

# CV Michael Kuperberg

## Personal data

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Citizenship: German  
Family status: unmarried  
Date of birth: June 23rd, 1981



## Work experience

- 11.2010 – now      Manager of the [Informatics Innovation Center \(IIC\)](#) at the Karlsruhe Institute of Technology (KIT), in charge for teaching and research on [IBM System z](#) in cooperation between KIT, [IBM](#) and [FZI Karlsruhe](#). Involved in the acquisition of third-party funds over public-private partnerships.
- 03.2006 – 11.2010      Researcher and PhD candidate at the chair of Prof. Reussner, KIT. Multiple teaching and organizational responsibilities in addition to research activities.
- 08.2004 – 02.2006      Student research assistant (analyzing JTA transaction managers) in the ControMAS project at the chair of Prof. Lockemann, University of Karlsruhe.
- 09.2003 – 05.2004      Teaching assistant in mathematics and computer science at the UMass Boston.
- 08.2002 – 08.2003      Working student at SAP AG (Walldorf, Germany): working in a team developing GUI-supported Python tests for a search engine built by SAP AG.
- 07.2000 – 08.2002      Working student at the asknet AG in Karlsruhe, Germany. Tasks: security, smartcard and cryptography (PKCS) programming in Java.

## Technologies and tools portfolio

- 07.2000 – now      10+ years Java programming experience incl. [JTA/JTS](#), [JNI](#), [Reflection](#) etc.
- Software performance      [Palladio Component Model](#) and its performance prediction tooling; [JProfiler](#); [VisualVM](#); [Jamon](#); [JavaSimon](#); [perf4j](#); [Dtrace](#) and [Apple Instruments](#)
- JVM analysis      [JMX](#); [JConsole](#); [JVMTI](#) (JVM tooling interface); [JIT compiler](#) internals
- Bytecode engineering      [ASM](#) bytecode engineering library; [Javassist](#); [java.lang.instrument](#)
- Other languages/tools      Author of [TIMERMETER](#) and [BYCOUNTER](#); contributed to [Faban](#); experience with [C#](#), [C/C++](#), [Scala](#), [X10](#), [MPI](#) and [Weka](#) data mining framework

## Dissertation and university education

- 03.2006 – 11.2010      Dr.-Ing. *magna cum laude* in Computer Science at the [Department of Informatics, Karlsruhe Institute of Technology \(KIT\)](#). Dissertation title: “Quantifying and Predicting the Influence of Execution Platform on Software Component Performance”, Advisors: [Prof. Ralf Reussner](#) and [Prof. Walter F. Tichy](#). 17 peer-reviewed publications (see full list starting on page [3](#)).
- 10.2000 – 11.2005      Undergraduate and graduate studies in informatics (computer science) at the University of Karlsruhe, diploma grade “A” (“sehr gut”). Diploma thesis on using rule-based multi-agent systems for controlling and monitoring production scheduling. Minors in operations research and abstract algebra.

*University education continues on the next page ⇒*

08.2003 – 06.2004 Baden-Württemberg state scholarship for abroad studies (1 year) at the [University of Massachusetts in Boston](#) as graduate student. First publication.

### Professional functions, community service and memberships

2011 Session Chair at [ICPE'11](#) (Intern. Conference on Performance Engineering).

2010 – now Elected officer and release manager of the [SPEC RG](#) (Standard Performance Evaluation Corporation Research Group), member of the steering committee.

March and April 2010 Lightning Talks “Exact Timing Measurements in Java” and “Performance measurements with perf4j” at the [Java User Group Karlsruhe](#), Germany.

2009 – now Member of ACM, IEEE, the [German Informatics Society \(GI e.V.\)](#) and [VKSI](#).

2008 Copy editor of the “Dependability Metrics” Springer [LNCS volume 4909](#).

March 29th, 2008 Workshop host for FESCA'08 (Formal Foundations of Embedded Software and Component-Based Software Architectures), Budapest, Hungary.

2006 – now Reviewer for the IEEE TSE journal (Transactions on Software Engineering) as well as for QoSA, CBSE and other conferences and workshops.

10.2001 Tutor during the freshmen orientation phase of the computer science department of the University of Karlsruhe.

### Awards and prizes

02.2011 Co-recipient of the “Best Lecture Award” for the lecture “*Component-based software development*” (as voted by students during the teaching evaluation at the KIT), taught during summer term 2010.

06.2009 Co-recipient of “Best Paper Award” for the QoSA 2009 conference paper “*Improved Feedback for Architectural Performance Prediction using Software Cartography Visualizations*” (published in Springer LNCS 5581, pages 52–69)

1999, 1997 and 1996 Prizes for Germany-wide and statewide mathematics competitions.

### Teaching at university level

Summer term '11 Planning, development and teaching of two new courses at the Informatics Innovation Center (IIC), KIT: project group on software development for IBM System z and a lab course on performance analysis of applications on IBM z10.

Winter term '10/'11 Lecturer on Scala and X10 programming languages as well as MPI (Message Passing Interface) in the lecture “Programming paradigms”.

Summer term '10 Teaching assistant for the award-winning lecture “Component-based software development” (voted by students as the best elective lecture of the department of computer science during the teaching evaluation at the KIT).

Winter term '09/'10 Teaching assistant for the lecture “Software Architecture” (also winter terms '06/'07, '07/'08 and '08/'09), authoring its “Middleware/SOA” part.

2006 – now Advisor of 5 diploma/master theses, 7 study/bachelor theses, 10 lab course participants and 12 seminar participants.

