

Signals, Instruments and Systems 2018-19

Course Projects

1 General information

SIS will involve a 45h 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 Week 5 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. Each project will be supervised by TAs (Alicja Wasik, Faezeh Rahbar, Chiara Ercolani and Cyrill Baumann). The definitive assignment of project topics and team members will be communicated by Week 7, based on the preferences expressed by the students. After the lecture of Week 8, 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 Week 11, 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 document 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 document, 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 Key dates / milestones

Week 5: Distribution of this course project list.

Week 6 / March 25: Send project / team preferences to Head TA (see instructions below)

Week 7: Assignment of projects / teams

Week 8 / April 11: Kick-off session after lecture

Week 11: Interim report is due

Week 15 / June 2: Final report due

June 5: Presentations

3 Project Assignments

1. Line following using the e-puck's camera

Supervisor: Chiara Ercolani (chiara.ercolani@epfl.ch)

Group 1: Pierre Fevre, Elise Hautefaye, Lo e Maire

Group 2: Esther J org, Blanche Dalimier, Alexandre Fourier

Group 3: Sarah Courdier, Alexis Barrou, Sixtine Guinard

Group 4: Mohamed Lamzouri, Youssef Lafkihi, Nouha Daghrir

2. Road sign recognition with the e-puck robot

Supervisor: Faezeh Rahbar (faezeh.rahbar@epfl.ch)

Group 1: Anna B ssel, Nathan Bonnet, Lena Straumann

Group 2: Gabriel Grosclaude, Julien Clark, Th ophile Maeder

Group 3: Clara Gualtieri, Paul Seguin

Group 4: Alexandra Wilkinson, Lucas Lometti, Sebastien Will

3. Finding a light source with an e-puck robot

Supervisor: Alicja Wasik (alicja.wasik@epfl.ch)

Group 1: Nicolas Manetti, Mos  Balmelli, Fedro Mattei

Group 2: Evgeny Karpuchov, Simon Perrelet, Raphael Renevey

Group 3: Sarah Fanous, Diego Schibli, Coraline Baud

Group 4: Lionel Pattaroni, C dric D l ze, Estelle Montet

4. Limitations of the e-puck's accelerometer to detect earthquakes

Supervisor: Cyrill Baumann (cyrill.baumann@epfl.ch)

Group 1: Trude Byre, Lisa Appavou, Viviane Remy

Group 2: Alma Wilkinson,  douard Cattin, Carole Ruppli

Group 3: Gabriel Kathari, Loic Brouet, Laura Pasero