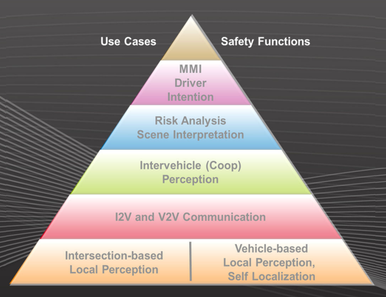


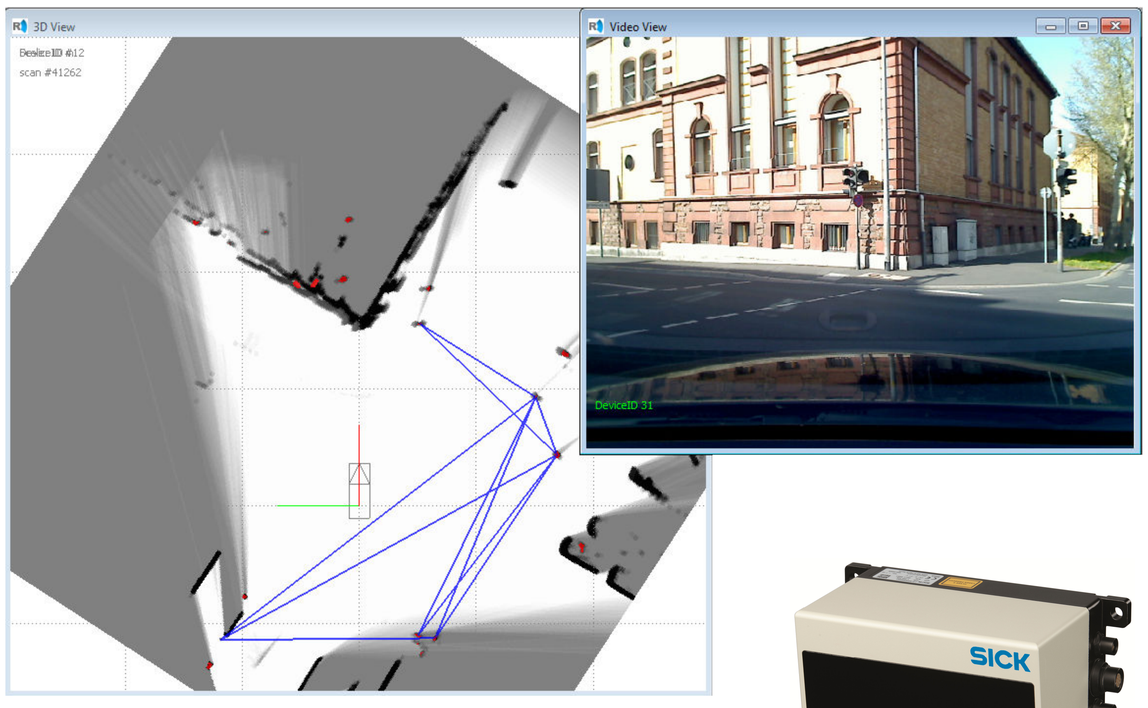
Project Ko-PER

Vehicle Self-Localization using Laser Scanners

FORSCHUNGSINITIATIVE
K O - F A S

A high precision self-localization system has been realized

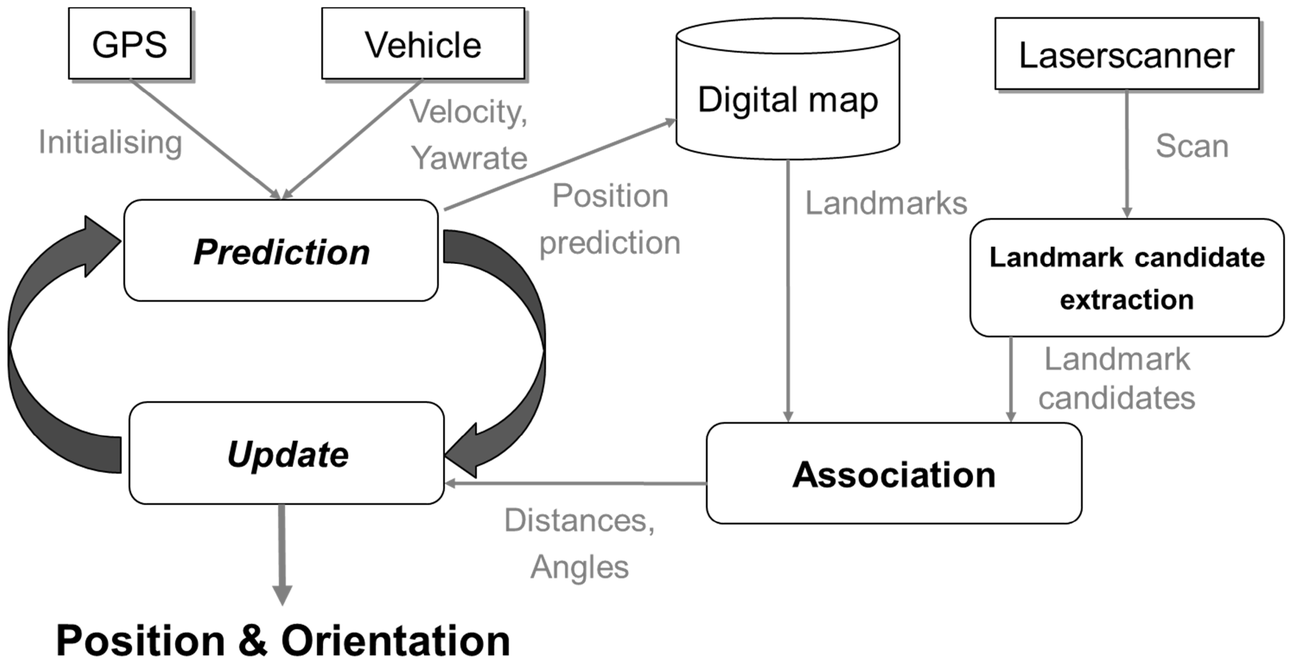
- Laser scanner-based self-localization method for rural road sites and intersections
- High precision in position and orientation (less than 0.5 m / 0.5°)
- Suitable for security and comfort applications
- Robust against harsh weather conditions
- Stand-alone system or add-on for already built-in environment perception systems



Requirements

- Digital map including landmarks (LM)
- Landmark candidates extractable from laser scanner data
