Software Development and Evolution

Seminar in Advanced Software Engineering, FS 2016

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s.e.a.l.
software evolution & architecture lab

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”

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SIGN IN SIGN UP

SEARCH

Code bubbles: rethinking the user interface paradigm of integrated development environments

Full Text: PDF

2010 Article

Authors:
Andrew Bragdon — Brown University
Steven P. Reiss — Brown University
Robert Zeleznik — Brown University
Suman Karumuri — 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

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

Published in:

- Proceeding

ICSE '10 Proceedings of the 32nd ACM/IEEE International Conference on Software Engineering - Volume 1

ACM New York, NY, USA ©2010

table of contents ISBN: 978-1-60558-719-6 doi>10.1145/1806799.1806866

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Abstract | Authors | References | Cited By | Index Terms | Publication | Reviews | Comments | Table of Contents

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
- John Hardy , Christopher Bull , Gerald Kotonya , Jon Whittle, Digitally annexing desk space for software development: NIER 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

Based on Mizenmacher (2010): http://www.eecs.harvard.edu/~michaelm/postscripts/ReadPaper.pdf

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

(also includes presentation guidelines, examples of response papers and reports, etc.)

- Contact:

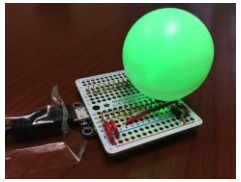
Thomas Fritz fritz@ifi.uzh.ch

André Meyer ameyer@ifi.uzh.ch

BSc and MSc Thesis & Project…

- Biometric Sensing in SE

- Personal Analytics



- Developers' Information Needs

- …

…contact me if you are interested