



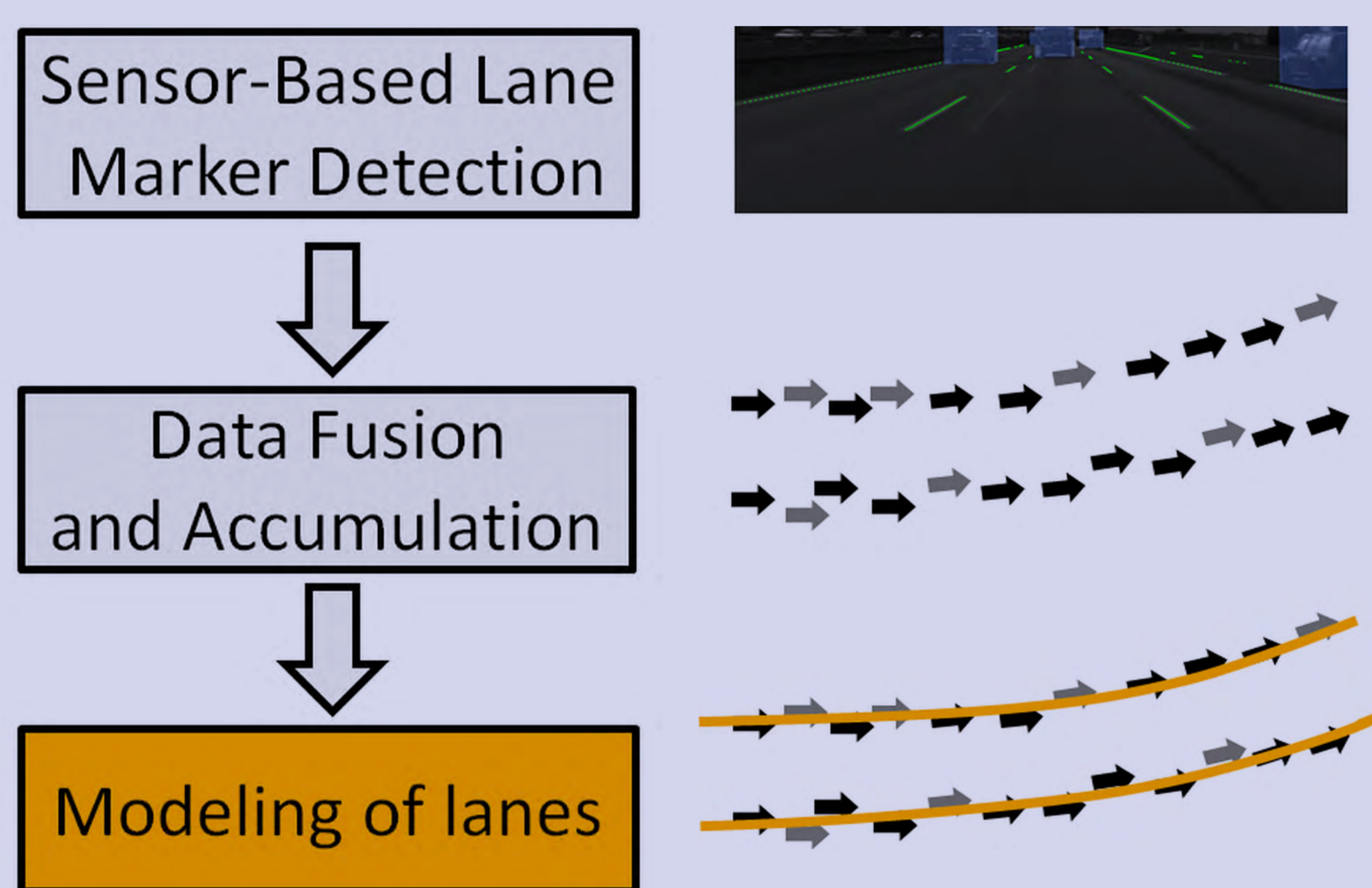
FRONTEND

Sensor-Based Environment Model and Backend Upload

MOTIVATION

- Robust estimation of traffic lanes with online sensors is one of the key aspects in environment perception for automated driving
- Upload of the sensor detected road model for collection and update of backend information

