



DCAITI-Project: Implementation of a Traffic Light Service on an (Android) Smartphone

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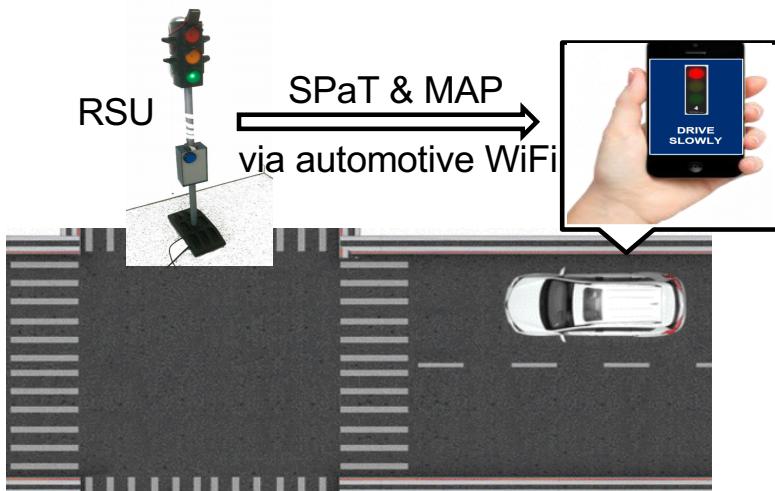
- I. Review of First Presentation
- II. Current Implementations
- III. Milestone



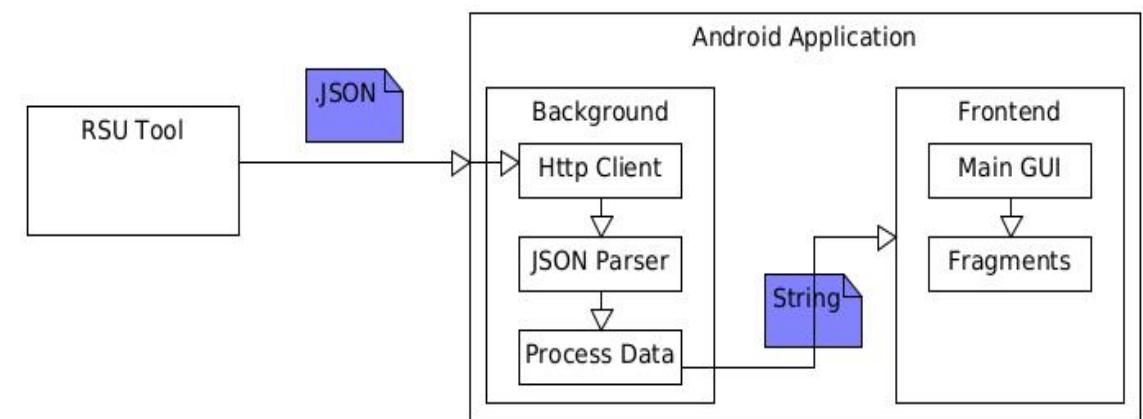
1.1 Review of First Presentation: Background & System Architecture

[disi: aiti:]

Background

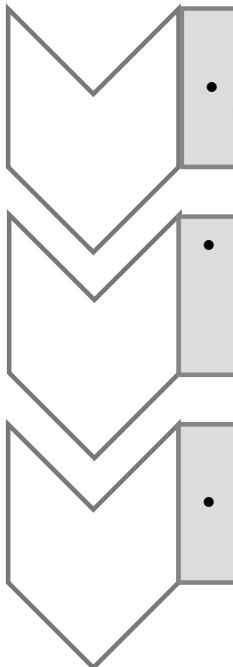


System Architecture



1.2 Review of First Presentation: Tasks

[disi: aiti:]

- 
- Request, analysis and visualization of traffic lights information 
 - Decision of driving strategy:
 - Determination of signal group 
 - Generation of strategies
 - Simulation and evaluation

2.1 Current Implementations: Works about Client

[disi: aiti:]

Server:

FOKUS Traffic Light Service (simulated RSU)

Data to request:

SPaT & Map in JSON format

Authorization:

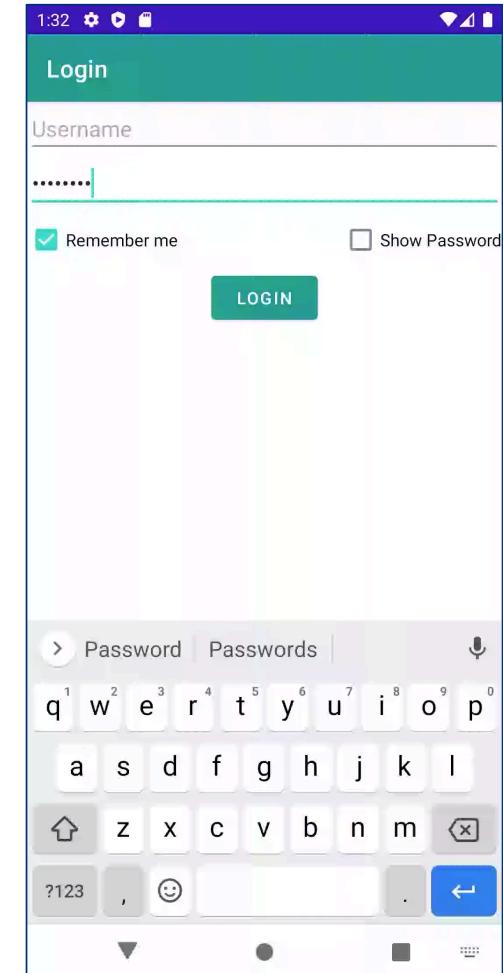
with TUB-Account

Functions:

Verify authorization,

Save username and password,

Hidden/Show password



JSON Parser for SPaT

Parameters of interest:

IntersectionState.movementStates -> traffic lights

MovementState.movementEvents -> phases

MovementEvent.phaseState

TimeChange.likelyTime

Likely time:

Timepoint, the end of this phase state in the current or next hour, with the unit of 0.1 sec

Phase states:

DARK,

PROTECTED_MOVEMENT_ALLOED,

PROTECTED_CLEARANCE,

STOP_AND_REMAIN,

PRE_MOVEMENT



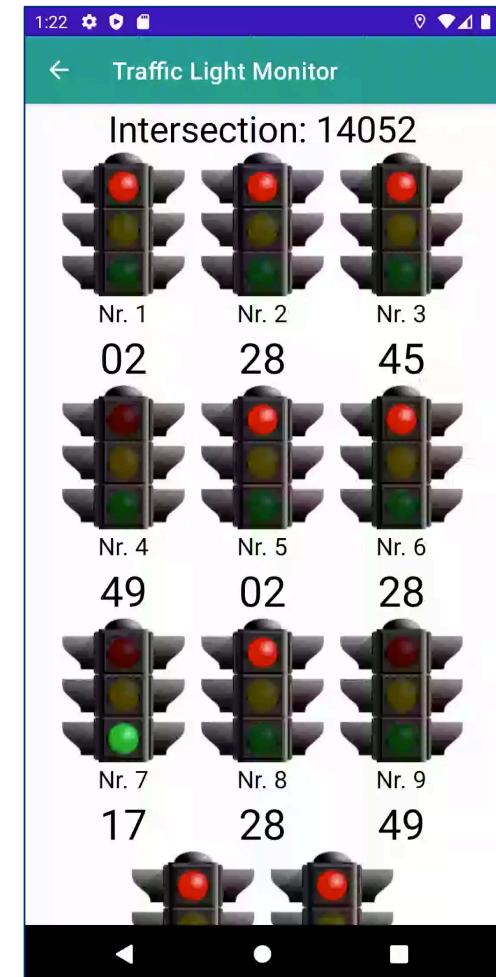
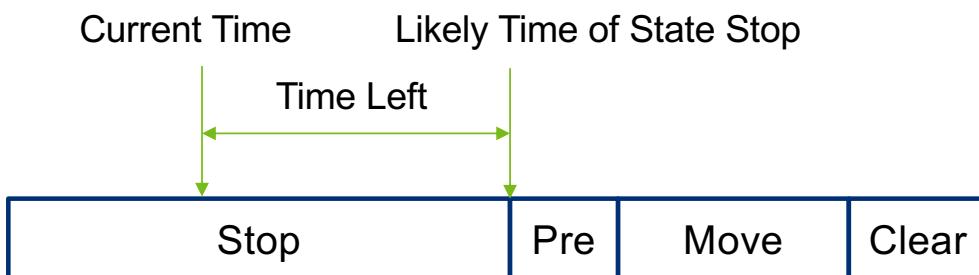
2.2 Current Implementations: Works about Traffic Light Monitor