### School and college education

06.2000	<i>Abitur</i> at the “Goethe-Gymnasium” in Karlsruhe as top of the class, average grade “excellent” (1.0) with distinction, majors: mathematics and physics.
09.1999 – 06.2000	Coorganization of the transportation study group at the Goethe-Gymnasium.
1999	3rd prize in Germany-wide mathematics competition.
09.1997	School exchange with Lycée Michelin, Marseille, France.
1997 and 1996	2nd and 3rd prize in statewide mathematics competition for high schools.

### Miscellaneous

Languages:	German (native language), English (fluent), French (business fluent), Russian (native language), Ukrainian (understanding and reading)
Driving license:	available
Interests and hobbies:	Architectural photography and history of architecture; public transportation and high-speed trains; playing piano; volleyball; geotagging

### Peer-reviewed publications in journals and conference proceedings

Top 3 publications highlighted in red; publications listed in reverse chronological order:

1. **Ginplex: Deriving Performance-relevant Infrastructure Properties Through Goal-oriented Experiments** (Michael Hauck, Michael Kuperberg, Nikolaus Huber, and Ralf Reussner), accepted for publication in *QoSA 2011: Proceedings of the Seventh International ACM Sigsoft Conference on the Quality of Software Architectures*, to appear 2011.
2. **Metric-based Selection of Timer Methods for Accurate Measurements** (Michael Kuperberg, Martin Krogmann, and Ralf Reussner), in *ICPE'11: Proceedings of the 2nd ACM / SPEC International Conference on Performance Engineering*, 2011.
3. **Analysing the Fidelity of Measurements Performed With Hardware Performance Counters** (Michael Kuperberg and Ralf Reussner), in *ICPE'11: Proceedings of the 2nd ACM / SPEC International Conference on Performance Engineering*, 2011.
4. **Using Invariant Analysis For Improving Instrumentation-based Performance Evaluation Of SPECjvm2008 Benchmarks** (Michael Kuperberg, Martin Krogmann, and Ralf Reussner) in *Proceedings of the International SPEC Benchmark Workshop 2010*, 2010.
5. **Using Genetic Search for Reverse Engineering of Parametric Behaviour Models for Performance Prediction** (Klaus Krogmann, Michael Kuperberg and Ralf Reussner), in *IEEE Transactions on Software Engineering* Vol. 36, No. 6, 2010.
6. **Automated Benchmarking of Java APIs** (Michael Kuperberg and Fouad Omri), in *Proceedings of Software Engineering 2010 (SE2010)*, Feb. 2010.
7. **Modelling Layered Component Execution Environments for Performance Prediction** (Michael Hauck, Michael Kuperberg, Klaus Krogmann and Ralf Reussner), in *Proceedings of the 12th International Symposium on Component Based Software Engineering (CBSE 2009)*, LNCS 5582, Pages 191–208. Springer-Verlag Heidelberg, 2009.
8. **Improved Feedback for Architectural Performance Prediction using Software Cartography Visualizations** (Klaus Krogmann, Christian M. Schweda, Sabine Buckl, Michael Kuperberg, Anne Martens and Florian Matthes), in *Architectures for Adaptive Systems (Proceeding*

- of *QoSA 2009*), LNCS 5581, pages 52–69. **Best paper award**. Springer-Verlag Heidelberg, 2009.
9. **TimerMeter: Quantifying Accuracy of Software Timers for System Analysis** (Michael Kuperberg, Martin Krogmann and Ralf Reussner), in *Proceedings of the 6th International Conference on Quantitative Evaluation of SysTems (QEST) 2009*, IEEE Computer Society, Washington, DC, USA.
  10. **Using Heuristics to Automate Parameter Generation for Benchmarking of Java Methods** (Michael Kuperberg, Fouad Omri and Ralf Reussner), in *Proceedings of the 6th International Workshop on Formal Engineering approaches to Software Components and Architectures*, York, UK, (ETAPS 2009, 12th European Joint Conferences on Theory and Practice of Software), March 2009.
  11. **Performance Prediction for Black-Box Components using Reengineered Parametric Behaviour Models** (Michael Kuperberg, Klaus Krogmann and Ralf Reussner), in *Proceedings of the 11th International Symposium on Component Based Software Engineering (CBSE 2008)*, LNCS 5282, pages 48–63. Springer-Verlag Heidelberg, 2008.
  12. **Reverse Engineering of Parametric Behavioural Service Performance Models from Black-Box Components** (Klaus Krogmann, Michael Kuperberg and Ralf Reussner), in *MDD, SOA und IT-Management (MSI 2008)*, Pages 57–71, GITO-Verlag, Berlin, 2008.
  13. **ByCounter: Portable Runtime Counting of Bytecode Instructions and Method Invocations** (Michael Kuperberg, Martin Krogmann and Ralf Reussner), in *Proceedings of the 3rd International Workshop on Bytecode Semantics, Verification, Analysis and Transformation*, ETAPS 2008, 11th European Joint Conferences on Theory and Practice of Software, Budapest, Hungary, April 2008.
  14. **Markov Models** (Michael Kuperberg), in *Dependability Metrics*, LNCS 4909, Springer-Verlag Heidelberg, 2008.
  15. **Predicting Software Component Performance: On the Relevance of Parameters for Benchmarking Bytecode and APIs** (Michael Kuperberg, Steffen Becker), in *Proceedings of the 12th International Workshop on Component-Oriented Programming*, Berlin, July 2007.
  16. **Influence of Execution Environments on the Performance of Software Components** (Michael Kuperberg), in *Proceedings of the International Research Training Groups Workshop 2006*, GITO-Verlag, Berlin, 2006.
  17. **Metric Incremental Clustering of Nominal Data** (Dan Simovici, Namita Singla and Michael Kuperberg), in *Proceedings of International Conference on Data Mining 2004*, Brighton, UK, 2004.