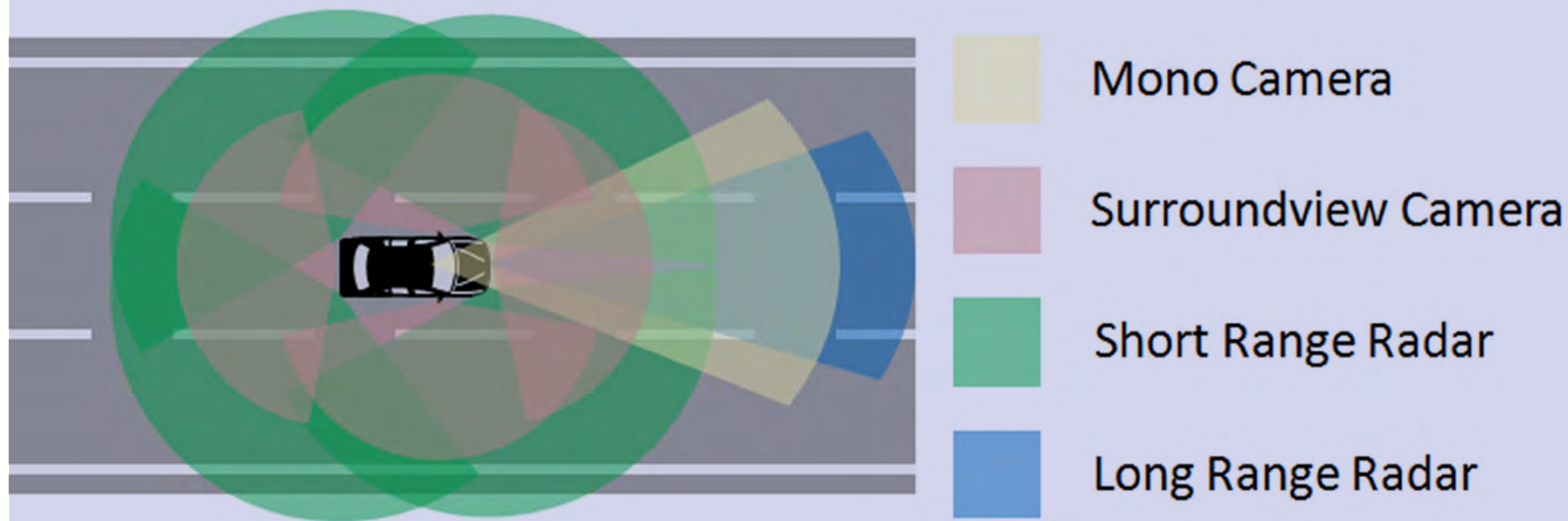
LANE MODEL CREATION OVERVIEW



Goal: Generic representation of the perceived road and geometry of the relevant traffic lanes.

