Pro-Seminar „Auswahlprozess für Hard- und Softwaresysteme am praktischen Beispiel“

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Scientific Working

Seminar Introduction

based on slides

• SDQ research group at KIT
Note

- All information available online on the seminar webpage
- No need to copy the slides
Overview

1. Managing deadlines

2. Searching literature, Writing outline

3. Rules for good quality
   - Structure, content, style, spelling
   - Correct citations and plagiarism
   - Technical issues
Overview (2)

4. Create reviews and include results
5. Create and run presentations
6. Evaluate presentations
7. Change management

8. Rules for seminar marking
9. Interaction with your supervisor
Motivation (1)

Goals of attending a (pro-)seminar

- Get in touch with interesting and recent research
- Practice literature surveying
- Early creation of a (pro-)seminar outline
- Finalizing a scientific thesis
  - 12 pages in Word or Latex
  - Getting used to correct citations and style of writing
- Practice presentations, Improve your presentation skills (by collecting supervisor feedback)
Motivation (2)

Goals of attending a (pro-)seminar (cont.)

- Manage hard deadlines (as in real world)
- Executing a detailed schedule of small work packages
- Getting used to an iterative self-improvement
- Block seminar at the end of the semester: use the time for high-quality results
- Final presentation: 30min presentation, 15min discussion
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Managing Deadlines (1)

The “real world”

- Project life: Determined by externally defined (+usually tight) deadlines and milestones

- Deadlines: "Zuckerbrot und Peitsche"
  - Missing deadlines: contract penalties
  - Long term effect: Loss of reputation and follow-up contracts
  - Social effects: Unemployment, ...
  - Sticking to deadlines by finishing things early: Relax, continuous work load, confidence
Managing Deadlines (2)

- Even for small projects ((pro-)seminar theses): define small work packages, break-down overall task
  - **Rough Schedule** defined externally in the deadlines of the seminar
  - **Refined Schedule**
    - Outline
    - Chapters, Figures
    - Survey Literature
    - Revision Effort
    - Buffer
    - Should be defined internally
Managing Deadlines (3)

- Causes in “real world”
  - Projects become foreseeable
  - Upcoming milestones are small and manageable
  - Less deadlines missed
  - “Early motivation to get started"
  - No overlooking of efforts like “Revision"
Managing Deadlines (4): Gantt-Charts

- If you lose the big picture easily maybe **Gantt-Charts** can help

<table>
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<tr>
<th>Nr.</th>
<th>Vorgangsname</th>
<th>Dauer</th>
<th>Anfang</th>
<th>01. Jan '0</th>
<th>05. Feb '0</th>
<th>12. Mrz '0</th>
<th>16. Apr</th>
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<td>30 Tage</td>
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<td>Mo 26.03.07</td>
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<td>5</td>
<td>Empirische Verhaltensanalyse der Datenbank</td>
<td>55 Tage</td>
<td>Mi 18.04.07</td>
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<td>Vorbereitung</td>
<td>37 Tage</td>
<td>Mi 18.04.07</td>
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<tr>
<td>7</td>
<td>Formulierung der Hypothesen und Experimentdesign</td>
<td>5 Tage</td>
<td>Mi 18.04.07</td>
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<td>8</td>
<td>Installation des DBMS und zusätzlich erforderlicher Software</td>
<td>2 Tage</td>
<td>Mi 25.04.07</td>
<td></td>
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- **Tool support** (not mandatory...)
  - GanttProject (Java, O/S) [http://ganttproject.biz/](http://ganttproject.biz/)
  - MS Project 2007 (use MSDNAA)
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Literature survey (1)

- To get you started, we provide initial literature references
  - This list is non-final
  - Get you started with the topic, **Keywords**
  - Authors, Conference, workshop, proceedings
  - Important: **follow incoming and outgoing** references (see next slides)

- No depth or broad search:
  - **FIRST** read the material you have
  - **THEN** continue by following references
Literature Survey (2)

- Read literature **efficiently**
  - **FIRST** read abstract, introduction, conclusions, then look at figures
  - **THEN** decide whether it is worth reading the article
  - **Goal-driven** reading:
    - Approach a text using concrete questions
    - Try to answer the questions while reading
  - **Be aware** while reading:
    - Question statements made in the text
    - Do not believe immediately all statements in a text even if it has been published at well-known conferences or journals
Literature Survey (3)

- How to find more literature?
  - Use references at the end of an article
    - Follow only references which seem to be promising given their context in the original paper
    - Do not follow all references
Many **articles** available from the university network or via VPN

- [http://scholar.google.com](http://scholar.google.com)
- [http://ieeexplore.ieee.org/Xplore/dynhome.jsp](http://ieeexplore.ieee.org/Xplore/dynhome.jsp)
- [http://portal.acm.org/dl.cfm](http://portal.acm.org/dl.cfm)
- [http://liinwww.ira.uka.de/bibliography/](http://liinwww.ira.uka.de/bibliography/)
- [http://www.informatik.uni-trier.de/~ley/db/](http://www.informatik.uni-trier.de/~ley/db/)
  - Search for similar publications of the same authors