- Approximate position and orientation as initial values (GPS accuracy)
- Motion data (velocity and yaw rate) from vehicle

Positioning algorithm

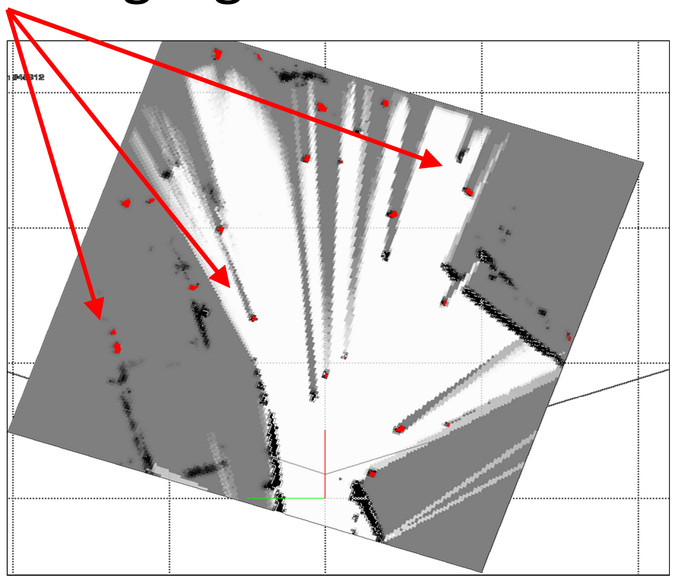


Landmark candidate extraction

- Find small sized objects in history map using image processing algorithms

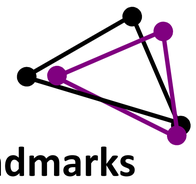
e.g.:

- Street lights
- Reflector posts
- Tree trunks
- Road signs
- etc.

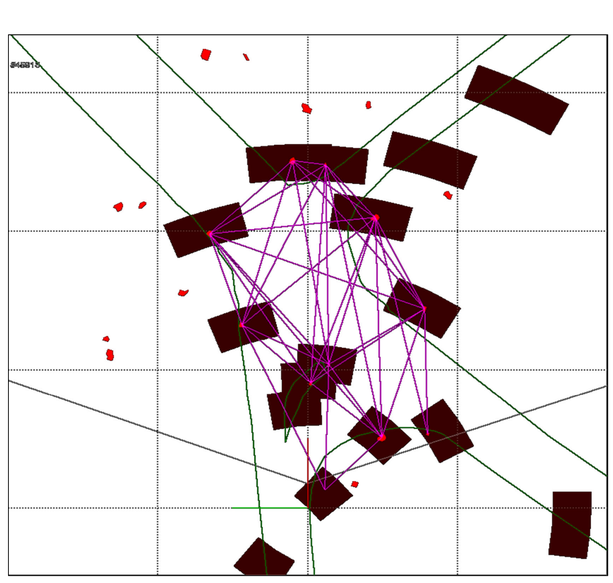


Landmark association

- Creation of an association area surrounding a landmark from the digital map
- Association of landmarks and LM-candidates using geometrical methods



Comparison of **landmarks** and **candidates** to avoid multiple/mismatched pairs



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