

# *Signals, Instruments and Systems 2019-20*

## Course Projects

### 1 General information

SIS will involve a 60 h 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 8. 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 TAs (Chiara Ercolani, Faezeh Rahbar, Anwar Quraishi and Kagan Erunsal). The definitive assignment of project topics and team members will be communicated by the end of Week 8, based on the preferences expressed by the students. During the lecture hours of Week 9, a kick-off session for the implementation of specific course projects 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 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. Further details on the intermediate report, project report and presentation will be communicated in timely fashion.

### 2 Key dates / milestones

Week 8/April 6: Distribution of this course project list.

Week 8 / April 8: Send project / team preferences to Head TA (see instructions below)

End of Week 8: Assignment of projects / teams

Week 9 / April 23: Kick-off session during lecture hours

Week 11/May 1: Interim report is due

Week 14 / May 24: Final report due

May 26/28: Presentations

### 3 Project Assignments

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

Supervisors: Chiara Ercolani ([chiara.ercolani@epfl.ch](mailto:chiara.ercolani@epfl.ch))  
Anwar Quraishi ([anwar.quraishi@epfl.ch](mailto:anwar.quraishi@epfl.ch))

Group 1: Lisa Laurent and Maria Dolores Abalos  
Group 2: Margot Plassard and Mostafa Genena  
Group 3: Victoria Kunz and Maxwell Bergström  
Group 4: Pietro Cerchiali and Remi Depalle  
Group 5: Lucie Dross and Chloe Udressy  
Group 6: Theo Boutros and Heloise Sandoz  
Group 7: Timothee d'Amico, Raphael Angeles and Alexandre Saugy  
Group 8: Camille Dross and Jeanne Estienne  
Group 9: Kjetill Christinat and Agathe Crosnier  
Group 10: Marie Pigneres and Raphaël Miazza

#### 2. Road sign recognition with the e-puck robot

Supervisors: Faezeh Rahbar ([faezeh.rahbar@epfl.ch](mailto:faezeh.rahbar@epfl.ch))  
Kagan Erunsal ([kagan.erunsal@epfl.ch](mailto:kagan.erunsal@epfl.ch))

Group 11: Can Eser and Laura Rabbath  
Group 12: Esther Barberis and Manuel Walser  
Group 13: Alexandre Bugnard and Guillaume Buchs  
Group 14: Jolan Wicht and Donato Kofel  
Group 15: Nicola Santacroce and Jules Gros-Daillon  
Group 16: Alexis de Aragao and Evanice Ruegg  
Group 17: Mathilde Boross and Mélodie Rey  
Group 18: Mohamed Amine Ajnui and Naoufal Rhiss  
Group 19: Jael Locher and Sara Beaudet