

Curriculum Vitae

Univ.-Prof. Dr. Alexander Egyed

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Immigration status: USA (permanent resident – Greencard)
EU (citizenship)

Current Positions

[2008-present] Professor at the **Johannes Kepler University** (JKU), Linz, Austria

[2005-present] Adjunct Assistant Professor at the **University of Southern California** (USC), Los Angeles, USA

Education

[Fall 2000] Ph.D. in Computer Science
University of Southern California in Los Angeles, USA
Thesis: “Heterogeneous View Integration and its Automation”
Advisor: Dr. Barry Boehm

[Spring 1996] M.S. in Computer Science, Specialization in Software Engineering
University of Southern California in Los Angeles, USA
Advisor: Dr. Barry Boehm

[Fall 1994] B.Sc. in Informatics, Specialization in Applied Informatics (German: Dipl.-Ing.)
Johannes Kepler University in Linz, Austria
Thesis: “Client-Server-Development and GUI with the CASE Tool ‘Systems Engineer’”
Advisor: Dr. Gerhard Chroust

Experience

Industrial

[2000-2007] Research Scientist at **Teknowledge Corporation** in 4640 Admiralty Way, Suite 1010, Marina Del Rey, CA 90292, USA (Contact: Dr. Robert Balzer)

[Fall 1997] Intern at **Rational Software Corporation** in 2906 W. 37th Avenue, Vancouver, British Columbia V6N 2T9, Canada (Contact: Dr. Philippe Kruchten)

[1995] Programmer at **HDVA (Heeresdatenverarbeitungsamt)** in Amtsgebäude Stiftgasse, Stiftgasse 2A, 1070 Vienna, Austria
(Contact: DI Johann Siegl)

[1992-1995] Part-time, lead developer of FLUP (a financial-services software product supporting over twenty Austrian Veterinarians)

[Summer 1994] Intern at **VOEST Alpine Stahl** in Voest-Alpine-Strasse 3, 4020 Linz, Austria

[Summer 1992] Intern at **Siemens PSE** in Petersbrunnstrasse 19, 5020 Salzburg, Austria

Academic

- [2007-2008] Principal Research Associate at the **University College London (UCL)**, London, UK (Contact: Dr. Anthony Finkelstein).
- [1996-2000] Research Assistant and Teaching Assistant at the **University of Southern California**, Los Angeles, CA, USA under Dr. Barry Boehm.
- [1990-1995] Tutor at the **Johannes Kepler University**, Linz, Austria under Dr. Arno Schulz and Dr. Gerhard Chroust for various courses.

Teaching

- [Fall 2007] **Software Engineering** (LVA# 343.324, 2 units, 60 students) at the Johannes Kepler University (JKU). Class was co-instructed by Paul Grünbacher (50%).
- [Spring 2006] **Software Architecture** (CS578, 3 units, 120 students) at the University of Southern California (USC). Roughly 120 students attended this class (90 on-campus students and 30 off-campus students via a televised education network).
- [Spring 2006] Guest Lecture for **Seminar in Computer Science Research** (CS597, 1 unit, 20 students) at the University of Southern California (USC). Prepared and taught one lecture on software modeling and its traceability to source code. The instructor was Dr. Laurent Itti.
- [Spring 2005] **Software Architecture** (CS578, 3 units, 140 students) at the University of Southern California (USC). Half the lectures were taught by me and the other half by Dr. Nenad Medvidovic. Roughly 140 students attended the class (on and off-campus students).
- [Spring 1999] Guest Lecture for **Software Analysis and Formal Methods** (CS612, 3 units, 40 students) at the University of Southern California (USC). Prepared and taught three lectures on modeling with the Unified Modeling Language (UML). The instructor was Dr. Nenad Medvidovic.
- [Spring 1999] Guest Lecture for **User Interfaces and Software Engineering** (ICS 227, 2 units, 30 students) at the University of California, Irvine (UCI). Prepared and taught one lecture on requirements negotiation. The instructor was Dr. David Redmiles.
- [Spring 1997] Teaching Assistant for **Software Engineering II** (CS577b, 3 units, 40 students) at the University of Southern California (USC). Advised and supervised over 40 graduate level students who were using software engineering principles and tools to develop library applications for the USC Library. The instructor was Dr. Ray Madachy
- [Fall 1996] Teaching Assistant for **Software Engineering I** (CS577a, 4 units, 100 students) at the University of Southern California (USC). Advised and supervised over 100 graduate-level students who were using software engineering principles and tools to develop library applications for the USC Library. The instructor was Dr. Barry Boehm