[disi: aiti:]

Traffic light phase example 1:



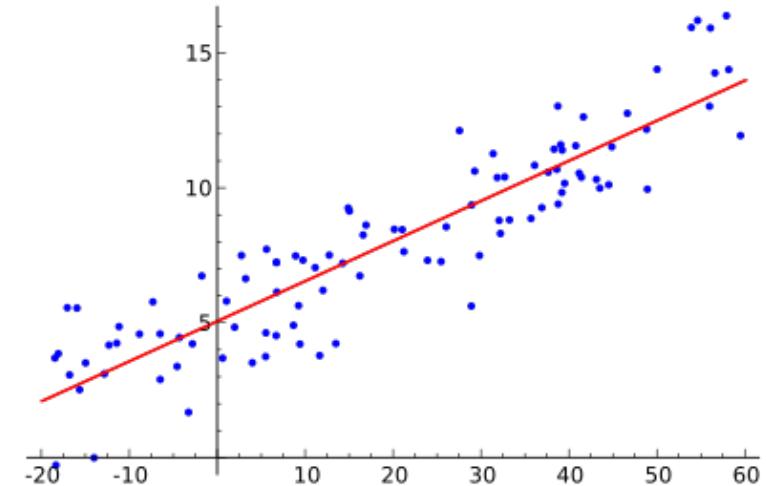
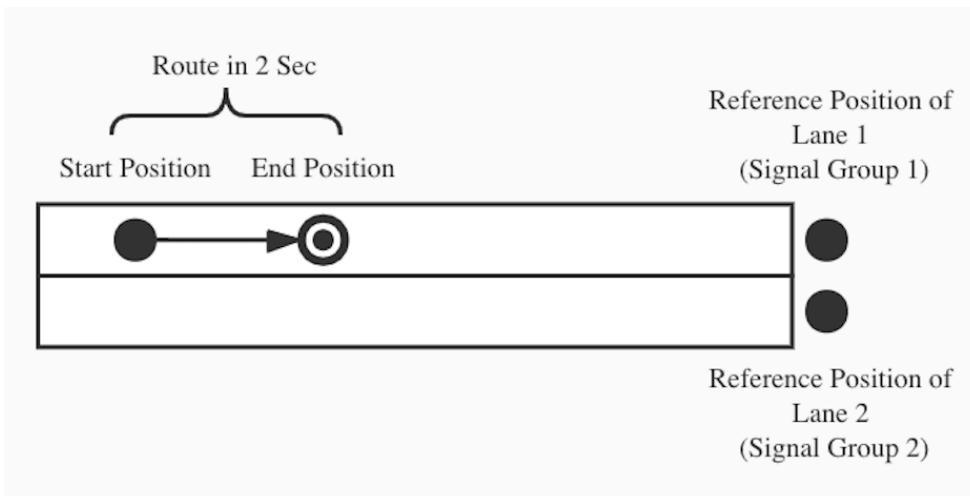
Traffic light phase example 2 and current state to determinate:



Algorithm 1

Linear Regression

Not suitable for real lane, which often in curve not straight line



Source: https://de.wikipedia.org/wiki/Lineare_Einfachregression

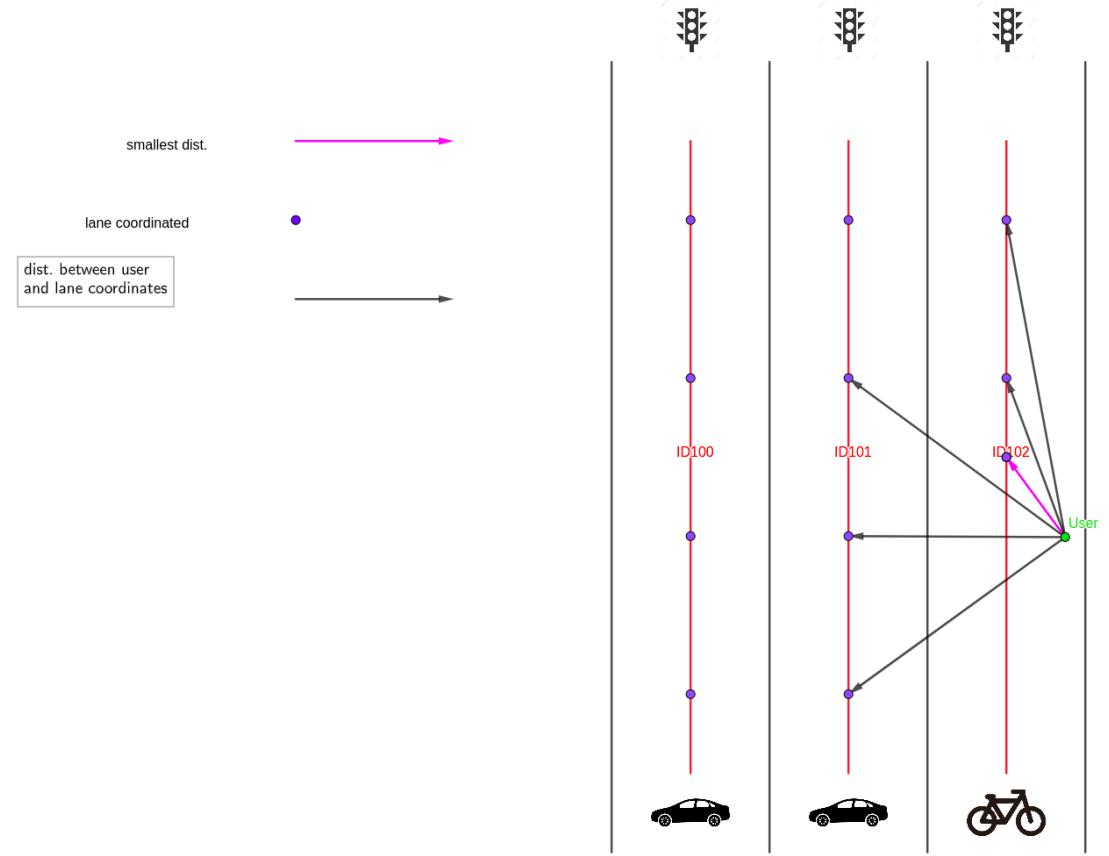
2.3 Current Implementations: Works about Determination

[disi: aiti:]

Algorithm 2

Min Distance to Lane

- Needs to add points in the curve of Lane to decrease deviation
- After estimating min dist.
=> return laneID which contains the desired point.



2.4 Current Implementations: Works about Map View

[disi: aiti:]

Google Maps Platform API

SupportMapFragment

Google Map API Key

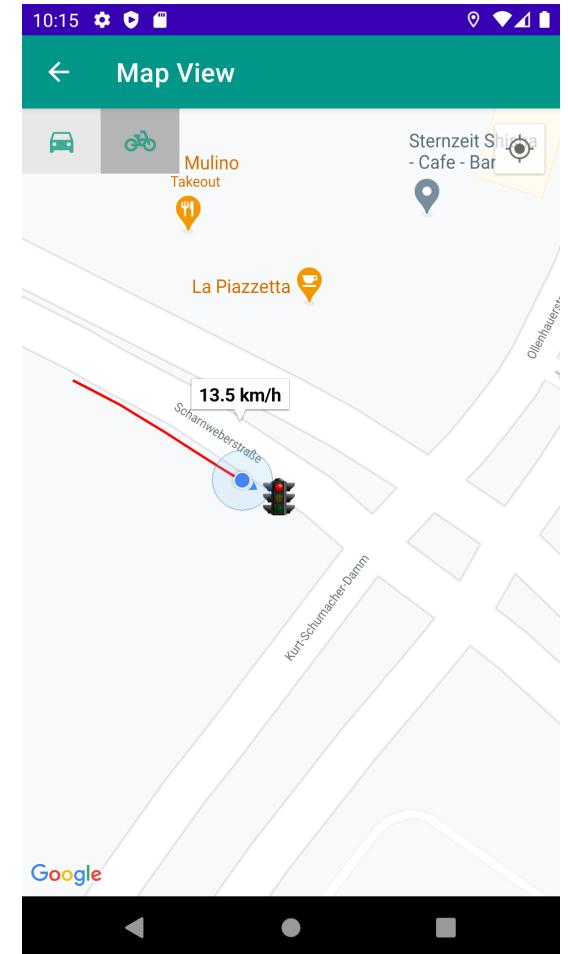
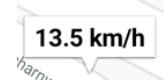
The My Location layer:



Polyline:



Marker:

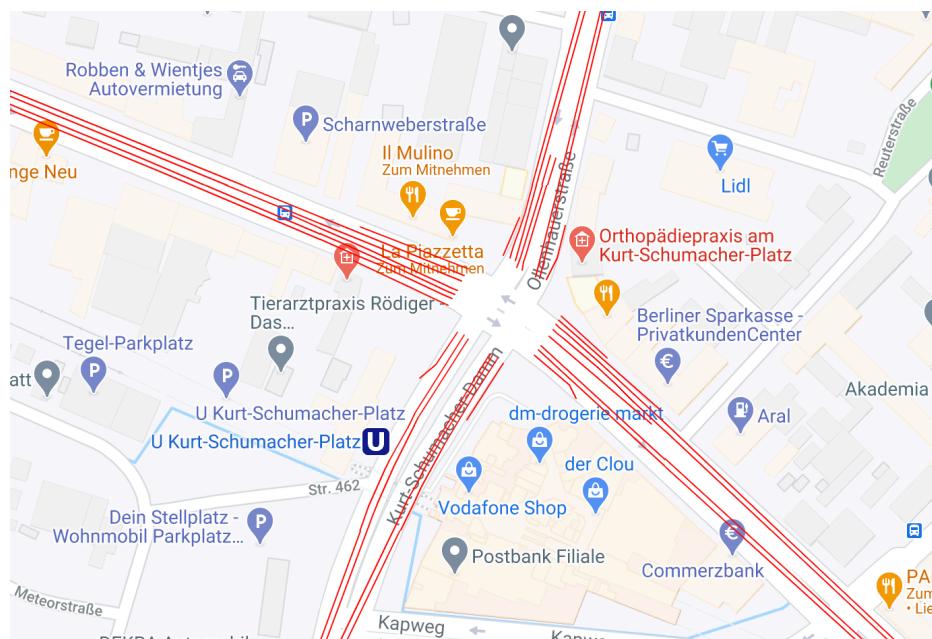


2.5 Current Implementations: Works about Simulation

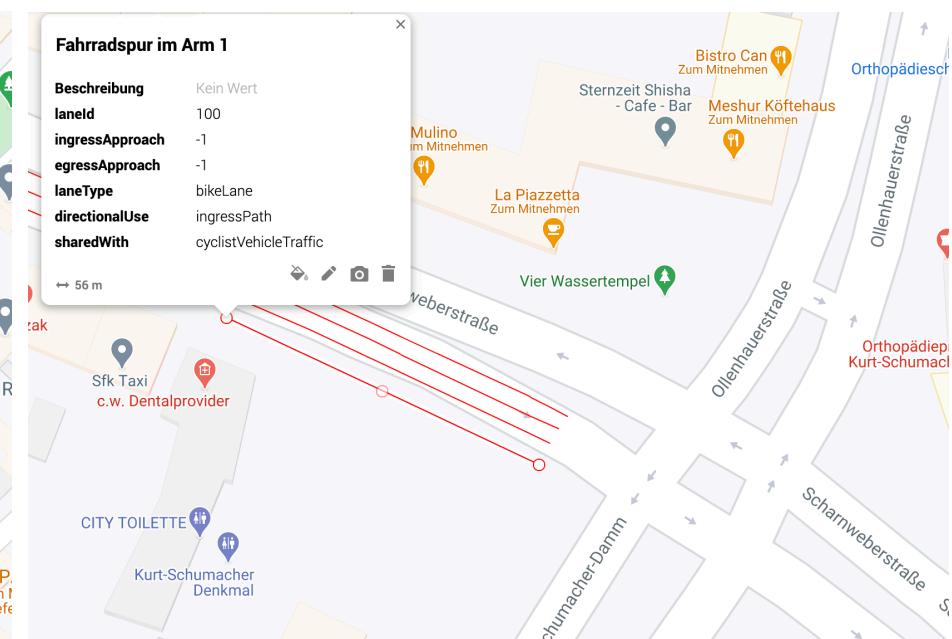
[disi: aiti:]

