

Dipl.-Ing., M.Sc.

Werner M. Dietl

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Degrees

01/2003: Diplom-Ingenieur, Salzburg University, Austria.

Passed both diploma examinations with distinction.

08/2000: Master of Science in Computer Science

Bowling Green State University, OH, USA. Passed with 4.00 GPA.

Education

09/2003 – Present: Doctoral Student

Swiss Federal Institute of Technology ETH Zurich, Switzerland.

PhD program under the supervision of Peter Müller at the Chair of Programming Methodology (until 08/2008 known as the Software Component Technology Group at the Chair of Software Engineering of Bertrand Meyer).

10/2001 – 01/2003: Study of Applied Computer Science and Business

Salzburg University, Austria.

08/1999 – 08/2000: Exchange Year

Bowling Green State University, OH, USA.

10/1996 – 08/1999: Study of Applied Computer Science and Business

Salzburg University, Austria.

1991 – 1996: Polytechnical school for electronics and computer science

Salzburg, Austria. Passed with distinction.

Employment

09/2003 – Present: Research and Teaching Assistant

Swiss Federal Institute of Technology ETH Zurich, Switzerland.

02/2003 – 08/2003: Research Assistant, Salzburg University, Austria.

10/2000 – 07/2001: Software Engineer, Synapta Corporation, Palo Alto, CA, USA.

08/1999 – 08/2000: Research Assistant, Bowling Green State University, OH, USA.

11/1997 – 09/2000: Software Engineer, SBS Software Ges.m.b.H., Austria.

Fall 1997 & 1998: Tutor, Non-procedural Programming, Salzburg University, Austria.

07/1997 – 09/1997: Software Engineer, Siemens AG, Austria.

Summer 1993 & 1995: Student internships at local companies.

Awards and Honors

03/2008: IDEA League Short-Term Research Grant from ETH Zurich.

09/2004: Excellent Diploma Thesis Award from the Austrian Computer Society OCG.

07/1999: Excellence Scholarship from Salzburg University.

06/1999: Travel Grant from the Joint-Study program, Salzburg University.

02/1999: Bonus for suggested improvement from Siemens AG, Austria.

12/1995: Grant for Students from the Austrian Federal Economic Chamber Salzburg.

Publications

Journals

- [1] W. Dietl and P. Müller. Universes: Lightweight ownership for JML. *Journal of Object Technology (JOT)*, Special Issue: ECOOP 2004 Workshop FTfJP, 4(8):5–32, October 2005.
- [2] W. Dietl, P. Meerwald, and A. Uhl. Protection of wavelet-based watermarking systems using filter parametrization. *Signal Processing (Special Issue on Security of Data Hiding Technologies)*, 83:2095–2116, 2003.

Conference Proceedings

- [3] D. Cunningham, W. Dietl, S. Drossopoulou, A. Francalanza, P. Müller, and A. J. Summers. Universe types for topology and encapsulation. In F. S. de Boer, M. M. Bonsangue, S. Graf, and W.-P. de Roever, editors, *Formal Methods for Components and Objects (FMCO)*, volume 5382 of *Lecture Notes in Computer Science*, pages 72–112. Springer-Verlag, 2008.
- [4] W. Dietl, S. Drossopoulou, and P. Müller. Generic Universe Types. In E. Ernst, editor, *European Conference on Object-Oriented Programming (ECOOP)*, volume 4609 of *Lecture Notes in Computer Science*, pages 28–53. Springer-Verlag, July 2007.
- [5] W. Dietl and A. Uhl. Robustness against unauthorized watermark removal attacks via key-dependent wavelet packet subband structures. In *International Conference on Multimedia and Expo (ICME)*, June 2004.
- [6] W. Dietl and A. Uhl. Watermark security via secret wavelet packet subband structures. In A. Liroy and D. Mazocchi, editors, *Communications and Multimedia Security*, volume 2828 of *Lecture Notes in Computer Science*, pages 214–225. Springer-Verlag, October 2003.

