

Dr. Michael Unterkalmsteiner

Curriculum Vitæ

Education

- 2009–2015 **PhD in Software Engineering**, *Blekinge Institute of Technology*, Karlskrona.
Thesis title: “Coordinating Requirements Engineering and Software Testing”
- 2007–2009 **MSc in Software Engineering**, *Blekinge Institute of Technology*, Karlskrona.
Thesis title: “Software Process Improvement Measurement and Evaluation Framework (SPI-MEF) - A Framework for Evaluating the Outcome of SPI Initiatives”
- 2004–2007 **BSc in Applied Computer Science**, *Free University of Bolzano/Bozen*, Bozen.
Thesis title: “Assessing Software Evolution by Extracting Data from Version Control Systems”

Work Experience

Current Employment

- 2017-present **Senior Lecturer**, *Blekinge Institute of Technology*, Karlskrona.

Previous relevant employment

- 2015–2017 **Postdoctoral researcher**, *Blekinge Institute of Technology*, Karlskrona.
The main research objective was to develop a support system for improving requirements specification quality. In collaboration with the Swedish Transportation Agency (Trafikverket).
- 2009–2015 **Doctoral student**, *Blekinge Institute of Technology*, Karlskrona.
The main objective of this research, conducted in close collaboration with industry, was to identify challenges in the coordination between requirements engineering and software testing (REST) and develop solutions to address some of these challenges.
Main contributions:
- An extensive investigation into the potential of information retrieval and natural language processing techniques to improve test coverage, a common REST alignment challenge, resulting in a solution prototype.
 - An lightweight assessment framework that can be applied as a postmortem in closing development projects to better understand REST alignment.
 - A conceptual framework in the form of a taxonomy providing constructs that further the understanding of REST alignment.
 - An in-depth study on REST alignment challenges and practices encountered in industry.
- 2007–2008 **Project collaborator**, *Free University of Bolzano/Bozen*, Bozen.
Design and implementation of a software architecture to consolidate application features into a reusable library.
- 2006–2007 **Intern**, *Free University of Bolzano/Bozen*, Bozen.
Implementation of a system to assess software evolution by analyzing historical version control data.

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Pedagogical merits

Course design and development

- 2017-present Co-responsible “Applied Cloud Computing and Big Data”
- 2011-2013 Main responsible “Applied Project Management”
- 2013 Responsible for design of assessments and exams “C++ programming for civil engineers”
- 2012 Co-responsible for course redesign “Software Architecture and Quality”

Talks and seminars

- 2014 Lärarlärdom at Blekinge Institute of Technology / “Use and Evaluation of Simulation for Software Process Education”
- 2013 Science Friday at Blekinge Institute of Technology / “Information Retrieval with RapidMiner”

Education

- 2014 Higher Education Pedagogy - Project course
- 2010 Higher Education Pedagogy - Introductory course

Scientific merits

Program committees

- 2017 4th International Workshop on Artificial Intelligence for Requirements
- 2016 12th Workshop on Testing: Academia-Industry Collaboration, Practice and Research Techniques
- 2015
 - 2nd Workshop on Continuous Requirements Engineering Workshop
 - 1st Workshop on Software Startups: State of the Art and State of the Practice
- 2014 1st International Requirements Engineering and Testing Workshop

Organization committees

- 2017
 - Finance Chair for the 2017 Evaluation and Assessment in Software Engineering Conference
 - Co-Chair for the 4th International Requirements Engineering and Testing Workshop
- 2015 General Chair and Web-Chair for the 3rd International Requirements Engineering and Testing Workshop
- 2014
 - Web Co-Chair for the 23rd IEEE International Requirements Engineering Conference
 - Web-Chair and Publicity Chair for the 2nd International Requirements Engineering and Testing Workshop

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- 2013 ○ Web-Chair, Web Master and Interaction Co-Chair for the 22nd IEEE International Requirements Engineering Conference
- Web-Chair for the 1st International Requirements Engineering and Testing Workshop

Refereeing

- 2017 ACM Computing Surveys
- 2017 IEEE Access
- 2017 European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering
- 17,14,12,11 Information and Software Technology
- 2017,2015 International Requirements Engineering Conference
- 2017-14 International Workshop on Requirements Engineering and Test
- 2016-15,2013 Journal of Systems and Software
- 2016,2015 Software Quality Journal
- 2016,2014 Empirical Software Engineering
- 2016 ○ e-Informatica Software Engineering Journal
- Journal of Computing and Information Technology
- Workshop on Continuous Requirements Engineering
- 2015 ○ Expert Systems with Applications
- Journal of Software: Evolution and Process
- International Workshop on Software Startups: State of the Art and State of the Practice
- 2014,2012 Transactions on Software Engineering
- 2013,2012 International Conference on Software Engineering
- 2012,2010 Journal of Software Maintenance and Evolution: Research and Practice
- 2012 International Conference on Evaluation and Assessment in Software Engineering
- 2011 ○ Working Conference on Requirements Engineering: Foundation for Software Quality
- International Conference on Automated Software Engineering
- International Symposium on Software Reliability Engineering
- 2010 International Symposium on Software Reliability Engineering

