Vak: Data Centric Architectures — credits: 5

Vakcode	SEVM19DCA
Naam	Data Centric Architectures
Studiejaar	2026-2027
ECTS credits	5
Taal	Engels
Coördinator	M. Sedighi
Werkvormen	Hoorcollege Projectonderwijs
Toetsen	Data Centric Architectures - Opdracht

Leeruitkomsten

At the end of this module the student is able to:

- design and/or implement a Digital Signal Processing Architecture considering fixed point core, floating point core, PLD, FPGA, GPU and mixed signal systems.
- implement algorithms by means of the most suitable programming model (i.e., sequential/linear, functional, parallel).
- design an IoT system considering edge, fog, cloud or mist computing IoT architectures.
- design IoT system connectivity considering wireless and wired communication technologies, such as for example: Wifi, mobile G4/G5, LoRa, ethernet, etc.
- evaluate the impact of system design choices on resource usage considering at least energy consumption and usage of rare materials.

Inhoud

The course covers the following topics:
The student is trained in architectural design at two conceptual levels. At the level of System Architectures for “big data” applications they learn about top-level trade-offs, e.g. between measured data rates and required processing power.
The student get introduced to high-performance computing and streaming database technology. At the level of Digital Signal Processing Architectures, the student learns key concepts (fixed point, floating point) and technologies (FPGA, GPU, Mixed signal chips).
Linear and Functional programming as well as Parallel processing are covered.

Opgenomen in opleiding(en)

Smart Systems Engineering

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