M.Sc. Projects 2014

NIRA Dynamics AB is a Swedish expert company focusing on R & D of signal processing algorithms for the vehicle industry. We provide the global vehicle industry with innovative, value-adding products that enhance safety in vehicles. We do this by using our expertise in signal processing, modelling 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 5 millions activated licenses.

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

1. **Monitoring road surface conditions**: The problem we consider is to detect road surface anomalies that, when left unreported, can cause wear of vehicles, lesser driving comfort and vehicle controllability, or even an accident.
2. **Estimation of tire characteristics:** The problem we consider is to estimate and classify the tire characteristics on the driven wheels using available signals. This in order to further optimize the functional performance of TPI.

Since several of the project tasks involve in-vehicle testing of the algorithms you will develop, a "B-driving license" is required. The proposed projects require furthermore that the students should have an excellent knowledge in:

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

Appropriate educational background is studying at a Masters 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 are driven and can take initiative and work independently. 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 7, 2014.