Research collaborations with industry

- 2015-present Trafikverket
- 2011-2015 Axis AB
- 2014 Telenor
- 2013 CompuGroup Medical, ST Ericsson, Volvo Car Corporation, Ericsson

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Community and industry interaction (selection of talks last three years)

- 2017 Swedish Requirements Engineering Network (SIREN)
- 2016
- o 3rd TOCSYC Industry Day & Karlskrona Test Gathering #10
 - o Trafikverket Systematisk Kravhantering Kompetens Nätverk
- 2015
- o 3rd National Workshop on Data Science
 - o Swedsoft Workshop
- 2014 Workshop on Requirements Engineering and Testing in Chalmers
- ### PhD level supervision
- 2014-present Eriks Klotins (“Software Engineering in Startups”) / Assistant supervisor
- ### Master level supervision - Primary supervisor
- 2017
- o Mingda Chen and Yao He (“Exploration on Automated Software Requirement Document Readability Approaches”)
 - o PuLe Ying and LingZhi Fan (“Methods For Test Case Prioritization Based On Test Case Execution History”)
- 2016
- o Chaitanya Kumar Velpula (“Requirements Negotiation and Conflict Resolution in Distributed Software Development”)
 - o Veer Reddy Sathi, Jai Simha Ramanujapura (“A Quality Criteria Based Evaluation of Topic Models”)
 - o Akshay Kumar Magapu and Nikhil Yarlagadda (“Performance, Scalability, and Reliability (PSR) challenges, metrics and tools for web testing - A Case Study”)
- 2015 Alireza Shojaifar (“Evaluation and Improvement of the RSSI-based Localization Algorithm”)
- 2014 Mattias Liljeson and Alexander Mohlin (“Software defect prediction using machine learning on test and source code metrics”)
- ### Guest lectures
- 2017-2016 Software Process Improvement at Chalmers / “Software Process Assessment and REST-bench”
- 2010-2012 Information Retrieval at BTH / “Systematic literature reviews/maps - Some practical guidelines”

Technical skills

Programming languages	Java, C, C++, Ruby, Bash, Javascript	Scientific computing	R, Python, DKPro, GATE, Weka
Markup languages	HTML, CSS	Databases	MongoDB, MySQL, PostgreSQL
Technologies	Linux/Unix environment, Web stack, Hadoop	Productivity	L ^A T _E X, Git, Emacs, Office

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Languages

German	Native speaker
English	Near native / fluent
Italian	Good command
Spanish	Good command
Swedish	Basic communication skills

Publications

For a full account of publications, see Google Scholar¹.

Journal publications

- [1] Eriks Klotins, Michael Unterkalmsteiner, and Tony Gorschek. Software-intensive product engineering in start-ups: a taxonomy. *IEEE Software*, 2017. In Print.
- [2] Michael Unterkalmsteiner and Tony Gorschek. Process Improvement Archaeology – What led us here and what’s next? *IEEE Software*, 2017. In Print.
- [3] Elizabeth Bjarnason, Michael Unterkalmsteiner, Emelie Engström, and Markus Borg. A Multi-Case Study of Agile Requirements Engineering and Using Test Cases as Requirements. *Information and Software Technology*, 77:61–79, 2016.
- [4] Carmine Giardino, Nicolò Paternoster, Michael Unterkalmsteiner, Tony Gorschek, and Pekka Abrahamsson. Software Development in Startup Companies: The Greenfield Startup Model. *Transactions on Software Engineering*, 42(6):585–604, 2016.
- [5] Michael Unterkalmsteiner, Pekka Abrahamsson, Xiaofeng Wang, Anh Nguyen-Duc, Syed Shah, Sohaib Shahid Bajwa, Guido H. Baltes, Kieran Conboy, Eoin Cullina, Denis Dennehy, Henry Edison, Carlos Fernandez-Sanchez, Juan Garbajosa, Tony Gorschek, Eriks Klotins, Laura Hokkanen, Fabio Kon, Ilaria Lunesu, Michele Marchesi, Lorraine Morgan, Markku Oivo, Christoph Selig, Pertti Seppänen, Roger Sweetman, Pasi Tyrväinen, Christina Ungerer, and Augustin Yagüe. Software Startups - A Research Agenda. *e-Informatica Software Engineering Journal*, 2016(1):89–124, 2016.
- [6] Michael Unterkalmsteiner, Tony Gorschek, Robert Feldt, and Niklas Lavesson. Large-scale Information Retrieval in Software Engineering - An Experience Report from Industrial Application. *Empirical Software Engineering*, 21(6):2324–2365, 2016.
- [7] Michael Unterkalmsteiner, Tony Gorschek, Robert Feldt, and Eriks Klotins. Assessing Requirements Engineering and Software Test Alignment - Five Case Studies. *Journal of Systems and Software*, 109:62–77, 2015.
- [8] Elizabeth Bjarnason, Per Runeson, Markus Borg, Michael Unterkalmsteiner, Emelie Engström, Björn Regnell, Giedre Sabaliauskaite, Annabella Loconsole, Tony Gorschek, and Robert Feldt. Challenges and Practices in Aligning Requirements with