Workshop Proceedings

- [7] W. Dietl and P. Müller. Ownership Type Systems and Dependent Classes. In *Foundations of Object-Oriented Languages (FOOL)*, January 2008.
- [8] W. Dietl and P. Müller. Runtime Universe Type Inference. In *International Workshop on Aliasing, Confinement and Ownership in object-oriented programming (IWACO)*, July 2007.
- [9] W. Dietl and P. Müller. 2007 State of the Universe Address. In *International Workshop on Aliasing, Confinement and Ownership in object-oriented programming (IWACO)*, July 2007.
- [10] W. Dietl, S. Drossopoulou, and P. Müller. Generic Universe Types. In *Foundations and Developments of Object-Oriented Languages (FOOL/WOOD)*, January 2007.
- [11] W. Dietl and P. Müller. Exceptions in ownership type systems. In E. Poll, editor, *Formal Techniques for Java-like Programs (FTfJP)*, technical report, nr. NIII-R0426, University of Nijmegen, pages 49–54, 2004.
- [12] W. Dietl, P. Müller, and A. Poetzsch-Heffter. A type system for checking applet isolation in Java Card. In *Construction and Analysis of Safe, Secure and Interoperable Smart devices (CASSIS)*, volume 3362 of *Lecture Notes in Computer Science*, pages 129–150. Springer-Verlag, 2004.
- [13] M. Brachtl, W. Dietl, and A. Uhl. Key-dependency for a wavelet-based blind watermarking algorithm. In J. Dittmann and J. Fridrich, editors, *Multimedia and Security Workshop*, pages 175–179, September 2004.

- [14] W. Dietl, P. Meerwald, and A. Uhl. Key-dependent pyramidal wavelet domains for secure watermark embedding. In E. J. Delp and P. W. Wong, editors, *Electronic Imaging, Security and Watermarking of Multimedia Contents V*, volume 5020, pages 728–739. SPIE, January 2003.
- [15] W. Dietl, P. Meerwald, and A. Uhl. Watermark security via high-resolution wavelet filter parametrization. In S. Kmet' and M. Pavluš, editors, *International Scientific Conference, Section 1: Applied Mathematics*, pages 21–28, May 2002.

Technical Reports, Theses, and Unpublished Material

- [16] W. Dietl et al. Three papers. In B. Meyer, P. Müller, and M. Oriol, editors, *Annual Report*. Chair of Software Engineering, ETH Zurich, 2008.
- [17] G. T. Leavens, E. Poll, C. Clifton, Y. Cheon, C. Ruby, D. Cok, P. Müller, J. Kiniry, P. Chalin, D. M. Zimmerman, and W. Dietl. JML Reference Manual. Available from <http://www.jmlspecs.org/>, 2008.
- [18] W. Dietl, P. Müller, and D. Schreggenberger. Universe Type System — Quick-Reference. Available from <http://pm.inf.ethz.ch/research/universes/tools/juts-quickref.pdf>, July 2008.
- [19] W. Dietl et al. Four papers. In B. Meyer, P. Müller, and M. Oriol, editors, *Annual Report*. Chair of Software Engineering, ETH Zurich, 2007.
- [20] W. Dietl, S. Drossopoulou, and P. Müller. Formalization of Generic Universe Types. Technical Report 532, Department of Computer Science, ETH Zurich, 2006.
- [21] W. Dietl et al. Four papers. In B. Meyer, P. Müller, and M. Oriol, editors, *Annual Report*. Chair of Software Engineering, ETH Zurich, 2006.
- [22] W. Dietl. Improving the security of wavelet-based watermarking systems. Master's thesis, Salzburg University, Department of Scientific Computing, December 2002.