- If no PDF directly available, contact your supervisors or the authors directly 😊

- **Save BibTeX entries together with the papers!** (JabRef)
Literature Survey (5)

- **Books** and scientific journals
  - “More intense“ and strict review process
  - Ask supervisor (maybe book is available at special locations)
  - Amazon and others offer (partial) full-text search
  - Read sample chapters (look at publisher or author websites)

- Websites, online tutorials, etc. are commonly considered as weaker references
Outline (1)

- Contents:
  - **Headlines** for all sections and subsections, **Keywords** for all content of the seminar thesis
  - List of **references** (!) plus their association to sections (reference the articles from their linked sections)

- **Number of entries per outline level**
  - Subsections serve classification purposes, not for highlighting
  - Each outline level should have \( \geq 2 \) entries

- **Wrong**:
  - 1. Foundations,
    1.1 My special foundations,
    2. My contribution

- **Right**:
  - 1. Foundations, 1.1 Common foundations,
    1.2 Special foundations

- **Or**:
  - 1. Foundations, 2. My contribution

- **Very common mistake ☹️**
Outline (2)

- Section names
  - No punctuation, besides colon or hyphen
  - Compactness and precision. Short and wrong titles are more confusing than long and correct ones

- No multiline headings: always avoidable
  - Try to avoid abbreviations

- Try using short

- Readers should understand outline without reading content – should match abstract and introduction
Outline (3)

- **Structure:**
  - **Title page** (Topic, author, name of the seminar, name of the university group, name of supervisor, date) – use provided template
  - **Abstract** (max. 10 lines)
  - **Introduction, Motivation**
  - **Contents**
  - **Conclusions** (plus critical reflection of the topic)
  - **References**
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Structure and contents

- Follow your **outline**
- Follow a central theme **from the viewpoint of your reader**
- Use logical arguments, from broad context to deep details
- Monitor whether you still comply to your central theme
- (Pro-)Seminar: no scientific break-through expected
- **Write as simple as possible**, precise and logical

- „Blurring“ sentences by the use of words like „maybe“, „in some (undefined) cases“, etc. is non-scientific

- **Short sentences**: Make one statement per sentence
  - Use „because“ to make logical dependencies between arguments/statements explicit

- **Define terminology**: if term is non-common but: do not get lost in terminology discussions
Style (2)

- **Stick to well-defined (technical) terms**: Repetitions in scientific work are common
  - Reason: when you use synonyms the reader tries to see whether there are intentional differences you wanted to point out
  - Not valid for non-technical terms. Try to avoid repetitions here as usual!
Form

- **Thesis:**
  - We will provide a Word- and Latex-Template, Usage is optional

- **Slides:** Powerpoint or compatible program, use our templates
Hand-ins (1)

- Intermediate versions: Use PDF

- Final version: ZIP archive
  - Including all sources
  - All figure sources (e.g. Visio files plus their PDF variants)
  - If you use Latex:
    - All .tex files and .bib files (BibTeX)
    - All non-standard LaTeX packages (please try to avoid this anyway)
Grammar, Spelling (1)

- [http://dict.leo.org](http://dict.leo.org)
- Spell check, e.g., available in TeXnicCenter
- Proof-read your text with a little delay
- **Supervisors are not spell checkers!**
- **Too many spelling mistakes lead to penalty points**
- Assign someone to proof-read your text (but not revise or write your text 😊)
Footnotes

Before using a footnote check the following conditions

- No important text in footnotes
  - If a footnote is important include it in the main text for better readability
  - Otherwise avoid the footnote
- Never cite literature using footnotes

Footnotes should be an exception
Citations and Plagiarism

- “Proper citing avoids plagiarism issues"
Especially suited for this are parrots. Therefore, I advise in order to kill two birds with one stone, you should have good stones at hand.
In the main text
• Hans Meier coined funny statements like “to kill two birds with one stone you should have good stones at hand” [Mei98, S. 4].

In list of references
Wrong citation in the main text

Hans Meier coined funny statements like “to kill two birds with one stone you should have good stones at hand”.

Problems:

- Where does the statement come from?
  - No way of checking correctness
  - Where and when was the statement made? What was its context?
Citations: Why?

- **Give context** of information taken from a partial sentence.