Grants and Projects

I co-authored the EPSRC, HURT, SRS, MoBIES II, and Goedel research grants. I was a principal investigator for the MoBIES II and Goedel research grants. I was also an investigator of the ANTS, MoBIES I, and EDCS research grants, which I did not co-author.

- [2008] Siemens CT Pilotproject “Integrated Model Based Mechatronic Product Development,” Amount: €48,000 (PI: Prof. Klaus Zeman)

- [2007-2008] Investigator for “How to Fix Inconsistencies in Design Model,” PI: Anthony Finkelstein, funded by EPSRC under agreement EP/F032110/1, Amount: £63,000. This work investigated the role of inconsistencies in software design models and identified ways of fixing them.
- [2005-2007] Investigator for “HURT Systems Integration,” PI: Dwight Cass, subcontracted from Northrop-Grumman Company, under subaward agreement 861305, indirectly funded by the DARPA HURT program, Amount: \$1,500,000. This work involved building a system for autonomously controlling teams of unmanned air vehicle (UAV). This work was done with Northrop-Grumman as the lead and Honeywell, Sarnoff, and other large software development companies as subcontractors. My role in this project was in helping the software engineers understand this rather complex software system which consisted of distributed clients and embedded devices (e.g., unmanned vehicles, sensors, and camera).
- [2004-2006] Investigator for “Architectural Differencing, Wrappers, Diagnosis, Recovery, Adaptivity and Trust Management,” PI: Howard Shrobe, subcontracted from the Massachusetts Institute of Technology (MIT) under subaward agreement 5710001719, indirectly funded by the DARPA SRS/AWDRAT program, Amount: \$800,000. This work demonstrated how to “harden” an existing legacy software system to detect intrusion (attack) and prevent errors. This work was done with the Massachusetts Institute of Technology (MIT). My role in this project was to compare the actual execution of the software system with the expected execution.
- [2003-2005] Principal Investigator for “Model-Based COTS Incorporation”, PI: Robert Balzer and Alexander Egyed, funded by the DARPA MoBIES II program under contract F30602-00-C-0218, Amount: \$820,000.
- [2000-2002] Investigator for “Architectural Differencing”, PI: Robert Balzer, funded by the DARPA ANTS program under contract F30602-99-1-0524, Amount: undisclosed [2000-2002].
- [2000-2003] Investigator for “Model-Based Integration through GUI Monitoring”, PI: Robert Balzer, funded by the DARPA MoBIES I program, contract F30602-00-C-0218, Amount: \$1,300,000.
- [1997-2000] Investigator for DARPA “Evolution and Design of Complex Systems” (EDCS), Contract F30602-94-C-0195, PI: Barry Boehm
- [1994-1995] Sole Principal Investigator for “Revoking Design Decisions in Event-Triggered Life-Cycle Models,” Kurt Goedel Research Grant from the Austrian Ministry of Art, Science, and Research, PI: Alexander Egyed, Amount: \$13,500

