



Software Engineering Principles in Distributed Computing

People



**Prof.
Stefan Wesner**

- Director of RRZK/ITCC
Director PDS
- Leading IT centers for more than 10 years now
- Long history in High Performance, Grid and Cloud Computing
- Strong network expertise



**Dr.
Lutz Schubert**

- Research lead of PDS
- Core scientist in CDS
- Chair of CAA
- Expertise in High Performance Computing, Cloud Computing and Operating Systems
- also digital humanities, archaeology

People



M. Sc.
Robert Keßler

- PhD student at PDS
- Background and interest in Multi Agent Systems, Distributed Computing and Embedded Systems

General Goal

- You'll be working on a software project in groups of up to 3 students
- Each participant will take over responsibility for part of the code
- Team members work principally separately with regular “team meetings”

Potential Topics

1. Swarm intelligence with neural networks
 2. Distributed multi agent system
 3. Sensor data sharing with Home Assistant
- Topic details depend on programming skills. We are open for other suggestions ;)

Tasks

You will have to

- Generate an overarching plan as a team
- Develop and maintain an individual plan (in line with overall plan)
- Develop and test code individually
- Integrate and test code as a team
- Develop and present a functionality demo
- Write a joint and individual report (aggregation of all plans and progress made)

Seminar Structure

Week	Topic	
1-2	Introduction to Software Engineering, “Agile” Project Management, Software Testing “How to generate a software development plan”	
3	Definition and Presentation of topics + initial software architecture & development plan	each team
4-7	Code development. Weekly “scrum” sprints => alignment of progress and next steps	
8	Intermediate “milestone”. Presentation of progress and initial lessons learned	
9-12	Continued code development and sprints.	
13-14	Presentation of final results / demos, Lessons learned	

Goals

- You will learn about software development and how to work as a team
- You will learn about different forms of communication and integration in distributed code
- We do not expect the final code to be error-free, but all bugs should be known and reported ;)

Registration

- If you like to participate in the seminar, send a mail to:

robert.kessler@uni-koeln.de

- Deadline to register is **January 31, 2024, at 23:55**
- First come, first serve