HPS
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Seminar with Practical: Scalable Computing Systems and Applications in AI, Big Data and HPC

Seminar with Practical: Learning Objectives

- Describe approaches for the development of scalable systems and apps
- Sketch efficient algorithms and concepts
- Analyze and summarize state-of-the-art concepts, tools and research papers
- Deliver a technical presentation for a professional audience
- Explore and apply concepts or tools to improve scalability for a use case
- Quantify efficiency and scalability of selected use cases

Seminar with Practical

- The module consists of the parts:
  - Topic Introduction Presentation 15 min, not marked
  - Practically working on the topic (individually)
  - Topic Result Presentation 25 min (30% of grade)
    - + 5 min Q&A + 5 min feedback
    - Leeway of $\pm$5 min
  - Report about topic and your results (70% of grade)
    - 10-15 pages (core content, without preamble/appendix)
- We aim to publish all presentations and reports on our webpage
  - You can disagree without any disadvantage
- Please check also organisational remarks
- A supervisor for formative assessment will be assigned per student
- Today, you can pick topics from the webpage!

Practical Aspect

- You'll look deeper into the selected topic, various options:
  - Evaluate practically a tools (on GWDG system and/or your Laptop)
  - Write your own use case to demonstrate framework/tool
  - Perform a performance analysis, write a benchmark
  - Compare different tools (theoretically and practically)
  - Extend the existing tool(s)
- Create a presentation and report from your findings with content such as:
  - Your problem description
  - Background (tool, context), existing knowledge
  - Your methodology
  - Your results
  - Your conclusion
- For best results, involve your supervisor:
  - Discuss proposal of activities
  - Discuss results

Schedule for Preparation of Presentation/Report

- 3 Weeks **before** presentation
  - Submission of a structure/rough sketch of the presentation to the supervisor
  - Receive feedback and optional discussion with the supervisor
- 2 Weeks **before** presentation
  - Sketch of the slides, feedback of the supervisor
  - Recommendation: practice the slides to find gaps
- 1 Week **before** presentation
  - Send slides to Jonathan to confirm that you can present in following week
    - If not done, your presentation will be **cancelled!**
  - Recommendation: practice slides for smooth transitions
- **Before** the end of the semester
  - Receive feedback on structure, style and content of report from supervisor
  - Submission of the report as PDF per email to Jonathanjonathan.decker@uni-goettingen.de

Course Organization

2025-04-17 Meeting: Introduction & Scientific Presentation

2025-04-24 Meeting: LaTeX Crash Course & Scientific Writing

2025-04-25 You have submitted your topic to Jonathan by email

2025-05-02 You have been assigned a supervisor and presentation date

2025-05-08 Meeting: Effective Literature Search

2025-05-22 Meeting: And following weeks, 2 student presentations per week

- Project topic presentations in first half of semester
- Project result presentations in second half

2025-10-31 Deadline for submitting reports

Additional Remarks

- It is your responsibility to contact your supervisor
  - They might take a few days to answer
- If you get stuck/need help $\Rightarrow$ ask your supervisor
- Ask for feedback for the direction of your work, presentation, report
  - Be specific in your questions and feedback requests to get faster responses
- If you have a problem with your supervisor, contact Jonathan
  jonathan.decker@uni-goettingen.de
  - If you have a problem with Jonathan, escalate to Prof. Kunkel
    julian.kunkel@gwdg.de
- Remember to submit slides one week before the presentation
- If you are unhappy with your topic, discuss with your supervisor
  - Switching early on is possible
- We will inform you when FlexNow registration is open

Expectations

You will be graded based on

- Quality of presentation
  - Form/Style
  - Content/Depth
  - Present the results you have (not necessarily final)
- Quality of report
  - Form/Style
  - Content/Depth
  - Project Structure
- Requires in-depth work on topic
  - Even if desired results are not achieved
  - Write about what you have done and learned
- Bonus: Scientific context via reading (recent) papers

"*Students shouldn’t go into life without the ability to communicate.
Your success in life will be determined largely by...*

- your ability to speak,
- your ability to write, and
- the quality of your ideas,
***in that order**.*"

— Prof. Patrick Winston