Recognitions and Awards

- [2007] Recognized as the 10th Best Scholar in Software Engineering by Ren, J. and Taylor, R. N. in “Automatic and Versatile Publications Ranking For Research Institutions And Scholars,” Communications of the ACM, June 2007, Vol. 50, No. 6.
- [2007] Recognition of Service Award for Chairing the Program Committee of the 22nd IEEE/ACM International Conference on Automated Software Engineering (ASE), Atlanta, GA, USA
- [2001] Paper on “A Scenario-Driven Approach to Traceability” was selected as one of the ‘best of’ papers of the International Conference on Software Engineering (ICSE) and was subsequently published in the IEEE Transactions on Software Engineering.
- [2001] Paper on “Software Model Connectors: Bridging Models across the Software Lifecycle” was selected as one of the ‘best of’ papers of the International Conference on Software Engineering and Knowledge Engineering (SEKE) to be published in the Journal of Systems and Software.
- [1999] Outstanding Achievement Award from the University of Southern California, Los Angeles, USA.

[1998] INCOSE Student Paper Award received during the 8th International Conference of Systems Engineering, Vancouver, Canada.

[1994] “Mit Erfolg” (German: success) Award from the Johannes Kepler University, Austria.

Publications

Refereed Book Chapters

- [1] **Egyed, A.** “Tailoring Software Traceability to Value-Based Needs,” in Value-Based Software Engineering (VBSE), editors: S. Biffl, A. Aurum, B. Boehm, H. Erdogmus, and P. Grünbacher, Springer Verlag, 2006, pp. 287-308.
- [2] **Egyed, A.** “Automatically Discovering Transitive Relationships in Class Diagrams,” in Model-Driven Software Development (MDS2), editors: Sami Beydeda, Matthias Book, and Volker Gruhn, Springer Verlag, 2005, pp. 179-198.
- [3] **Egyed, A.,** Horling, B., Becker, R., and Balzer, R. “Visualization and Debugging Tools,” Distributed Sensor Networks: A multiagent perspective, editors: Victor Lesser, Charles Ortiz, and Milind Tambe, Kluwer Academic Publishers, 2003, pp. 33-41.

Refereed Journal Papers

- [1] **Egyed, A.** and Wile, D. “Support for Managing Design-Time Decisions,” IEEE Transactions on Software Engineering (TSE), Volume 32, Number 5, May 2006. pp. 299-314.
- [2] **Egyed, A.** and Balzer, R. “Integrating COTS Software into Systems through Instrumentation and Reasoning,” International Journal of Automated Software Engineering (JASE), Volume 13, Number 1, 2006, pp. 41-64.
- [3] **Egyed, A.,** and Grünbacher, P. “Supporting Software Understanding with Automated Requirements Traceability,” International Journal of Software Engineering and Knowledge Engineering (JSEKE), Volume 15, Number 5, 2005, pp. 783-810.
- [4] **Egyed, A.** and Grünbacher, P. “Identifying Requirements Conflicts and Cooperation: How Quality Attributes and Automated Traceability Can Help,” IEEE Software, Volume 21, Number 6, November/December 2004, pp. 50-58.
- [5] Grünbacher, P., **Egyed, A.,** Medvidovic, N. “Reconciling Software Requirements and Architectures with Intermediate Models,” Journal for Software and Systems Modeling (SoSyM), Volume 3, Number 3, August 2004, pp. 235-253.
- [6] Medvidovic, N., Grünbacher, P., **Egyed, A.,** Boehm, B. “Bridging Models across the Software Life-Cycle,” Journal for Software Systems (JSS), Volume 68, Issue 3, December 2003, pp.199-215.
- [7] **Egyed, A.** “A Scenario-Driven Approach to Trace Dependency Analysis,” IEEE Transactions on Software Engineering (TSE), Volume 29, Number 2, February 2003, pp. 116-132.
- [8] **Egyed, A.** “Automated Abstraction of Class Diagrams,” ACM Transactions on Software Engineering and Methodology (TOSEM), Volume 11, Number 4, October 2002, pp. 449-491.
- [9] **Egyed, A.,** Medvidovic, N., and Gacek, C., “A Component-Based Perspective of Software Mismatch Detection and Resolution,” IEE Software Engineering, Volume 147, Issue 6, December 2000, pp. 225-236.
- [10] **Egyed, A.** and Boehm, B., “Comparing Software System Requirements Negotiation Patterns”, Systems Engineering Journal, Volume 6, Number 1, June 1999, pp. 1-14.
- [11] Boehm, B. and **Egyed, A.,** “Optimizing Software Product Integrity through Life-Cycle Process Integration”, Journal for Computer Standards and Interfaces, Volume 21, Number 1, May 1999, pp. 63-75.

