Signals, Instruments and Systems 2016-17
Course Projects

1 General information

SIS will involve a 50h course project (this should include reading, implementation, reporting, oral defense of the project, and review of the report of another student team). Students will choose a project from a list of approved topics distributed during the seventh week of the semester. Projects will be carried out in groups of three students (an ad hoc arrangement will be found in case of total number students not divisible by three). Each member of the student team will have to defend part of the project in front of the audience. Every project will be supervised by either a member of the support staff (Ali Marjovi, Bahar Haghighat) or one of the TAs (Alexander Bahr). Definitive assignment of project topics and team members will be communicated by the beginning of the eight week, based on the preferences expressed by the students. Students will be expected to contact their project supervisor as soon as possible to begin planning their work schedule. During the eight week, a kick-off session for the implementation of specific course projects will be organized by each project supervisor and will involve all the teams working on the very same topic.

Students will be required to submit a brief intermediate report on their project progress by the end of the tenth week, showing a clear understanding of the project topic and its related literature, a concrete implementation plan in terms of time, task breakdown and role of each member, familiarization with the needed tools, and preliminary implementation results. This will allow their project supervisor to give them feedback in terms of implementation progress, problem and tool understanding, and time planning. The concepts learned during the course will help the students to find solutions to the tasks required for achieving the project goals. Students are asked to reason about the decisions and choices made during the project and show the effectiveness of their methods by repeated experiments and therefore statistically significant results. Students are encouraged to start from a carefully thought-out plan that takes into account the system requirements, limitations and constraints, sources of noise, etc.; it should leverage simple software abstractions (e.g., flowcharts, behavioral blocks) and tentative performance evaluation metrics. This plan should be included in the intermediate report mentioned above. For each project, a reference paper will be provided by the project supervisor on the same topic, to help the students gain a deeper understanding of the concepts behind the project. This paper, can serve as an example of how the final report is expected to be.

Each student will also be asked to serve as a reviewer for another student project and invited to ask questions during the defense session. Further details on the intermediate report, project report and presentation will be communicated in timely fashion.

2 Project assignments

1. Sound detection with the e-puck robot

Supervisor – Bahar Haghighat (bahar.haghighat@epfl.ch)
Group 1 - Pellaton Louise, Pauline Délessert, René Lugrin
Group 2 - Cécile Nyffeler, Nicolas Jullien, Bonzi Patrick
Group 3 - Nathalie Camplani, Marco Vieira Ruas, Clara Barret
2. Road sign recognition with the e-puck robot

Supervisor – Ali Marjovi (ali.marjovi@epfl.ch)
Group 1 - Mégane Vogel, Xavier Buchwalder, Philipp Neuenschwander
Group 2 - Keller Cloé, Johann Franziskakis, Bertil Decosterd
Group 3 - Laura Bissel, Deborah Bouvresse
Group 4 - Coralie Kowalski, Antoine El-hani

3. Localizing the maximum in an environmental field using a mobile sensor

Supervisor – Alexander Bahr (alexander.bahr@epfl.ch)
Group 1 - Miriam Bergqvist, Sophie Baudelet, Fiona Collins
Group 2 - Alice Andreetti, Andrea Quillici, Théodore Caby
Group 3 - Sophie Chalumeau, Lucie Arnaudon, Coralie Chappelier