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Second STINT - KOSEF - Sweden / Korea Workshop – Proposals

Very brief summary of presented research topics during the first workshop

During the first workshop numerous research topics have been presented. From the student side, fields like *Smart Home/City* in respect of ubiquitous technologies and *Simultaneous Localization and Mapping (SLAM)* in respect of autonomous robots/vehicles were mainly emphasized.

Identification of topics for possible research collaboration or joint research

At Umeå University, the Control System Group (headed by Prof. Anton Shiriaev, http://www.tfe.umu.se/forskning/Control_Systems/) is running the project *Smart Crane*. Here, the following research areas are important:

- **Feedback control algorithms** for complex mechanical systems;
- Off-line and on-line **motion planning algorithms** (including SLAM);
- Process visualization/manipulation via **virtual reality (VR) environment and multimodal user interaction** (e.g. wired glove, force-feedback devices) as well as process visualization/manipulation over any kind of **communication network** (e.g. internet);
- Methods and algorithms for **sensor fusion**.

Furthermore, the following research areas are of significant interest:

- Motion Generation and Feedback Stabilization for **Underactuated Nonlinear Systems**;
- **Friction Compensation in Mechanical Systems**.

According to the presented research topics, areas like **motion planning, communication networks** and **sensor fusion** seem to be promising for collaboration. Nevertheless, there might be very interesting research collaboration dealing with **feedback control algorithms** for complex mechanical systems.

Exchange of students, post docs and professors

Most valuable exchange of people will be:

- Exchange related to **experimental work in different laboratories**.
- **Long-term visits** (2-5 months) in order to study certain techniques, work remotely

Identification of methods for collaboration in teaching/training

Most valuable method in teaching/training might be:

- **2 weeks full-time course** covering a particular research area including lab sessions