following a Binomial/Poisson process.
- We can have collisions in the sumo simulation

– data processing

- include weights to the edges (1/distance; distance calculated of vehicle to the border)
- Creating the intention, using simple approach (meaning only consider u-turn, left, right or straight)
- discontinuity handled during data collection by grouping together rows that have the same nodes.
- coordinates are shifted of -100,-100

Next Steps

- histogram to check on the duration of self-consistent graphs during the simulation We need to identify how many frames can we really use for training.
- Test with collecting data with only one car at each time step and use fully connected layers to predict state
- Build GCN architectures and start training

Questions

- is ok to use the probability function so that a vehicle will be emitted randomly with the given probability each second? (This results in a binomially distributed flow for small prob)
- shall we increase the simulation time up to 20000 time steps given that for 2100 time steps 243 groups were identified?
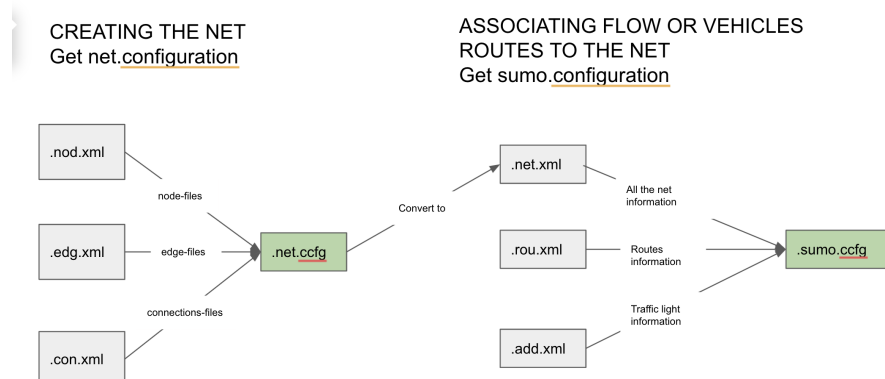
Ref Material

– sumo-netedit overview

Figure 1: Creating and Editing sumo files