

Bachelor-/Masterthesis

Development of a Map Matching Algorithm for Embedded Systems.

Problem Statement

One of the leading causes for accidents with bicycles is inappropriate speed. We investigate predictive warning system to improve rider safety. The system shall warn the rider if the current speed is likely too high for the anticipated situation. For this the current position of the bicycle must be known as well as the most likely path. Therefore a map is needed from which the current road and obstacles ahead can be retrieved based on the current location, heading and velocity.



Your Tasks

Your task is to develop a map matching algorithm for an embedded system based on a nRF52832 microcontroller. This includes:

- ▶ Literature research
- ▶ Extract the necessary data from data sources like OpenStreetMap
- ▶ Develop a space efficient storage scheme suitable for embedded systems
- ▶ Implement an efficient algorithm to retrieve the most likely current road based on a supplied position
- ▶ Evaluate of developed solution

Your Profile

- ▶ Reliable and motivated
- ▶ Experience with C development especially on microcontrollers
- ▶ Desirable: Knowledge about mapping and efficient search structures (e.g. k-d trees)

Contact

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Please include in your application: transcript of records, CV and certificates.