- [12] Boehm, B., **Egyed, A.**, Port, D., Shah, A., Kwan, J., and Madachy, R., “A Stakeholder Win-Win Approach to Software Engineering Education”, *Annals of Software Engineering*, Volume 6 (1998), April 1999, pp. 295-321.
- [13] Boehm, B., **Egyed, A.**, Kwan, J., Port, D., Shah, A., and Madachy, R., “Using the WinWin Spiral Model: A Case Study”, *IEEE Computer*, Volume 31, Number 7, July 1998, pp. 33-44.

Refereed Conference Papers

Conferences play a vital role in my field and some have acceptance rates above those of the top journals. I listed acceptance information where available. Almost all conference papers are long, 10-page contributions.

- [1] **Egyed, A.** “Fixing Inconsistencies in UML Design Models,” Proceedings of the 29th International Conference on Software Engineering (ICSE), Minneapolis, MN, May 2007 (50 papers accepted out of 334 submitted).
- [2] Shrobe, H., Laddage, R., Balzer, R., Goldman, N., Wile, D., Tallis, M., Hollebeek, T., and **Egyed, A.**: “Self-Adaptive Systems for Information Survivability: PMOP and AWD RAT,” Proceedings of the 1st IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO), Boston, MA, July 9-11, 2007, pp. 332-335.
- [3] **Egyed, A.** “UML/Analyzer: A Tool for the Instant Consistency Checking of UML Models,” Tool Demonstration, Proceedings of the 29th International Conference on Software Engineering (ICSE), Minneapolis, MN, May 2007 (12 papers accepted out of 56 submitted).
- [4] **Egyed, A.**, Binder, G., and Grünbacher, P. “STRADA: A Tool for Scenario-based Feature-to-Code Trace Detection and Analysis,” Tool Demonstration, Proceedings of the 29th International Conference on Software Engineering (ICSE), Minneapolis, MN, May 2007.
- [5] Shrobe, H. E., Laddaga, R., Balzer, R., Goldman N. M., Wile D. S., Tallis M., Hollebeek, T., **Egyed, A.**: AWD RAT: A Cognitive Middleware System for Information Survivability. Proceedings of the 21st National Conference on Artificial Intelligence (AAAI) and the 18th Innovative Applications of Artificial Intelligence Conference (IAAI), Boston, MA, July, 2006.
- [6] **Egyed, A.** “Instant Consistency Checking for the UML,” Proceedings of the 28th International Conference on Software Engineering (ICSE), Shanghai, China, May 2006 (36 papers accepted out of 395 submitted).
- [7] Heindl, M., Reinisch, F., Biffl, S., and **Egyed, A.** “Value-Based Selection of Requirements Engineering Tool Support,” EUROMICRO-SEAA, 2006, pp. 266-273.
- [8] **Egyed, A.**, Biffl, S., Heindl, M., and Grünbacher, P. “Determining the Cost-Quality Trade-Off for Automated Software Traceability,” Proceedings of the 20th ACM/IEEE International Conference on Automated Software Engineering (ASE), Long Beach, CA, November 2005, pp. 360-363.
- [9] Jakobac, V., **Egyed, A.**, and Medvidovic, N. “Improving System Understanding via Interactive, Tailorable Source Code Analysis,” Proceedings of the 8th International Conference on Fundamental Approaches to Software Engineering (FASE), Edinburgh, Scotland, UK, April 2005, (25 papers accepted out of 99 submitted).
- [10] **Egyed, A.**, Shen, W., Wang, K. “Maintaining Life Perspectives during the Refinement of UML Class Structures,” Proceedings of the 8th International Conference on Fundamental Approaches to Software Engineering (FASE), Edinburgh, Scotland, UK, April 2005, (25 papers accepted out of 99).
- [11] **Egyed, A.** “Resolving Uncertainties during Trace Analysis,” Proceedings of the 12th ACM SIGSOFT Symposium on Foundations of Software Engineering (FSE), Irvine, CA, November 2004, pp. 3-12 (25 papers accepted out of 169).