¹<https://scholar.google.se/citations?user=c4a2z1AAAAAJ&hl=en>

Verification and Validation: A Case Study of Six Companies. *Empirical Software Engineering*, 19(6):1809–1855, 2014.

- [9] Carmine Giardino, Michael Unterkalmsteiner, Nicolo Paternoster, Tony Gorschek, and Pekka Abrahamsson. What do we know about software development in startups? *IEEE Software*, 31(5):28–32, 2014.
- [10] Nicolo Paternoster, Carmine Giardino, Michael Unterkalmsteiner, Tony Gorschek, and Pekka Abrahamsson. Software Development in Startup Companies: A Systematic Mapping Study. *Information and Software Technology*, 56(10):1200–1218, 2014.
- [11] M. Unterkalmsteiner, T. Gorschek, A. Islam, C. Cheng, R. Permadi, and R. Feldt. A conceptual framework for SPI evaluation. *Journal of Software: Evolution and Process*, 26(2):251–279, 2014.
- [12] Michael Unterkalmsteiner, Robert Feldt, and Tony Gorschek. A Taxonomy for Requirements Engineering and Software Test Alignment. *Transactions on Software Engineering and Methodology*, 23(2), 2014.
- [13] S. Barney, M. Khurum, K. Petersen, M. Unterkalmsteiner, and R. Jabangwe. Improving Students With Rubric-Based Self-Assessment and Oral Feedback. *IEEE Transactions on Education*, 55(3):319–325, August 2012.
- [14] Michael Unterkalmsteiner, Tony Gorschek, A. K. M. Moinul Islam, Chow Kian Cheng, Rahadian Bayu Permadi, and Robert Feldt. Evaluation and Measurement of Software Process Improvement - A Systematic Literature Review. *Transactions on Software Engineering*, 38(2):398–424, 2012.

Conference publications

- [15] Henning Femmer, Michael Unterkalmsteiner, and Tony Gorschek. Which requirements artifact quality defects are automatically detectable? A case study. In *4th International Workshop on Artificial Intelligence for Requirements (AIRE)*, Lisbon, Portugal, 2017. IEEE.
- [16] Lucas Gren, Richard Berntsson Svensson, and Michael Unterkalmsteiner. Is it Possible to Disregard Obsolete Requirements? — An Initial Experiment on a Potentially New Bias in Software Effort Estimation. In *Proceedings 10th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE)*, pages 56–61, Buenos Aires, Argentina, 2017. IEEE.
- [17] Michael Unterkalmsteiner and Tony Gorschek. Requirements quality assurance in industry: why, what and how? In *23rd International Working Conference on Requirements Engineering: Foundation for Software Quality (REFSQ)*, pages 77–84, Essen, Germany, 2017. Springer.
- [18] Elizabeth Bjarnason, Michael Unterkalmsteiner, Emelie Engström, and Markus Borg. An Industrial Case Study on the Use of Test Cases as Requirements. In *Proceedings of the 16th International Conference on Agile Software Development*, pages 27–39, Helsinki, Finland, 2015. Springer.

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- [19] Eriks Klotins, Michael Unterkalmsteiner, and Tony Gorschek. Software Engineering Practices in Start-up Companies: A Mapping Study. In *6th International Conference on Software Business*, pages 245–257, Braga, Portugal, 2015. Springer.
- [20] Nauman bin Ali and Michael Unterkalmsteiner. Use and evaluation of simulation for software process education: a case study. In *European Conference Software Engineering Education (ECSEE)*, Seon Monastery, Germany, 2014.
- [21] Giedre Sabaliauskaite, Annabella Loconsole, Emelie Engström, Michael Unterkalmsteiner, Björn Regnell, Per Runeson, Tony Gorschek, and Robert Feldt. Challenges in aligning requirements engineering and verification in a large-scale industrial context. In *Proceedings 16th International Working Conference on Requirements Engineering: Foundation for Software Quality (REFSQ)*, pages 128–142, Essen, Germany, 2010. Springer.

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