M.Sc. Projects 2015

NIRA Dynamics AB is a Swedish expert company focusing on R & D of signal processing algorithms for the vehicle industry. We provide the global automotive industry with innovative, value-adding products that enhance safety in vehicles. We do this by using our expertise in signal processing, modeling and sensor fusion to design unique, high-tech products. Sensor fusion can be described as using information from several different physical sensors to compute new, virtual sensor signals. An example where this approach is utilized is our indirect tire pressure monitoring system called TPI which can be found in vehicles manufactured by e.g. Audi, Volkswagen, Skoda and Seat with more than 10 million activated licenses.

We have currently two suggestions for M.Sc. projects:

1. **Lateral friction estimator**: The problem we consider is to estimate the friction coefficient in between the tire and the road during vehicle lateral maneuvering. This should be achieved using available sensor signals only (automotive grade sensors).

2. **Estimation of absolute speed**: The problem we consider is to estimate the absolute speed of a vehicle using automotive grade sensors that may, for investigation purpose, be supported with experimental sensors to support benchmarking.

The proposed projects require excellent knowledge in:

- Modelling and simulation
- Signal processing and mathematical statistics
- Programming for embedded systems

Appropriate educational background is studying at a Master’s program with specialization D, E, F, Y, Z or equivalent with a strong focus on signal processing & sensor fusion or vehicle & tire dynamics. We expect you to have excellent study results (average 4 or higher) and that you have a driven personality and can take initiative and work independently. A “B-driving” license is required since the task also involves in-vehicle testing. The project will be carried out at our head office in Linköping, but shorter stays at the Audi office in Ingolstadt, Germany, may be required. If you are interested in the above M.Sc. projects, please send a personal letter written in English including a course listing with grades to info@niradynamics.se. Earliest expected start-date is January 12, 2015.