- [12] **Egyed, A.** “Dynamic Deployment of Executing and Simulating Software Components,” Proceedings of the 2nd IFIP/ACM Working Conference on Component Deployment (CD), Edinburgh, Scotland, UK, May 2004, pp. 113-128 (16 papers accepted out of 34).
- [13] Johann, S. and **Egyed, A.** “Instant and Incremental Transformation of Models,” Proceedings of the 19th IEEE International Conference on Automated Software Engineering (ASE), Linz, Austria, September 2004, pp. 362-365 (short paper, 55 out of 183).
- [14] Wile, D. and **Egyed, A.** “An Externalized Infrastructure for Self-Healing Systems,” Proceedings of the 4th Working IEEE/IFIP Conference on Software Architecture (WICSA), Oslo, Norway, June 2004, pp. 285-288 (short paper, 35 out of 82).
- [15] **Egyed, A.** “Consistent Adaptation and Evolution of Class Diagrams during Refinement,” Proceedings of the 7th International Conference on Fundamental Approaches to Software Engineering (FASE), Barcelona, Spain, March 2004, pp. 37-53 (22 papers accepted out of 91).
- [16] **Egyed, A.** “Compositional and Relational Reasoning During Class Abstraction,” Proceedings of the 6th International Conference on the Unified Modeling Language (UML), San Francisco, USA, October 2003, pp. 121-137 (25 papers accepted out of 143).
- [17] **Egyed, A.** and Grünbacher, P. “Automating Requirements Traceability: Beyond the Record and Replay Paradigm,” Proceedings of the 17th IEEE International Conference on Automated Software Engineering (ASE), Edinburgh, Scotland, UK, September 2002, pp. 163-171 (19 papers accepted out of 94).
- [18] **Egyed A.** and Balzer, B. “Unfriendly COTS Integration – Instrumentation and Interfaces for Improved Plugability,” Proceedings of the 16th IEEE International Conference on Automated Software Engineering (ASE), San Diego, CA, November 2001, pp.223-231 (32 papers accepted out of 164).
- [19] Grünbacher, P., **Egyed, A.**, and Medvidovic, N. “Reconciling Software Requirements and Architectures - The CBSP Approach,” Proceedings of the 5th IEEE International Symposium on Requirements Engineering (RE), Toronto, Canada, August 2001, pp. 202-211 (26 papers accepted out of 127).
- [20] **Egyed, A.**, and Wile, D. “Statechart Simulator for Modeling Architectural Dynamics,” Proceedings of the 2nd IEEE/IFIP Conference on Software Architecture (WICSA), Amsterdam, The Netherlands, August 2001, pp. 87-96 (18 papers accepted out of 47).
- [21] Medvidovic, N., Grünbacher, P., **Egyed, A.**, and Boehm, B.W. “Software Model Connectors: Bridging Models across the Software Lifecycle,” Proceedings of the 13th International Conference on Software Engineering and Knowledge Engineering (SEKE), Buenos Aires, Argentina, June 2001, pp. 387-396.
- [22] **Egyed, A.** “A Scenario-Driven Approach to Traceability,” Proceedings of the 23rd International Conference on Software Engineering (ICSE), Toronto, Canada, May 2001, pp. 123-132 (47 papers accepted out of 268). (**Voted one of the best papers of ICSE 2001**)
- [23] **Egyed, A.** “Scalable Consistency Checking between UML Diagrams: The ViewIntegra Approach,” Proceedings of the 16th IEEE International Conference on Automated Software Engineering (ASE), San Diego, CA, September 2001, pp. 387-390 (short paper, 28 out of 164).
- [24] **Egyed, A.** and Medvidovic, N. “A Formal Approach to Heterogeneous Software Modeling,” Proceedings of the 3rd International Conference on Foundational Aspects of Software Engineering (FASE), Berlin, Germany, March 2000, pp. 178-192 (27 papers accepted out of 60).
- [25] **Egyed, A.** “Semantic Abstraction Rules for Class Diagrams,” Proceedings of the 15th IEEE International Conference on Automated Software Engineering (ASE), Grenoble, France, September 2000, pp. 301-304 (short paper, 25 out of 123).