Decide which lane to use for the simulation

Routes Information in KML File



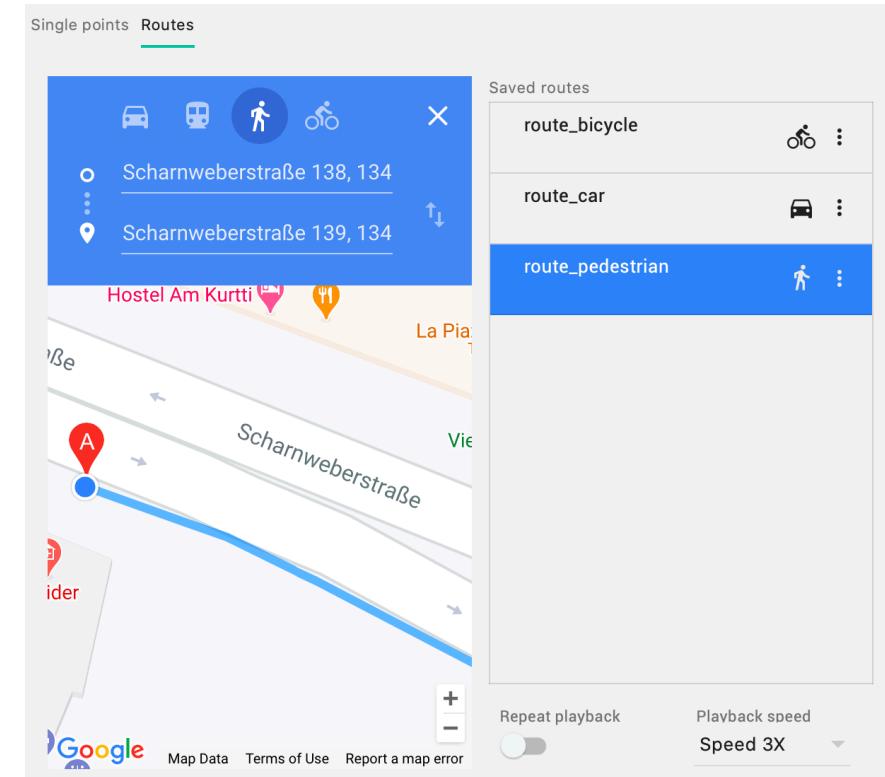
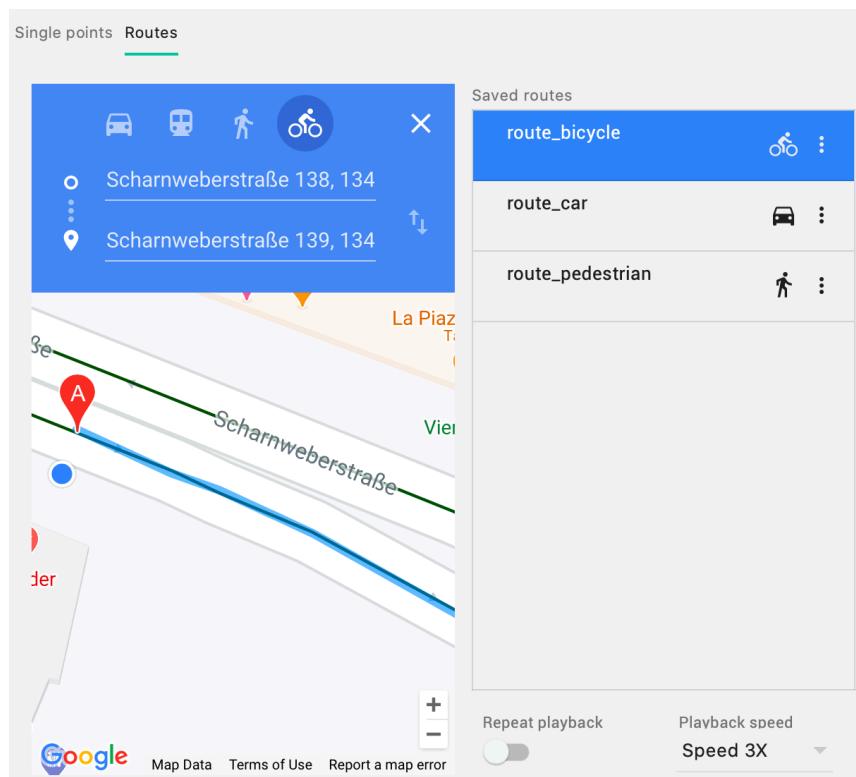
The Lane of Bicycle with ID 100 selected to test



