Unconventional reinforcement learning on traffic lights with SUMO

Master Degree in Computer Science

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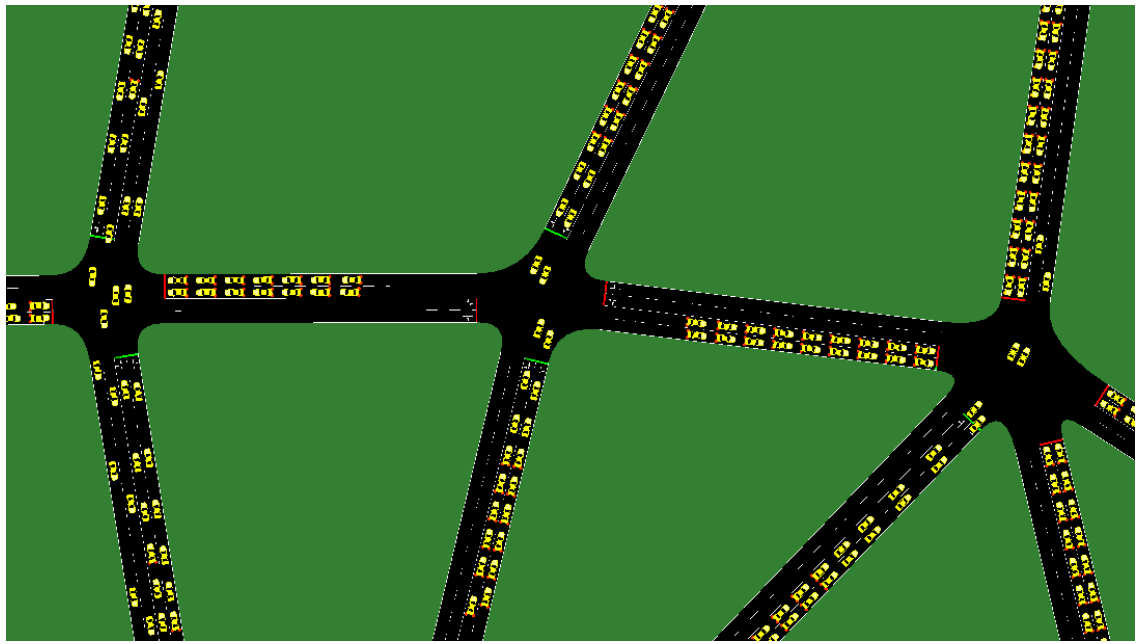
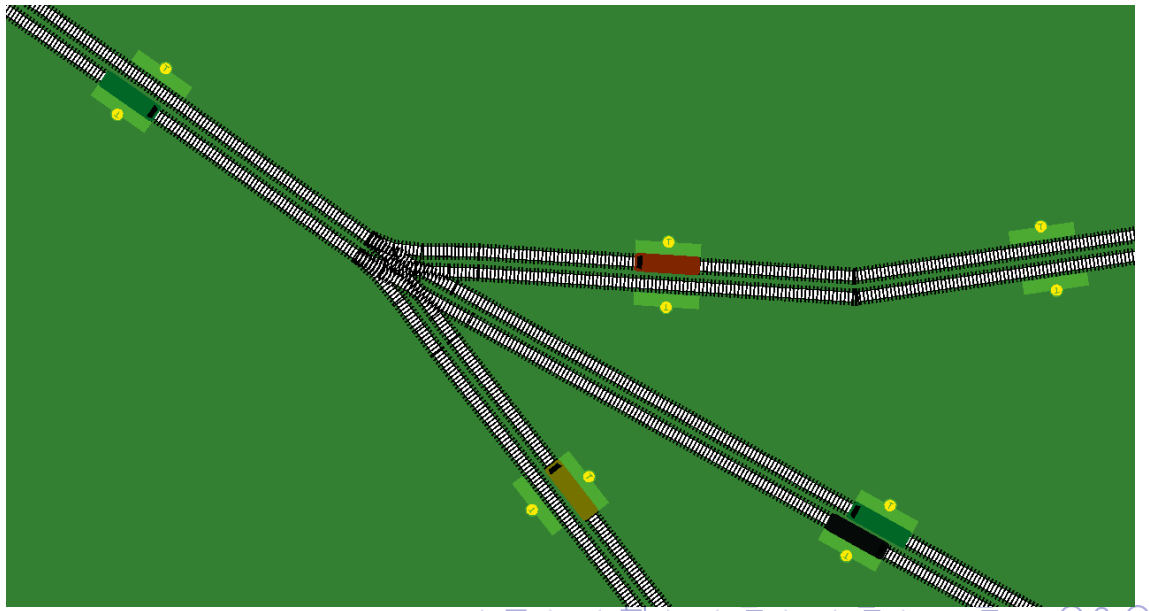
SUMO

