

Embedded Systems Programming

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Motivation

Most computers are **embedded in physical systems**. The computer

- Has to react within given time frames.
- Has to control parts of the system doing things periodically.
- Has to do many things concurrently.

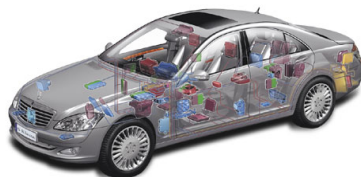


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Goals

The course introduces programming techniques suitable for embedded systems. The course addresses mainly techniques for **concurrency**, **real-time** and **reactivity**.



Students will acquire experience in programming embedded systems that execute on one or several processors, that comply with time constraints and that can interact with the physical environment.

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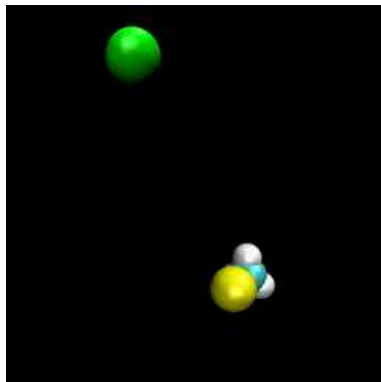
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Contents

- Concurrent programming: programs organized as concurrent threads, a kernel supporting threads protecting data with encapsulation, object orientation.
- Reactive programming: a programming discipline for organizing concurrent programs using reactive objects.
- Real-time programming: deadlines, baselines, periodic processes and event controlled processes.



Organization

- Lectures (around 14)
- 5 labs (small exercises and project work)
- Written exam.