Software Artifacts

1. *MultiJava* and *Java Modeling Language (JML)*: full implementation of the Generic Universe Types system, including type checking, storage of type information, and runtime checking, in the Common JML2 tools. Also general bug fixing, especially related to Java 5 and generics. Committer to the standard source repository. Available from the standard distribution at <http://www.jmlspecs.org/>. Described in [18, 17]. Project reports [25, 39, 44, 46, 47].
2. *JML2 Eclipse Plug-In*: integration of the JML2 tools into Eclipse. Used by students at ETH and other universities to easily use the Common JML2 tools. Also a part of the Mobius Program Verification Environment. Available from <http://pm.inf.ethz.ch/research/universes/tools/eclipse/>. Project reports [26, 40].
3. *ESC/Java2*: implementation of a Universe Type System checker. Project report [43].
4. *Universe Type System Tools for Scala*: type checker and runtime system for Generic Universe Types for Scala implemented as compiler plug-in. Available from <http://pm.inf.ethz.ch/research/universes/tools/scala/>. Project reports [23, 28].
5. *Universe Type System Tools using JSR 308*: type checker for Generic Universe Types for Java implemented as JSR 308 compiler plug-in. Project report [35].
6. *Static Universe Type Inference*: static inference of Universe Types using a SAT solver. Command line tool and integration into Eclipse. Project reports [26, 29, 32].
7. *Runtime Universe Type Inference*: inference of Universe Types from program execution traces. Command line tool and integration into Eclipse. Described in [8]. Project reports [26, 30, 33].

8. *Visualization of Ownership Structures*: Eclipse GEF plug-in that visualizes ownership structures. Integrated with the static and runtime Universe type inference to visualize the inference results. Project reports [36, 40, 42].
9. *Static Purity Inference*: implementation of the purity inference described in “Purity and Side Effect Analysis for Java Programs” (VMCAI 2005) from Alexandru D. Sălcianu and Martin C. Rinard. Command line tool and integration into Eclipse. Project report [41].
10. *Universe Type Annotation Tools*: common XML schema used for storing the results of the static, runtime, and purity inference tools. Command line tool to insert the annotations into existing Java sources and integration into Eclipse.

Talks

1. *Ownership Type Systems and Dependent Classes*. Foundations of Object-Oriented Languages (FOOL) 2008. San Francisco, USA. 13th January 2008.
2. *Generic Universe Types*. Formal Methods for Components and Objects (FMCO) 2007. Amsterdam, Netherlands. 24th October 2007. Invited Talk.
3. *Generic Universe Types*. European Conference on Object-Oriented Programming (ECOOP) 2007. Berlin, Germany. 1st August 2007.
4. *Runtime Universe Type Inference*. ECOOP Workshop: International Workshop on Aliasing, Confinement and Ownership in object-oriented programming (IWACO) 2007. Berlin, Germany. 30th July 2007.
5. *Generic Universe Types*. Imperial College London, Group Meeting. London, United Kingdom. 19th July 2007.
6. *Generic Universe Types*. POPL Workshop: Foundations and Developments of Object-Oriented Languages (FOOL/WOOD) 2007. Nice, France. 20th January 2007.
7. *Static Universe Type Inference*. Imperial College London, Group Meeting. London, United Kingdom. 23rd May 2006.
8. *Object Ownership — Overview and Issues*. IFIP TC 2 WG 2.3 Meeting. Prato, Italy. 9th September 2004. Invited Talk.
9. *Exceptions in Ownership Type Systems*. ECOOP Workshop: Formal Techniques for Java-like Programs (FTfJP) 2004. Oslo, Norway. 15th June 2004.
10. *Key-dependent pyramidal wavelet domains for secure watermark embedding*. SPIE Electronic Imaging 2003. Santa Clara, California, USA. 24th January 2003.
11. *Watermark security via high-resolution wavelet filter parametrization*. 7th International Scientific Conference. Košice, Slovakia. 22nd May 2002.
12. *Database Connectivity using JDBC*. Northwest Ohio Computer Science Workshop. Bowling Green, Ohio, USA. 19th November 1999.

Student Project Supervision

Master’s projects

Master’s projects are six month full-time projects.

- [23] Manfred Stock. *Implementing a Universe Type Checker in Scala*. Master’s Thesis, 08/07 – 02/08.
- [24] Mathias Ottiger. *Runtime Support for Generics and Transfer in Universe Types*. Master’s Thesis, 02/07 – 08/07; Co-supervised with A. Rudich.
- [25] Robin Züger. *Generic Universe Types in JML*. Master’s Thesis, 01/07 – 07/07.