- [26] **Egyed, A.** and Gacek, C. “Automatically Detecting Mismatches during Component-Based and Model-Based Development,” Proceedings of the 14th IEEE International Conference on Automated Software Engineering (ASE), Cocoa Beach, Florida, October 1999, pp. 191-198 (25 papers accepted out of 123).
- [27] **Egyed, A.** and Medvidovic, N. “Extending Architectural Representation in UML with View Integration,” Proceedings of the 2nd International Conference on the Unified Modeling Language (UML), Fort Collins, CO, October 1999, pp. 2-16 (44 papers accepted out of 166).
- [28] Boehm, B., Port, D., **Egyed, A.**, and Abi-Antoun, M., “The MBASE Life Cycle Architecture Milestone Package: No Architecture Is An Island,” Proceedings of the 1st Working IFIP International Conference on Software Architecture (WICSA), San Antonio, TX, February 1999, pp. 511-528.
- [29] **Egyed, A.** and Kruchten, P., “Rose/Architect: a tool to visualize architecture,” Proceedings of the 32nd Hawaii International Conference on System Sciences (HICSS), Maui, HI, January 1999.
- [30] **Egyed A.** and Boehm, B., “Telecooperation Experience with the WinWin System,” Proceedings of the 15th IFIP World Computer Congress (WCC), Vienna, Austria and Budapest, Hungary, September 1998, pp. 37-46.
- [31] Boehm, B. and **Egyed, A.**, “Improving the Life-Cycle Process in Software Engineering Education,” Proceedings of the 1st European Software Day co-located with the 24th Euromicro conference, Västerås, Sweden, August 1998, pp. 23-35.
- [32] **Egyed, A.** and Boehm, B., “A Comparison Study in Software Requirements Negotiation,” Proceedings of the 6th International Conferences of Systems Engineering (INCOSE), Vancouver, Canada, July 1998, pp. 667-674.
- [33] Boehm, B. and **Egyed, A.**, “WinWin Requirements Negotiation Processes: A Multi-Project Analysis,” Proceedings of the 5th International Conference on Software Processes (ICSP), Lisle, IL, June 1998, pp.125-136.
- [34] Boehm, B. and **Egyed, A.**, “Software Requirements Negotiation: Some Lessons Learned,” Proceedings of the 20th International Conference on Software Engineering (ICSE), Kyoto, Japan, April 1998, pp. 503-506.
- [35] Boehm, B., **Egyed, A.**, Kwan, J., Madachy, R., “Developing Multimedia Applications with the WinWin Spiral Model,” Proceedings of the 5th European Software Engineering Conference held jointly with the 5th ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE), Zurich, Switzerland, September 1997, pp. 20-39.
- [36] **Egyed, A.** and Boehm, B., “Analysis of Software Requirements Negotiation Behavior Patterns,” Proceedings of the 7th International Conferences of Systems Engineering (INCOSE), Los Angeles, CA, July 1997, pp. 269-276.

