Software Development and Evolution

Seminar in Advanced Software Engineering, FS 2016

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Organizational Announcements

- 3rd year and up
  (prerequisite: Software Engineering)

- Language for report and presentation is English

- Work independently

- Don’t forget to do the “Modulbuchung”!
Seminar Goals

- Introduce you to a part of research in software engineering
- Improve your ability to find related work and critically read and analyze scientific papers
- Strengthen your technical writing and your presentation skills
- Improve your ability to ask and answer critical questions
Seminar Structure

- Two parts (after today):
  - Part 1: 3 weeks
  - Part 2: 10 weeks

- Today: kickoff
- Part 1: Group discussions of topics 1-6
- Part 2: Literature report on one of the topics, reviews, and presentation
What you have to do: Part 1

- First three weeks: Group discussions in class (topic 1-6, 2 topics per week, attendance mandatory)
  
- Read the main paper per topic & find a third one (i.e. for Feb 29th: main paper of topic 1, main paper of topic 2)
  
- Write a short and concise response paper (on the three papers, less than 1 page long)
  
- Discussion of topics in class (actively participate in the discussions!)
  
3 credits (→ 90 hours): 1/3 for part 1 (~30 hours)
What you have to do: Part 2

- Do a literature review for an assigned topic
  (at least 8-10 relevant articles)

- Write a report and refine it
  (10 to 13 pages, “Lecture Notes in Computer Science”-format)

- Review two reports

- Present your findings
  (approx. 15 minutes and 10 minutes questions)

- Actively participate in discussions

3 credits (→ 90 hours): 2/3 for part 2 (~60 hours)
Software Development and Evolution - Topics

1. Productivity/Efficiency
2. Interruptions, Flow and Fragmentation
3. Code Quality
4. Testing
5. Code Summarization
6. Code Reviews
7. Biometrics in Software Engineering
8. Socialness of Software Development
1. Productivity / Efficiency

- How to measure developer productivity?
- How and when do developers perceive productive?
- How to improve developer productivity?
2. Interruptions & Fragmented Work

- Fragmentation of developer‘s work
- Cost of an interruption
- Better management of interruptions and fragmentation
3. Code Quality

- Defect prediction

- Where to focus effort to improve software quality?
4. Testing

- Test coverage and effectiveness
- The right tests
5. Code Summarization

- Automatically generating comments for code elements
- What’s most relevant for a method summary
6. Code Reviews

- How, when and why are code reviews used in practice?

- Code reviews and their effect on code quality
7. Biometrics in SE

- Better understanding code comprehension
- Better understanding the developer in the process and her/his experiences
8. Socialness of Software Dev.

- Awareness of others and working in a team
- Keeping up to date of changes and more
Grading

- 3 response papers, class participation [20%]
- Reviews of other reports [10%]
- Written report [50%]
- Presentation [20%]
Finding Relevant Work

- search online by author, keyword, topic, etc. on personal web sites, Google Scholar, ACM Digital library, Citeseer, IEEE Digital Library

- Look through proceedings of main conferences (ICSE, FSE, CHI, ASE, MSR, ICPC, ICSME)

- Browse and follow references/citations in relevant papers and read related work sections

- If you found a relevant and older paper, look for papers it is “cited by”
Code bubbles: rethinking the user interface paradigm of integrated development environments

Full Text: PDF

Authors: Andrew Bragdon, Brown University
        Steven P. Reiss, Brown University
        Robert Zeleznik, Brown University
        Suman Karunuri, Brown University
        William Cheung, Brown University
        Joshua Kaplan, Brown University
        Christopher Coleman, Brown University
        Ferdi Adeputra, Brown University
        Joseph J. LaViola, Jr., University of Central Florida

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Bibliometrics
- Downloads (6 Weeks): 13
- Downloads (12 Months): 258
- Citation Count: 11

Tags: bubbles, concurrent views, development environments, navigation, integrated environments, working set

11 Citations

- Robert DeLine, Gina Venolia, Kael Rowan, Software development with code maps, Communications of the ACM, v.53 n.8, August 2010
- Robert DeLine, Gina Venolia, Kael Rowan, Software Development with Code Maps, Queue, v.8 n.7, July 2010
- Jon Hardy, Christopher Bull, Gerald Kotinga, Jon Whittle, Digitally annexing desk space for software development: NIFER track, Proceeding of the 33rd international conference on Software engineering, May 21-28, 2011, Waikiki, Honolulu, HI, USA
Reading a Research Paper

- Read critically: be suspicious and ask appropriate questions:
  - e.g. are the authors solving the right problem, what are the limitations, are the assumptions reasonable

- Read creatively: critical is easy, reading creatively is harder:
  - e.g. what are the good ideas, how would you extend it, are there applications or extensions the authors haven’t thought of

- Make notes!