2.5 Current Implementations: Works about Simulation

[disi: aiti:]

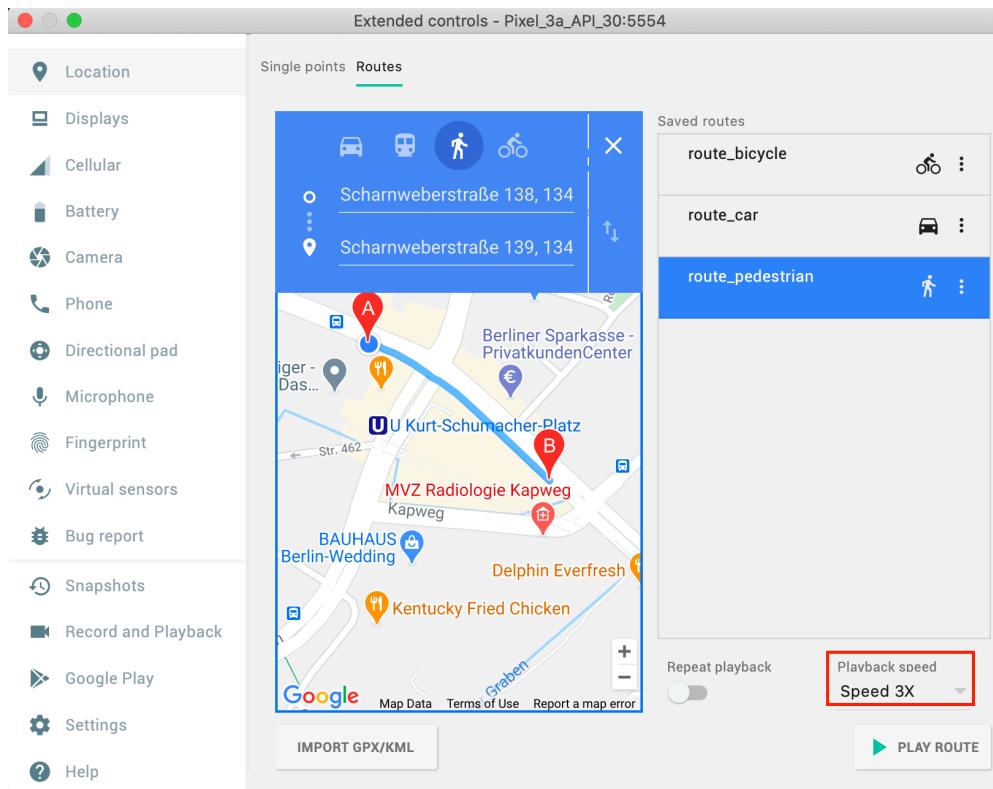
Simulate route in Android Emulator



2.5 Current Implementations: Works about Simulation

[disi: aiti:]

Simulating Result



Route of pedestrian with Speed 3X: around 13.5km/h

3. Milestone

[disi: aiti:]

CWTasks	Literature Research	Framework & Libs Test	SPaT Analysis & Visual	Determination of signal group	2nd Pre.	Work about driving strategies	Simulation and Evaluation	3rd Pre.
47								
48								
49								
50								
51								
52								
53								
1					6-Jan			
2								
3								
4								
5								
6								10-Feb



Thanks for your attention!

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