Refereed Workshop Papers

- [1] Balzer, R., **Egyed, A.**, Goldman, N., Hollebeck, T., Tallis, M., and Wile, D. “Adapting COTS Applications: an Experience Report,” Proceedings of the Second International Workshop on Incorporating COTS Software into Software Systems: Tools and Techniques (IWICSS), May 2007.
- [2] **Egyed, A.**, Biffl, S., Heindl, M., and Grünbacher, P. “A Value-Based Approach for Understanding Cost-Benefit Trade-Offs During Automated Software Traceability,” Proceedings of the 3rd International Workshop on Traceability in Emerging Forms of Software Engineering (TEFSE), co-located with ASE 2005, Long Beach, CA, November 2005.
- [3] **Egyed, A.** “Architecture Differencing for Self Management,” Proceedings of the 2nd Workshop on Self-Managed Systems, co-located with FSE 2004, Newport Beach, CA, November 2004.

- [4] **Egyed, A.**, Johann, S., and Balzer, R. “Data and State Synchronicity Problems while Integrating COTS Software into Systems,” Proceedings of the 4th International Workshop on Adoption-Centric Software Engineering, co-located with ICSE 2004, Edinburgh, Scotland, UK, May 2004.
- [5] Johann, S. and **Egyed, A.** “State Consistency Strategies for COTS Integration,” Proceedings of the 1st International Conference on Incorporating COTS Software into Software Systems, co-located with ICCBSS 2004, Redondo Beach, CA, February 2004.
- [6] Grünbacher, P., **Egyed, A.** “Towards Understanding Implications of Trace Dependencies among Quality Requirements,” Proceedings of the 2nd International Workshop on Traceability in Emerging Forms of Software Engineering (TEFSE), co-located with ASE 2003, Montreal, Canada, October 2003.
- [7] Medvidovic, N., **Egyed, A.**, and Grünbacher, P. “Stemming Architectural Erosion by Coupling Architectural Discovery and Recovery,” Proceedings of the 2nd Second International Workshop from Software Requirements to Architectures (STRAW), co-located with ICSE 2003, Portland, Oregon, May 2003.
- [8] **Egyed, A.** “Reasoning about Trace Dependencies in a Multi-Dimensional Space,” Proceedings of the 1st International Workshop on Traceability in Emerging Forms of Software Engineering (TEFSE), co-located with ASE 2002, Edinburgh, Scotland, UK, September 2002.
- [9] **Egyed, A.** “Transformation, Ambiguity, and Trivialization,” Proceedings of the 2nd International Workshop on Living with Inconsistencies (IWLWI), co-located with ICSE 2001, Toronto, Canada, May 2001.
- [10] **Egyed, A.** and Medvidovic, N. “Consistent Architectural Refinement and Evolution using the Unified Modeling Language,” Proceedings of the 1st Workshop on Describing Software Architecture with UML, co-located with ICSE 2001, Toronto, Canada, May 2001, pp. 83-87.
- [11] **Egyed, A.**, Grünbacher, P., and Medvidovic, N. “Refinement and Evolution Issues in Bridging Requirements and Architectures,” Proceedings of the 1st International Workshops From Requirements to Architecture (STRAW), co-located with ICSE 2001, Toronto, Canada, May 2001, pp. 42-47.
- [12] **Egyed, A.** “Validating Consistency between Architecture and Design Descriptions,” Proceedings of 1st Workshop on Evaluating Software Architecture Solutions (WESAS), Irvine, CA, May 2000.
- [13] **Egyed, A.** and Hilliard, R. “Architectural Integration and Evolution in a Model World,” Proceedings of 4th International Software Architecture Workshop (ISAW) co-located with ICSE 2000, Limerick, Ireland, June 2000.
- [14] Grünbacher, P., **Egyed, A.**, and Medvidovic, N. “Dimensions of Concerns in Requirements Negotiation and Architecture Modeling,” Proceedings of 2nd Workshop on Multi-dimensional Separation of Concerns in Software Engineering (MDSOC) co-located with ICSE 2000, Limerick, Ireland, June 2000.
- [15] **Egyed, A.**, Mehta, N., and Medvidovic, N. “Software Connectors and Refinement in Family Architectures,” Proceedings of 3rd International Workshop on Development and Evolution of Software Architectures for Product Families (IWSAPF), Las Palmas de Gran Canaria, Spain, March 2000 (also published in Springer Lecture Notes no. 1951).
- [16] Medvidovic, N., **Egyed, A.**, and Rosenblum, D. “Round-Trip Software Engineering Using UML: From Architecture to Design and Back,” Proceedings of the 2nd Workshop on Object-Oriented Reengineering (WOOR) co-located with the 7th European Software Engineering Conference held jointly with the 7th ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE), Toulouse, France, September 1999, pp. 1-8.
- [17] **Egyed, A.** “Using Patterns to Integrate Architectural Views in UML,” Proceedings of the 3rd Ground Systems Architecture Workshop (GSAW'99), El Segundo, CA, March 1999.