LANE INFORMATION

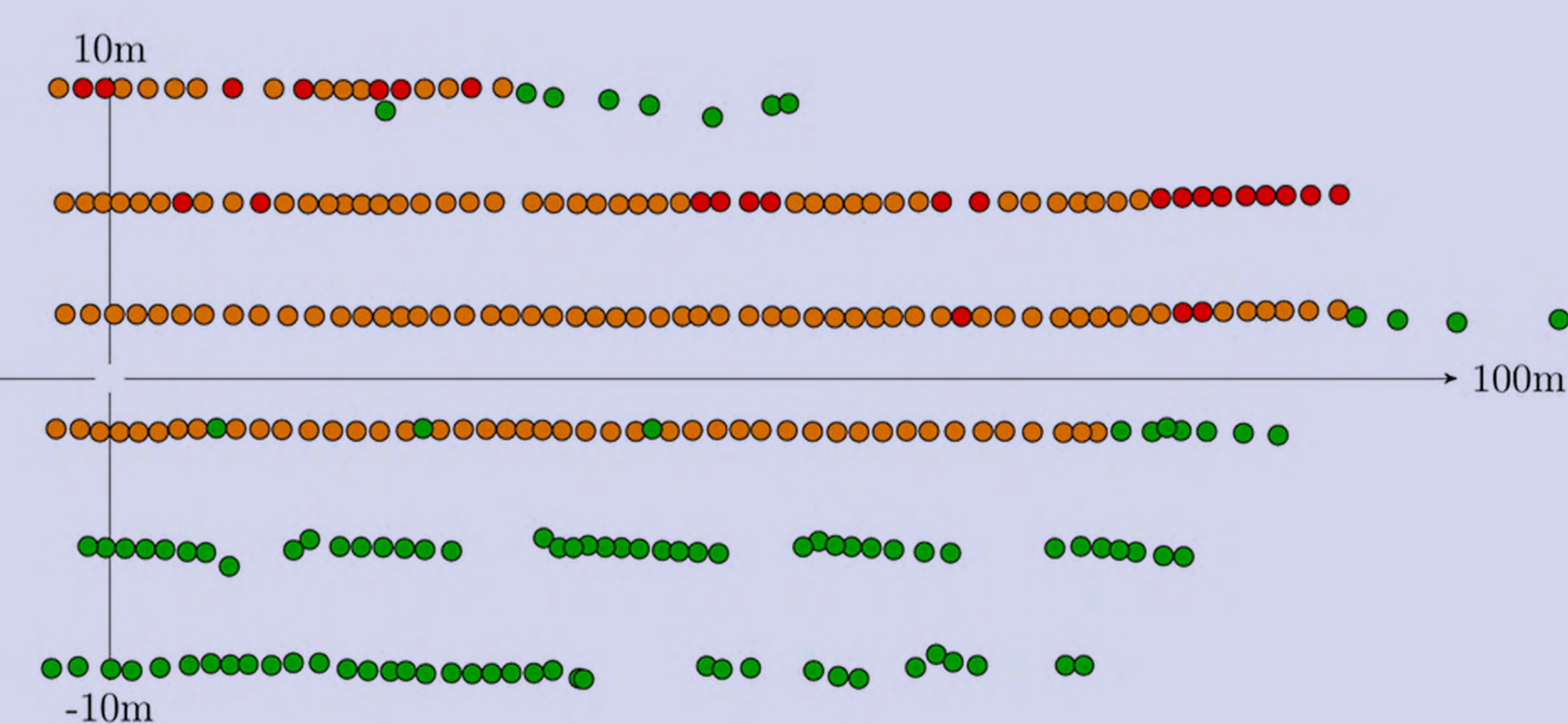
- Camera-based perception of lane markings
- Redundancy and variety in the camera setup: frontal cameras with different opening angles and resolutions, surround view cameras



- In addition, lane information is inferred from trajectories of other traffic participants