- Better: “to kill two [parrots] birds with one stone you should have good stones at hand" [Mei98, S. 4]
Citation: Shortening

- To shorten original text use []

- For example
  - He argues “[..] you should have good stones at hand" [Mei98, S. 4].
Citations: Use

- Use a reference actively in your text. Having a reference in the list of references only is **not** allowed.
- Translations
  - Translating existing work into English/German is still a citation
  - Especially, it is not own and original work
  - Non citing such work is considered as cheating attempt
Citation: Summarizing foreign ideas

- Summarizing foreign ideas with own words
  - Used source must be **cited**
  - Citation of the source **close to the summarized idea**
    - Clearly recognize who had the original idea
    - Clearly identifiable own and foreign ideas

- Same is true for shortened citations
Example in BibTeX (Entry from DBLP):

@proceedings{2004trust,
    editor = {Ralf H. Reussner and Judith A. Stafford and Clemens A. Szyperski},
    title = {Architecting Systems with Trustworthy Components, International Seminar, Dagstuhl Castle, Germany, December 12-17, 2004. Revised Selected Papers},
    booktitle = {Architecting Systems with Trustworthy Components},
    publisher = {Springer},
    series = {Lecture Notes in Computer Science},
    volume = {3938},
    year = {2006},
    isbn = {3-540-35800-5},
}

Citation: Exaggeration

- Not common to include non-referenced work in literature list
- **Do not use LaTeX \nocite{*}**

- Foundations:
  Include in introduction of a matching section, i.e., „The following foundations introduce XML [1,2,3]“
Citation: Plagiarism (1)

- “[the] use or close imitation of the language and thoughts of another author and the representation of them as one's own original work." (Source: http://en.wikipedia.org/wiki/Plagiarism)
- Is considered to be a crime in some countries
Citation: Plagiarism (2)

- **Consequences** of plagiarism
  - Denial of „Seminarschein“
  - Seminar counts as „not passed“
  - Might have more consequences

- **Always mark your sources**
  - Mark your sources clearly
  - **In case of doubt:** Ask your supervisor!
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Writing reviews

- Not done in this pro-seminar!
- A fellow student submitted a seminar
- We expect constructive and reasonable feedback
- **Primary**: Understandability, Outline, Correctness and Completeness
- **Secondary**: correct citations, grammar, spelling, reasonable references, etc.
- We provide a **template** to ease your task
Dealing with reviews

- No need to accept all comments – however, provide reasons for not accepting something
- **Reviews by your fellow students** give you feedback from people with comparable background
- Later you also get feedback by your supervisors
- **You gain experience** from multiple reviews
- Trains you for later industrial and academic life
1. Version control with SVN
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Presentations (1)

- Seminar 15 slides, 2 minutes per slide, proven practice
- Do not assume you can do better

- Contents
  - Outline: after title or motivation slide
  - Content
  - Summary + Future Work: final slide
  - Slide with used references: usually not shown in the presentation, but be prepared to show it
Prepare and run presentations (2)

- Slide design
  - max. 5-7 bullet points per slide
  - No complete sentences
  - Figures instead of text: Replace text by self explaining figures
  - Check readability (font size, contrast)
  - On each slide: name of presenter + title of talk (footnote), slide number, number of total slides, maybe progress indicator
  - Use animations carefully: Do not play with animations, we know that you can find them in PowerPoint
  - A typical animation effect is simple „appear“
Prepare and run presentations (3)

- **Format**
  - **Sans serif font**
  - **Fontsize**: min. 18pt
  - **Colors**: red/green, blue/violet bad for color blind people
  - **Vector graphics only**
  - Include 1-2 slides as buffer, to compensate for **timing issues**
Prepare and run presentations (4)

- Important: **Stick to your time limit**
  - Check time while talking
  - Identify timing issues early and react on them, never realize them when interrupted by supervisor due to timeout

- **Rehearsal**: Practice 1-2 times at home
  - Speak continuously, get a feeling for your timing

- **Look at your audience**: speak to everybody
  - And not only to your supervisor...

- When explaining figures do not show them on your laptop screen, but on the projection
  - But do not lose contact to your audience

- **Be serious**: no chewing gum, no cool slang

- **Acoustics**: Speak loud and clearly
Judge Presentations

- Requires **concentrated listening**
- Take **notes**!
- Jot **down questions** and ask later – only ask very important questions directly
- Get an overall picture and not just details
- If you get lost:
  note down the slide number and try to resync 😊
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Seminar Marking

Your mark will be based on:
- Your thesis
- Your presentation (slides, talk, answering questions)
- Search for additional literature
- How independent you achieved our results, how much help did you need by your supervisor
- Active participation in block seminar discussion!
Interaction with your supervisor

- In general: your supervisor does not need a „Seminarschein“ anymore...

- Supervisors are usually busy:
  - Appointments: stick to agreed dates
  - Canceling an appointment: as early as possible
  - Non-availability via phone
    - No reason to not cancel an appointment
    - Contact supervisor via mail
  - Not coming to an agreed appointment: only in urgent cases

- The same is true for supervisors. We try to inform you as fast as possible if an appointment does not take place. We need to reach you via mail!
Final tips

- **Stick to our proven rules.** They help you to avoid trouble.

- **Read and understand our rules.** In case of doubt, read them **again**. In case of further doubt, talk to your **supervisor**.

- **Do not fool yourself** by
  - Missing deadlines
  - Violating rules
  - Or even plagiarism

- **You are not learning for a “Schein” but for life**