

Signals, Instruments, and Systems 2020-21

Course Projects

1 General information

SIS will involve a 60h course project (this should include reading, implementation, reporting, and oral defense of the project). Students will choose a project from a list of two approved topics distributed at the beginning of Week 7. Projects will be carried out in groups of two students. 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 two of the four TAs (Hugo Grall, Cyrill Baumann Anwar Quraishi and Kagan Erunsal). The definitive assignment of project topics and team members will be communicated by the end of Week 7, based on the preferences expressed by the students. During the lab hours of Week 8, a kick-off session for the implementation of each course project will be organized by the project supervisors 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 team 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 by Week 8, 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. Further details on the intermediate report, project report and presentation will be communicated in timely fashion.

2 Key dates / milestones

- Week 7 (October 28): Distribution of course project list
- Week 7 (October 30, midnight): Send project/team preferences to Head TA (see instructions below)
- Week 7: Assignment of projects / teams
- Week 8: Distribution of reference project documents
- Week 8: Kick-off session during lab hours
- Week 11 (November 30, midnight): Intermediate report is due
- Week 13 (December 12, midnight): Final report is due
- Week 14 (December 15-17): Presentations

3 Project Assignments

1. Road sign recognition and localization with the e-puck robot

Supervisors: Cyril Baumann (cyrill.baumann@epfl.ch)

Kagan Erunsal (kagan.erunsal@epfl.ch)

Group 1: Ambre de Herde & Sandrine Siu

Group 2: Miro Durini & Justin Manson

Group 3: Jonas Muller & Balthazar Allegri

Group 4: Louis le Guillouezic & Emilien Seiler

Group 5: Romain Audétat & Michel Knaff

Group 6: Marie Randin & Mathias Brühlmann

Group 7: Célia Rouvenaz & Léo Jacquat

Group 8: Antonie Zaninetti & Arnaud Weber

Group 9: Jasmin Hänni & Romana Paganini

Group 10: Marc Chavanne & Anaëlle Semerle

2. Line following and localization with the e-puck robot

Supervisors: Hugo Grall (hugo.gralllucas@epfl.ch)

Anwar Quraishi (anwar.quraishi@epfl.ch)

Group 11: Gabriel Gasser & Bastien Amez-Droz

Group 12: Oddo Gabriele & Boris Blanc

Group 13: Naufal Rhiss & Rabbath Laura

Group 14: Isolde Wackernagel & Julia Wälti

Group 15: Johanna Brendow & Marie-Clémence Breuillot

Group 16: Loïc Fache & Lucas Palumbo

Group 17: Basile Tornare & Elisabeth Brugger

Group 18: Elsa Musy & Noé Fellay

Group 19: Marc-Antoine Courtois & Amine Ajnui