Advanced Topics in Service-Oriented Computing and Cloud Computing

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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.
SOCloud – 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
### Grades

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

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Failed? → retake the final oral examination part!
THANKS! ANY QUESTION?
Thanks for your attention

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