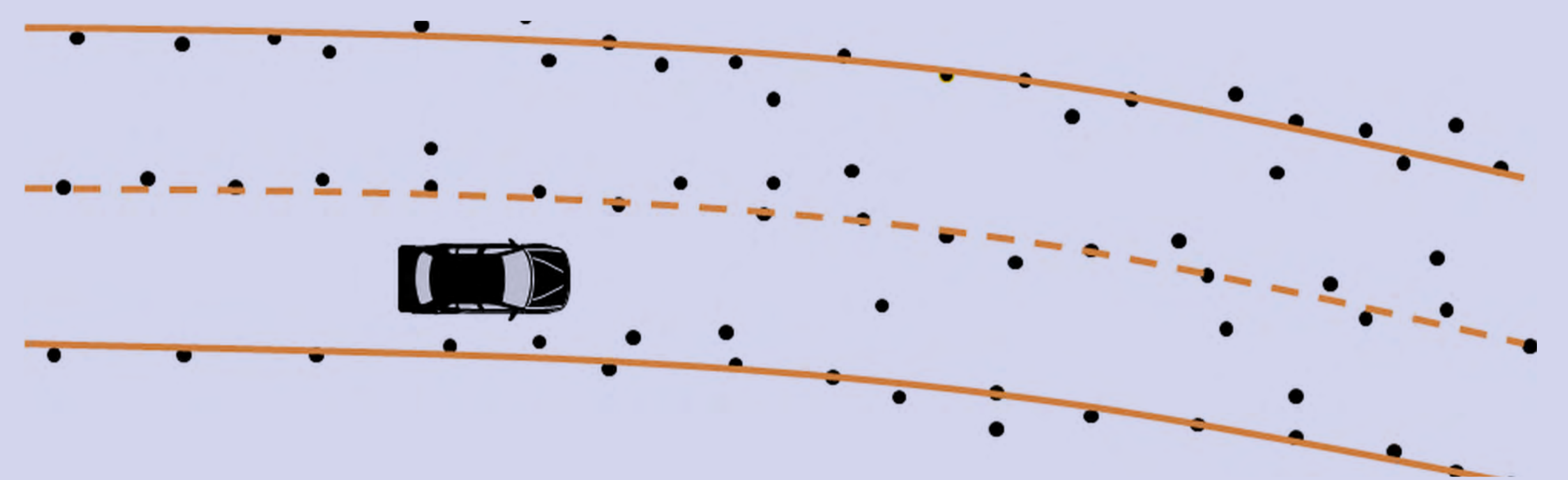
LANE FEATURE FUSION

- All lane information is transformed into a common feature representation (position, orientation, uncertainties) in vehicle coordinates
- Temporal accumulation und fusion using GraphSLAM



LANE MODELING

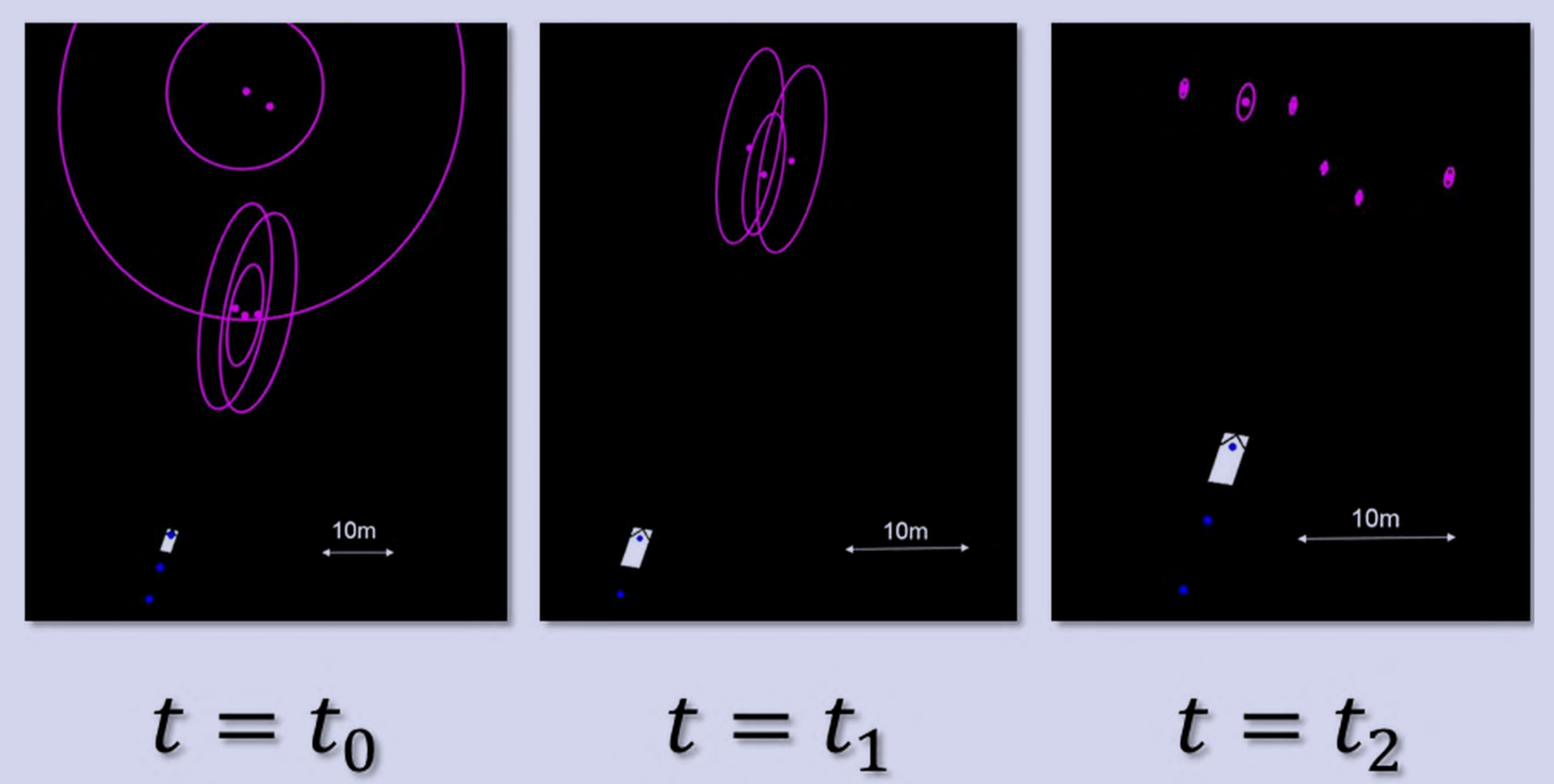
- Based on the fused lane information a mathematical model describing the lane configuration and geometry in the vicinity of the vehicle is derived