SIMULATION OF URBAN MOBILITY

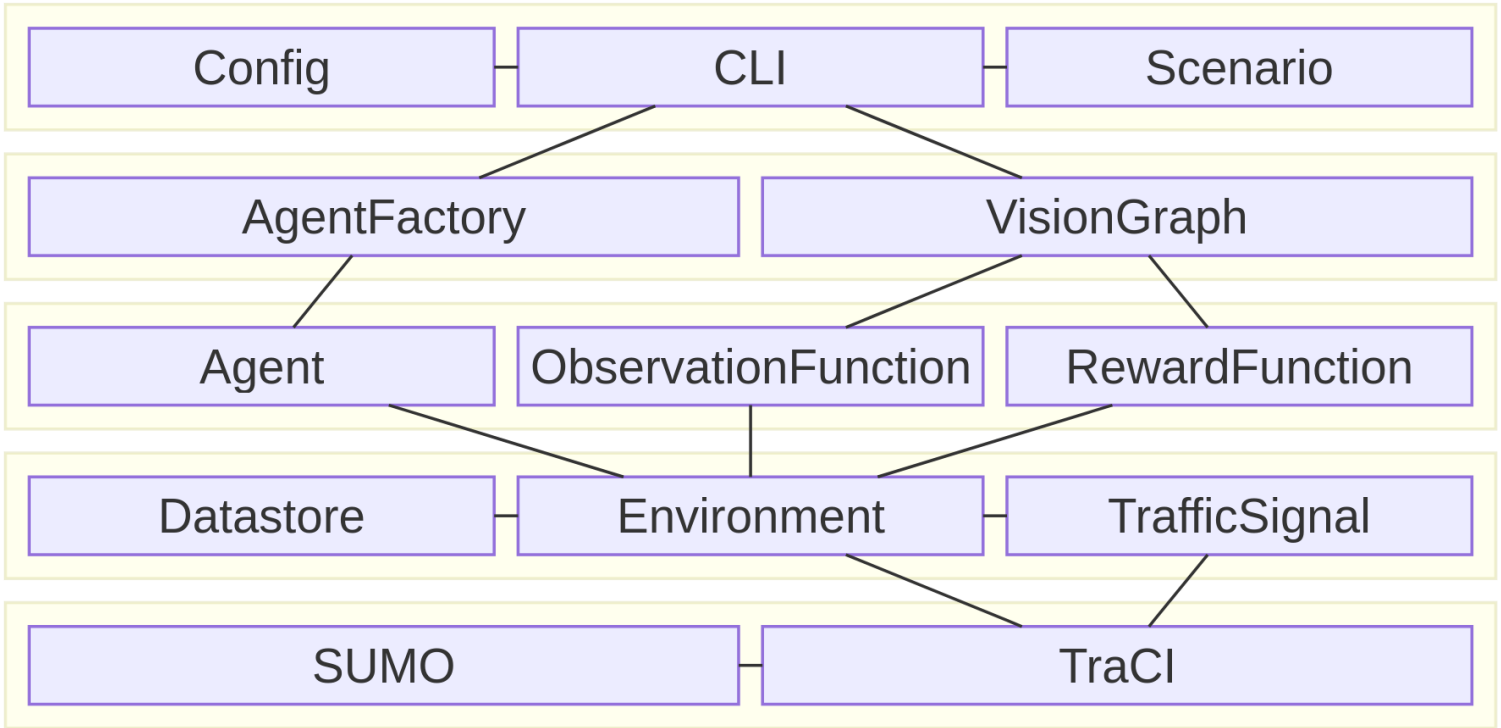
- Free and Open Source microscopic traffic simulator
- Developed at German Aerospace Center (DLR)
- Multimodal: cars, trams, bikes, pedestrians ...
- Highly customizable





SUMO-RF: SUMO + Reinforcement Learning

A FOSS framework for Reinforcement Learning with SUMO developed as fork of *LucasAlegre/sumo-rl* with a focus on modularity, flexibility and Multi Agent Learning. It also contains several utilities for format conversions, metrics analysis and plot, schematic-based demand generation and more.



The Agent Model

The Observation Function

The Reward Function

The Action Space

The Dataset

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TOK = (£|\*|~|%(,[0-9.]+)?(,[0-9.]+)?|[A-Z][A-Z0-9]+)
EXP = ^([0-9]+,)?([0-9]+,)?TOK(,TOK)*$
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Thank You