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Interactive Front-End for EV Traffic Simulation in Highways

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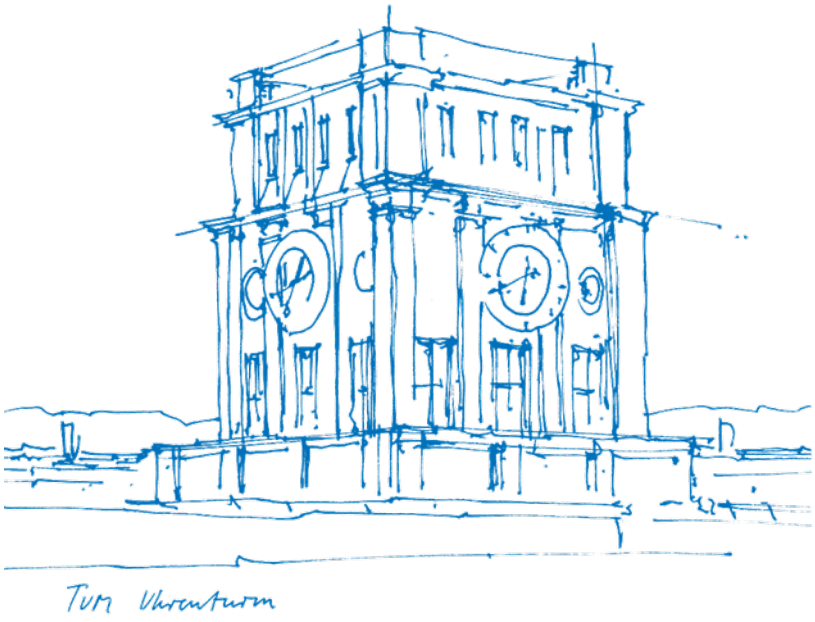

Smart scheduling approach for EVs

- **paper:** “Smart Charging Schedules for Highway Travel with Electric Vehicles”
  - authors: Victor del Razo and Hans-Arno Jacobsen
- **idea:** EVs determine their charging stops during a highway trip
- **goal:** reduce the total travel time for each EV
- **summary:** shortest path problem
  - A* search algorithm
  - extended with verification of constraints
- **software:** Python based simulation framework that provides
  - generated trip data
  - time-dependent parameters

Smart scheduling approach for EVs

- **simulation model**
  - electric vehicles (EVs)
  - charging stations (CSs)
  - highway
- **scheduling design**
  - local to the EV
  - communication with charging stations
  - highway-related information system
- **scheduling process**
  - calculate set of charging stops and times
  - submit bookings to the charging stations
  - proceed trip as planned unless an update event is received

Interactive Front-Ends

Our task was to design and implement two front-ends for the simulation framework.

- **Simulation Manager Interface**
  - show current states of EVs and CSs
- **EV Driver Interface**
  - show relevant vehicle information
  - display travel-related information

Research questions

- “What is the most suitable form of presentation for the data that is most relevant during the simulation and while driving respectively?”