Java Project Milestone 1

Insert names of group here

Wintersemester 2025/26

1 Intruduction

The program uses the TraaS API to connect to the SUMO Traffic Simulation and display the simulation inside a GUI. The programming language used is Java. The program has the task of connecting to a running SUMO simulation, to step through the simulation, and to render the simulation in a GUI and allow user control.

2 Organizational

For the creation of the project, our group is split into two groups with 3 people each. One group works on the frontend and the other on the backend implementation. For the coordination between both groups and all members of the group, we meet every week at least one time and use the App Discord for communication between these meetings. For sharing our code and version control, we use our own GitHub Repository.

3 Technology Stack

3.1 Frontend & GUI

1. **UI Framework:** JavaFX 13

2. **UI Desing Tool:** SceneBuilder 25.0.0 (Gluon)

3. **Layout Format:** XML

4. **Styling:** CSS (JavaFX components)

3.2 Application

1. **Core language:** Java 25

2. **Build Tool:** Maven

3. **Dependency Manager:** Maven POM

4. **Version Control:** Git / Github

3.3   Backend

1. **Simulation Engine:** SUMO 1.24.0

2. **API:** TraaS 1.1

4   Timeline

Till 23.11.:

- Working connection to SUMO (stepping through the simulation)
- First Version of finished GUI Layout
- Class Diagram for the TraaS Wrapper

Till 30.11.:

- Main functionalities of the TraaS Wrapper
- Basic interaction between GUI and SUMO (Start, Stop, etc.)
- Rendering the static map in the GUI

Till 07.12.:

- Interactive Elements of the Wrapper (Vehicle injection, Traffic Light control)
- Rendering dynamic Elements in the GUI (Cars, Traffic Lights)
- Full interaction with GUI (Map Zoom, etc.)

Till 14.12.:

- Implement at least one test scenario
- Implement batch injection for stress testing
- write a first draft for the User Guide
- Full documentation of the code

Till 04.01.:

- Vehicle Grouping and Filtering
- Traffic light adaptation

- Statistics and Analytics (allow data export)

- Complete GUI with map, controls, statistics

Till 11.01.:

- **Full documentation**

  - Updated and finished user guide
  - Final code documentation

- **Final application (additional features could be added)**

5 Architecture Diagram

TODO: add diagram here

6 Class Design for TraaS wrapper

TODO: add UML Diagram here

7 GUI Mockups

TODO: add pictures of GUI Layout here

8 Git Repository Setup

The repository can be found on Github. Every member of the group is added as a contributor. *TODO: add link here*