CS-728

Topics on Datacenter Design

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Cursus	Sem.	Type
Computer and Communication Sciences		Opt.

Language of teaching	English
Credits	2
Session	
Exam	Oral
Workload	60h
Hours	**28**
Courses	14
TP	14
Number of positions	

Remark

Not offered this year

Summary

Modern datacenters with thousands of servers and multi-megawatt power budgets form the backbone of our digital universe. In this course, we will survey a broad and comprehensive spectrum of datacenter design topics from workloads, to server architecture and infrastructure.

Content

The course wil use the primer from ClayPool lecture series on Warehouse-Scale Computing by Barrosso and Hoelzle, and technical research papers from recent years in venues corresponding to the topic. The course will be run as a seminar series with student presentations followed by an in-class discussion. The students will be graded based on presentations and short reviews written for each reading assignment.

- Datacenter basics: computing at scale of tens of thousands of servers
- Quality of service, energy proportionality and total cost of ownership
- Workloads
- Programming paradigms
- System software
- Virtualization
- Networking
- Storage systems
- Processors and memory systems
- Resource management
- Infrastructure: power distribution and cooling