- [26] Andreas Fürer. *Combining Runtime and Static Universe Type Inference*. Master's Thesis, 09/06 – 03/07.
- [27] Martin Klebermaß. *An Isabelle Formalization of the Universe Type System*. Master's Thesis, 10/06 – 04/07; Co-supervised with Prof. T. Nipkow, T. U. München.
- [28] Daniel Schreggenberger. *Universe Type System for Scala*. Master's Thesis, 09/06 – 06/07.
- [29] Matthias Niklaus. *Static Universe Type Inference using a SAT-Solver*. Master's Thesis, 12/05 – 06/06.
- [30] Marco Bär. *Practical Runtime Universe Type Inference*. Master's Thesis, 11/05 – 05/06.
- [31] Stefan Nägeli. *Ownership in Design Patterns*. Master's Thesis, 09/2005 – 03/2006.
- [32] Nathalie Kellenberger. *Static Universe Type Inference*. Master's Thesis, 04/2005 – 10/2005.
- [33] Frank Lyner. *Runtime Universe Type Inference*. Master's Thesis, 01/2005 – 07/2005.
- [34] Thomas Hächler. *Applying the Universe Type System to an Industrial Application*. Master's Thesis, 09/2004 – 03/2005.

Total number of master's projects: 12

Semester projects

Semester projects have a workload of around 160 hours.

- [35] Phokham Nonava. *A Universe Type Checker using JSR308*. Semester Project, Summer 2008.
- [36] Timur Erdag. *Visualizer for Universe Type Inference Information*. Semester Project, Summer 2007.
- [37] Dominique Schneider. *Testing Tool for Compilers*. Semester Project, Winter 2006/07.
- [38] Annetta Schaad. *Universe Type System for Eiffel*. Semester Project, Summer 2006.
- [39] Ovidio Mallo. *MultiJava, JML, and Generics*. Semester Project, Summer 2006.
- [40] Paolo Bazzi. *Integration of Universe Type System Tools into Eclipse*. Semester Project, Summer 2006.
- [41] David Graf. *Implementing Purity and Side Effect Analysis for Java Programs*. Semester Project, Winter 2005/06.
- [42] Marco Meyer. *Interaction with Ownership Graphs*. Semester Project, Summer 2005.
- [43] Dirk Wellenzohn. *Implementation of a Universe type checker in ESC/Java2*. Semester Project, Summer 2005.
- [44] Alex Suzuki. *Bytecode support for the Universe type system and compiler*. Semester Project, Winter 2004/05.
- [45] Thomas Hächler. *Static Fields in the Universe Type System*. Semester Project, Summer 2004.
- [46] Daniel Schreggenberger. *Dynamic Typechecking in the Universe Type System*. Semester Project, Summer 2004.
- [47] Yann Müller. *Testcases for the Universe type system compiler*. Project Assistant, Summer 2004.

Total number of semester projects: 13

Teaching

The semester at ETH has 14 weeks. Lectures and exercise sessions are 45 minutes long.

1. **Fall 2008:** *Concepts of Object-Oriented Programming*, Prof. P. Müller. Teaching assistant for one-hour exercise sessions with around 25 students. Substitute lecturer for two hours. Oral exam supervision and written exam preparation.
2. **Summer 2007:** *Core-Course on Software Engineering*, Prof. B. Meyer. First-time course. Teaching assistant for two-hour exercise sessions with around 20 students. Written exam preparation and correction.
3. **Winter 2006/07:** *Concepts of Object-Oriented Programming*, Prof. P. Müller. Teaching assistant for one-hour exercise sessions with around 40 students. Substitute lecturer for two hours.
4. **Winter 2006/07:** *Software Engineering Seminar*, Prof. B. Meyer, Prof. P. Müller, Prof. D. Kröning. Supervised two seminar students.
5. **Summer 2006:** *Core-Course on Software Engineering*, Prof. P. Müller. First-time course. Teaching assistant for two-hour exercise sessions with around 25 students. Substitute lecturer for three hours. Written exam preparation and correction.
6. **Winter 2005/06:** *Concepts of Object-Oriented Programming*, Prof. P. Müller. Only teaching assistant for one-hour exercise sessions with around 80 students. Responsible for preparation and correction of the two-hour written exam.
7. **Winter 2005/06:** *Seminar on Specification and Verification of Object-Oriented Software*, Prof. P. Müller, Prof. D. Kröning. Supervised one seminar student.
8. **Winter 2004/05:** *Concepts of Object-Oriented Programming*, Prof. P. Müller. Only teaching assistant for one-hour exercise sessions with around 80 students. Substitute lecturer for eight hours. Responsible for preparation and correction of the two-hour written exam.
9. **Winter 2004/05:** *IT Project Management*, Prof. P. Müller. Supervision of student projects.
10. **Winter 2004/05:** *Seminar on Specification and Verification of Object-Oriented Software*, Prof. P. Müller, Prof. D. Kröning. Supervised three seminar students.
11. **Summer 2004:** *Seminar on References and Aliasing in Object-Oriented Software*, Prof. A. Biere, Prof. P. Müller. Supervised two seminar students.
12. **Summer 2004:** *Computer Science Course 4 — Programming in the Large*, Prof. B. Meyer. Teaching assistant for two-hour exercise sessions with around 20 students. Written exam preparation and correction.
13. **Winter 2003/04:** *Concepts of Object-Oriented Programming*, Prof. P. Müller. First-time course. Only teaching assistant for one-hour exercise sessions with around 50 students. Oral exam supervision.
14. **Winter 2003/04:** *IT Project Management*, Prof. P. Müller. First-time course. Supervision of student projects.
15. **Winter 2003/04:** *Seminar on Specification and Verification of Object-Oriented Software*, Prof. A. Biere, Prof. P. Müller. Supervised two seminar students.

