

# Bachelor-/Masterthesis

## Development of a Movement Model for Bicycles.

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### 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 and future traction of the bicycle must be predicted. This is needed to evaluate if the current speed is appropriate. The traction model must consider the current surface, the surface condition (i.e. wet, snow, contaminants) as well as the current velocity, lean angle and rider preference.



### Your Tasks

Your task is to develop a traction model for bicycles suitable to run on an embedded system based on a nRF52832 microcontroller. This includes:

- ▶ Literature research
- ▶ Identify necessary parameters for traction calculation
- ▶ Implement traction model on embedded system in C
- ▶ Evaluate of developed model

### Your Profile

- ▶ Reliable and motivated
- ▶ Experience with C development especially on microcontrollers
- ▶ Desirable: Good understanding of physics

### Contact

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