

Automatic and Real Time System

Person in charge: Chan Wai Po Francis

Prerequisite:

Organization: 14 x 3h Lectures/Tutorials

Evaluation: Exam

ECTS: 5 credits

Context

This module is divided in two parts. Automatic presents the basics of automation applied to embedded systems. It explores different concepts such as robustness of systems and exposes current problems such as hybrid systems control, control in a distributed context, reliable control from unreliable components. Real time systems explore the concept of real time kernel usage and programming.

Objectives

Skills

The skills involve the analysis of control systems and their constraints. This module teaches the modeling and processing of information in the context of embedded systems. Concerning real time system, the aim is to understand real time constraints for applications and their involvement in terms of programming and control systems.

Knowledge

Concept of system

- State space
- Optimal control theory
- Systems analysis and modeling
- Simulation with Matlab Simulink

Real time Operating system

- Micro kernel
- Tasks scheduling with real time constraints
- Tasks communication
- Peripheral drivers

Various approaches with Lectures, labs and projects will be used to teach the subject. Microcontroller boards in a connected environment will be used.

References

Handout