

Advanced Topics in Service-Oriented Computing and Cloud Computing

Hong-Linh Truong

Faculty of Informatics, TU Wien

truong@dsg.tuwien.ac.at
[http://dsg.tuwien.ac.at/staff/truong](http://dsg.tuwien.ac.at/staff/truong@linhsolar)
[@linhsolar](#)

Outline

- Why do we need this course?
- What is the course about?
- Course administrative information

Current trends in SOC and Cloud

- Integration of Internet of Things (IoT)/cyber-physical systems, Cloud computing, and Fog/Edge-centric computing
 - Dispersed computing
 - Cloud robotics
 - Connected Cars/Electronic Horizon
 - Autonomous cars/unmanned aerial vehicle (UAV)
 - Smart contracts with blockchain + IoT

Current trends in SOC and Cloud

- Intelligences from human and machines
 - Analytics services atop big data infrastructures
 - Infrastructures for big data analytics + human interaction + artificial intelligence
 - Human-centric robotics
 - Predictive maintenance
 - Cloud manufacturing + business service integration

Complex requirements and SOCloud focus

- Some key issues
 - High availability, data sharding, geographical multi-cloud load balancing, automatic formation of on-demand data centers
 - Horizontal scalability in big data, elasticity coordination in multi-cloud environments, elasticity algorithms for fog and network function virtualization (NFV)
 - Complex connectivity and execution models
 - Algorithms for large-scale data ingest/big data.
 - Performance monitoring and analysis
- Gaps between theoretical concepts and practical applications of advanced algorithms and techniques

We **study and explore** complex algorithms and techniques in SOC, Cloud, Fog/edge, and Big data systems.

It is a kind of “advanced distributed systems” focused SOC, Cloud, and fog/edge systems.

SOCcloud – relevant courses

- Advanced Internet Computing
 - Give you some advanced technologies about SOC, Cloud Computing and (business) processes/workflows
- Advanced Services Engineering
 - Focus on services engineering techniques for IoT and clouds
- Distributed Systems Technologies:
 - Give you fundamental distributed technologies and how to use them

Course administration (1)

- Lectures + participant's presentations + discussions
 - Held through the whole semester
 - But not every week – check the course website!
 - Make sure you reserve all slots for changes
- Who could participate in the course?
 - Master students in advanced stages (e.g., seeking for master thesis) in informatics and business informatics
 - PhD students: normal PhD track, PhD School of Informatics, and Doctoral Colleges
 - Students should have knowledge about fundamental distributed systems, internet computing and distributed computing technologies

Course administration (2)

- Learning methods
 - Discussion, individual and team work, literature and practical studies
- Evaluation methods
 - Assignments and a final examination
- Assignments
 - 4 home assignments resulting in some analysis summaries (presentations) and discussions
 - Each assignment: 10 points for presentation content and 10 points for answers/questions
- Oral final exam
 - Flexible – 30 minutes

- Assignments: 80 points
- Final oral examination: 20 points

Point	Final mark
90-100	1 (sehr gut)
75-89	2 (gut)
56-74	3 (befriedigend)
40-55	4 (genügend)
0-39	5 (nicht genügend)

Failed ? → retake the final oral examination part!

THANKS! ANY QUESTION?

Thanks for your attention

Hong-Linh Truong
Faculty of Informatics
TU Wien
truong@dsg.tuwien.ac.at
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