- After reading, try to summarize the paper

- Compare to other works

Response Papers

- Encouragement to read and reflect
  Class discussions work better if everyone has read and thought about the paper

- At most one page per class

- **NOT a summary.** Think of it this way
  If I asked you what you thought about a movie you recently went to, you wouldn’t just summarize it

- Grading based on “thoughtfulness”

- Due by **midnight** on Sunday before class
Response Papers

- Questions of interest
  - What did you think about it and what did you find important or interesting?
  - What are main contributions of the paper?
  - What are strengths or weaknesses of the paper/research?
  - What are five questions you have about it?
  - What could be improved?
  - How could you imagine extending the work?
  - Do you agree or disagree with the findings?
  - …

- Express your perspective, *address all readings* and *draw connections between readings* when possible
- Example provided on web site!
Expectations to Report

- Summarize current state of the art
- Provide a good overview of the area
- Present main research questions, concepts, ideas and approaches in the area as well as open challenges
- Find commonalities, specialties, differences,…
- Critical and creative thinking, some reflection on your own

- Wikipedia is not an option!
Expectations to Report (2)

- Find good structure / outline / categorization and present in a coherent and consistent way
  
  Abstract, Introduction, Related Work, Discussion, Conclusion, References, Word of Honor

- Use **correct and understandable English**, presentation is very important (proof-read?)

- Phrases such as “I like this paper” should not be in it

- Cite and quote correctly to avoid plagiarism!

- Higher for master than for bachelor students

Find more details at (Sven Seuken):
http://www.ifi.uzh.ch/ce/teaching/fall2013/seminar/seminar_guideline.pdf
Word of Honor

- At the end of your report, include a note on a separate page which you sign, stating:

  I, [first and last name], hereby declare that I have produced this work independently and have used no other than the listed tools and sources

- This does not count towards the 10-13 pages
- Only required in the final report
Review a Report

- Start with a brief summary of the report (2-3 sentences)
- Technical quality, originality/novelty and significance:
  are the arguments in the paper correct, how original/novel is the report, how significant is the research question the author poses, is the research area well covered, what is good about the report, are there any problems/issues, what could the author improve
- Logical structure, presentation and style:
  is the paper coherent, well-written and are concepts and approaches well-explained, are graphics/tables used appropriately, is it easy to follow and clear, how could it be improved

- Be constructive, polite and professional!
- Start with summary, pros/cons and go from high granularity to lower
Review a Report

- You will receive a review form through EasyChair

- Provide your review and a grade from the following options:
  - accept
  - weak accept
  - weak reject
  - reject
Presentation (15 mins)

- Several guidelines on website
- Some more:
  - Don’t exceed the time limit!!!
  - Practice the talk
  - Don’t ignore the audience
  - Avoid too many slides, too many bullets, fonts too small, too much text
  - Have a flow / story line
  - Motivate topic, explain concepts, provide overview,…
Deadlines

- Feb 24th - Email with 3 preferences to André
- Feb 25th - Topic assignment (by us)
- Feb 28th, Mar 6th, Mar 13th – Response papers to André
- Apr 11th - Submit list of selected research papers & rough outline to André
- Apr 13th or 14th – Quick meeting with André to get feedback on the selected papers & report outline
- May 2th - Report submission for review
- May 9th - Review period ends
- May 10th - Notification (by us)
- May 23th - Corrected report submission
- May 30th - Presentation Day (9.30am, mandatory)

Hint: All deadlines are due the latest by midnight (no exceptions)!
Details & More Information

- [www.ifi.uzh.ch/seal/teaching/courses/semadvse.html](http://www.ifi.uzh.ch/seal/teaching/courses/semadvse.html)
  (also includes presentation guidelines, examples of response papers and reports, etc.)

- **Contact:**
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BSc and MSc Thesis & Project…

- Biometric Sensing in SE
- Personal Analytics
- Developers’ Information Needs
- …

…contact me if you are interested