Reviewing

1. European Conference on Object-Oriented Programming (ECOOP) 2008.
2. International Workshop on Aliasing, Confinement and Ownership in object-oriented programming (IWACO) 2008 (PC member).
3. European Symposium on Programming (ESOP) 2008.
4. International Workshop on Aliasing, Confinement and Ownership in object-oriented programming (IWACO) 2007.
5. Technology of Object-Oriented Languages and Systems (TOOLS) 2007.
6. Perspectives of System Informatics (PSI) 2006.
7. Formal Techniques for Java-like Programs (FTfJP) 2004.

Service Activities

- 01/2005 – Present:** *Department Conference:* representative of the assistants in the department conference, the quarterly assembly of professors, assistants, and students at the Department of Computer Science, ETH Zurich.
- 10/2007 – Present:** *Association of Computer Science Assistants (VMI):* member of the board.
- 07/2008:** *TOOLS EUROPE 2008: Objects, Models, Components, and Patterns:* conference assistant.
- 11/2007:** Winner of the T-Shirt slogan competition of the Department of Computer Science, ETH Zurich; winning entry: “Infinite possibilities”.
- 06/2007:** *TOOLS EUROPE 2007: Objects, Models, Components, and Patterns:* member of the organization committee.
- 05/2007:** *JSR 308: Annotations on Java Types:* extensive feedback on a draft version.
- 10/2005:** *Verified Software: Theories, Tools, Experiments Conference:* member of the organization committee.
- 09/2004:** *IFIP TC 2 WG 2.3 Meeting in Prato, Italy:* local co-organizer.

Certification, Training, and Summer Schools

- 09/2007:** *Applied Software Verification*
one week course; LASER Summer School on Software Engineering, Elba, Italy.
- 05/2007:** *Making Effective Scientific Presentations in English*
two and a half day seminar; Human Resources, ETH Zurich.
- 05/2007:** *McKinsey Business Technology Seminar*
four day workshop; McKinsey & Company, Portugal.
- 08/2006:** *Software System Reliability and Security*
two week course; Summer School Marktoberdorf, Germany.
- 09/2005:** *Project Management for Scientists*
three day seminar; Human Resources, ETH Zurich.
- 03/2005:** *Networking:* one day seminar; Equal, ETH Zurich.
- 02/2005:** *Basic Management Skills*
ten day seminar; Management College Zurich, ETH Zurich.
- 05/2004:** *Presenting — Publishing — Communicating*
four day seminar; Center for Teaching and Learning, ETH Zurich.
- 03/2004:** *Didactics Workshop*
three day seminar; Center for Teaching and Learning, ETH Zurich.

09/2002: *Summer School in Beijing and Shanghai*

four weeks of education about Chinese economy and history; People's Republic of China.

11/1998: *Team Training and Development*

one day seminar; adult education center Salzburg.

11/1997: *IBM Programmer Aptitude Test*, IBM Salzburg.