

Exercise

Empirical Model Building and Methods (Empirische Modellbildung und Methoden)

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SS 2017

Administrative Information

Outline

- Purpose
- Organization
- Schedule
- Administrative information

Purpose

- **Discussing and complementing the content of the lecture**
- **Gathering experience in the empirical evaluation of software technologies**
- **Learning to review empirical evaluations (controlled experiments)**
- **Preparing the examination**

- **Overview**
 - Students will build teams of 2 members. (In case of an odd number, one team may have 3 members).
 - During the semester, each team will be responsible for:
 - Analyzing and improving a published controlled experiment in software engineering context
 - Documenting and presenting their results
 - During the semester, each team will be responsible for taking part in additional activities, e.g.:
 - Taking part in an empirical evaluation
 - Discussing the analysis of empirical data

The analysis and improvement of an empirical evaluation (along with the submission of the corresponding exercise sheets) during the semester time is mandatory for being allowed to take the exam.

- **How to?**
 1. Each team must
 - **Select a controlled experiment** published in the Journal of Empirical Software Engineering, the International Conference on Software Engineering or in the International Symposium on Empirical Software Engineering and Measurement
 - Published not before 2010 (!)
 2. Teams are expected to
 1. **Solve the assigned tasks** described in each exercise sheet
 2. **Document** their results according to the predefined templates and send them to tutor latest one day before the exercise
 3. **Present** their solutions during the exercise class
 3. Students and tutor will discuss the proposed solutions together in the exercise class.
 4. Teams are expected to enhance their solutions based on the previous discussions

Suggested experiments

Requirements

- Benestad, H.C.; Hannay, J.E., "**Does the prioritization technique affect stakeholders' selection of essential software product features?**," Empirical Software Engineering and Measurement (ESEM), 2012 ACM-IEEE International Symposium on , vol., no., pp.261,270, 20-21 Sept. 2012 (assigned to Sophie)
- Fabio Calefato, Filippo Lanubile, Tayana Conte, and Rafael Prikladnicki. 2012. **Assessing the impact of real-time machine translation on requirements meetings: a replicated experiment.** In Proceedings of the ACM-IEEE international symposium on Empirical software engineering and measurement (ESEM '12). ACM, New York, NY, USA, 251-260.

Testing

- Itkonen, Juha and Mäntylä, MikaV. 2014. **Are test cases needed? Replicated comparison between exploratory and test-case-based software testing.** Journal of Empirical Software Engineering. 19 (2): 303-342
- Davide Fucci, Burak Turhan, "**A Replicated Experiment on the Effectiveness of Test-First Development,**" 2013 ACM / IEEE International Symposium on Empirical Software Engineering and Measurement, pp. 103-112, 2013 ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM), 2013

Software product lines

- Michalik, B.; Weyns, D.; Boucke, N.; Helleboogh, A., "**Supporting Online Updates of Software Product Lines: A Controlled Experiment,**" Empirical Software Engineering and Measurement (ESEM), 2011 International Symposium on , vol., no., pp.187,196, 22-23 Sept. 2011

Others

- Riaz, M., Slankas, J., King, J., & Williams, L. (2014, September). Using templates to elicit implied security requirements from functional requirements-a controlled experiment. In *Proceedings of the 8th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement* (p. 22).
- Salman, I., Misirli, A. T., & Juristo, N. (2015, May). Are students representatives of professionals in software engineering experiments? In *Proceedings of the 37th International Conference on Software Engineering* (pp. 666-676).
- Moreno, L., Bavota, G., Di Penta, M., Oliveto, R., & Marcus, A. (2015, May). How can I use this method?. In *Software Engineering (ICSE), 2015 IEEE/ACM 37th IEEE International Conference on* (Vol. 1, pp. 880-890).
- Gómez, Marta and Acuña, Silvia. 2014. **A replicated quasi-experimental study on the influence of personality and team climate in software development.** *Journal of Empirical Software Engineering*. 12(2): 343-377
- Katsiaryna Labunets, Fabio Massacci, Federica Paci, Le Minh Sang Tran, "**An Experimental Comparison of Two Risk-Based Security Methods**," 2013 ACM / IEEE International Symposium on Empirical Software Engineering and Measurement, pp. 163-172, 2013 ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM), 2013

- **PDFs can be found via google scholar or publisher**

Schedule

SWS: 1

Schedule: Friday, 11:45-14:30

02.06. Introduction and assignment of topics
Group formation and selection of a controlled experiment

23.06. Exercise sheet 1: Problem statement and measures
Exercise sheet 2: Research planning

30.06. Exercise sheet 3: Research design
Exercise sheet 4: Execution and data analysis

12.07. Prepare for Exam and Q&A session during Lecture “Recap”

Tutor Silverio Martínez

Location Room Z13.07 KMU-Center (Fraunhofer IESE)

- **Exercise class**
 - Tutor: Silverio Martínez
 - Contact: silverio.martinez [a] iese.fraunhofer.de
 - Location: Fraunhofer IESE
 - Website: <http://www.wagse.informatik.uni-kl.de/teaching/ese/ss2017/>