- The resulting sensor-based road model is transformed into a generic model free representation for further steps

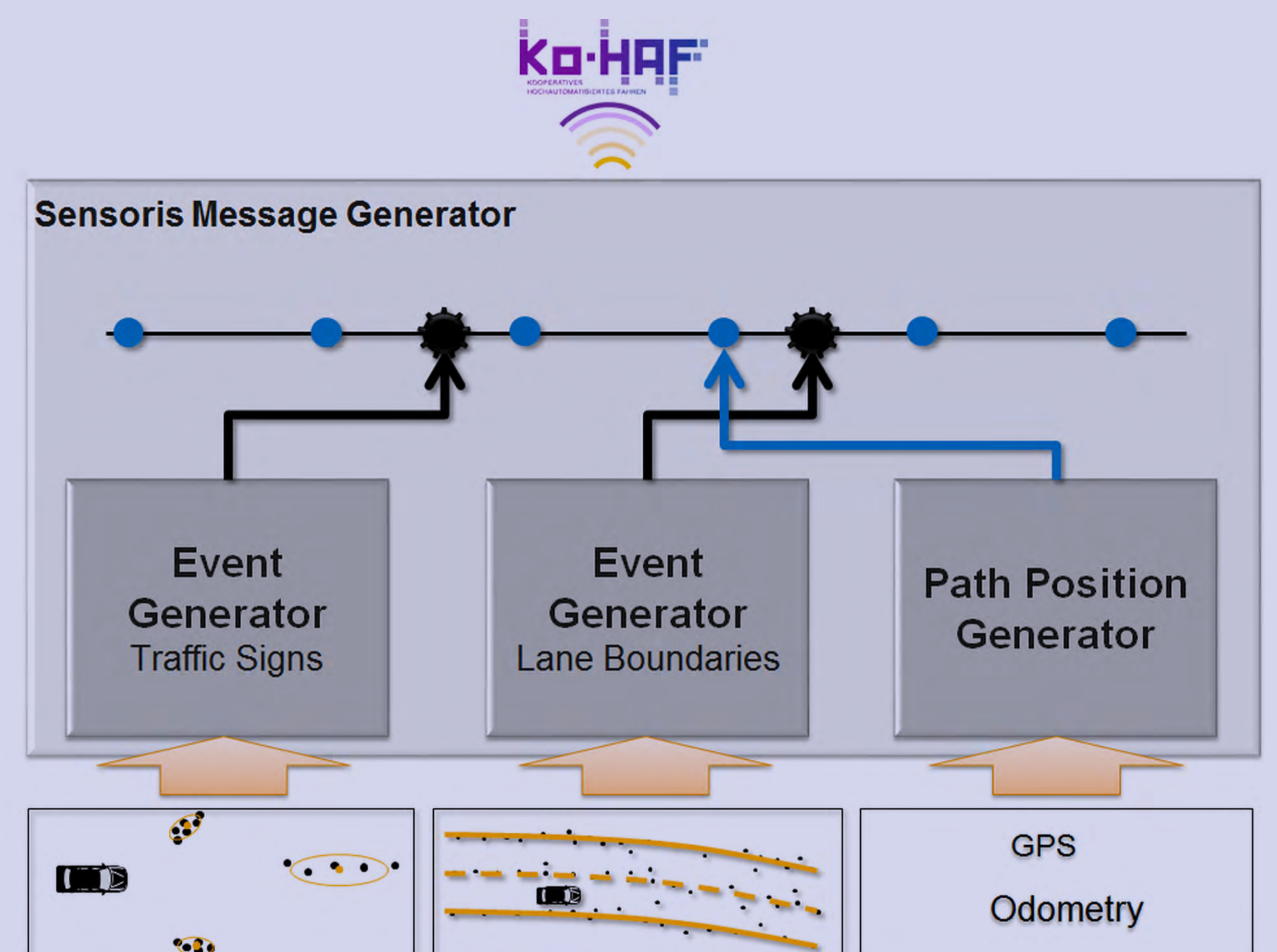
TRAFFIC SIGN DETECTION AND TRACKING

- Camera based SLAM to get traffic sign position

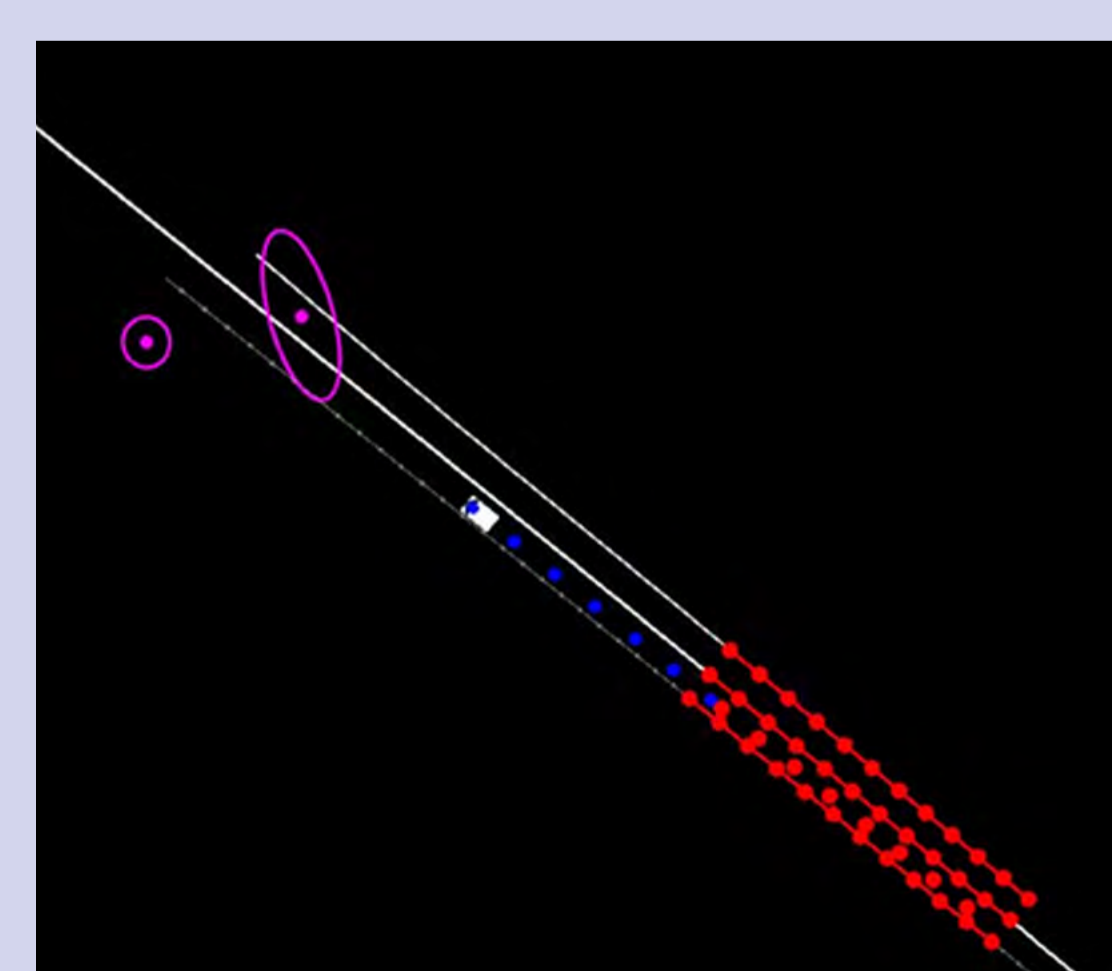


SENSORIS MESSAGE UPLOAD

- Sensoris message generator builds path and attaches path events



- Generates a new tile every 50m



Red: previous uploaded tile
White: lane model
Blue: vehicle trace
Pink: traffic sign position



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