Non-Refereed Publications

- [1] Bontemps, Y. and **Egyed, A.** “Scenarios and State Machines: Models, Algorithms, and Tools: A Summary of the 4th Workshop,” ACM SIGSOFT Software Engineering Notes, Vol. 30, No. 5., ACM Press, New York, USA, September 2005.
- [2] **Egyed, A.**, Müller, H.A., and Perry, D.E. “Integrating COTS into the Development Process,” IEEE Software July/August 2005, Vol. 22, No. 4, pp. 2-5.
- [3] Reusable Software in Autonomous Negotiating Teams, eBook, to appear.
- [4] Bontemps, Y. and **Egyed, A.** “Forth Workshop on Scenarios and State Machines: Models, Algorithms, and Tools,” Proceedings of the 27th International Conference on Software Engineering, St. Louis, USA, May 2005, pp. 697.
- [5] **Egyed, A.** and Perry, D. “First International Workshop on Incorporating COTS into Software Systems,” in Proceedings of the 3rd International Conference on COTS-Based Software Systems, Redondo Beach, California, USA, February 2004, pp. 6-7.
- [6] **Egyed, A.**, Glinz, M., Krüger, I., Systä, T., Uchitel, S., Zündorf, A. “Second Workshop on Scenarios and State Machines: Models, Algorithms, and Tools,” Proceedings of the 25th International Conference on Software Engineering, Portland, Oregon, USA, May 2003, pp. 783-784.
- [7] **Egyed, A.**, Systä, T., Uchitel, S., and Zündorf, A. “A Summary of the ICSE 2002 Workshop on Scenarios and State Machines: Models, Algorithms, and Tools,” ACM SIGSOFT Software Engineering Notes, Vol. 27, No. 5, ACM Press, New York, USA, 2002.
- [8] **Egyed, A.** “UML/Analyzer – a system for defining and analyzing the conceptual integrity of UML models,” ACM SIGSOFT Software Engineering Notes, Vol. 25, No. 1, ACM Press, New York, USA, January 2000.
- [9] Boehm, B., Port, D., Abi-Antoun, M., and **Egyed, A.** “Guidelines for the Life Cycle Objectives (LCO) and the Life Cycle Architecture (LCA) deliverables for Model-Based Architecting and Software Engineering (MBASE),” Technical Report USCCSE-98-519, Center for Software Engineering, University of Southern California, Los Angeles, CA 90089-0781, 1999.

Proceedings Editor

- [1] Proceedings for 22nd International Conference on Automated Software Engineering (ASE), Alexander Egyed and Bernd Fischer (editors), Atlanta, CA, USA, November.
- [2] Proceedings for 1st International Workshop on Incorporating COTS Software into Software Systems, Alexander Egyed and Dewayne E. Perry (editors), Redondo Beach, CA, USA, February 1, 2004.
- [3] Proceedings for 10th Focused Workshop on Software Engineering and Systems Engineering, with Barry Boehm and Cristina Gacek, Los Angeles, CA June 1998.
- [4] Proceedings for 9th Focused Workshop on Software Architecture II, with Barry Boehm and Cristina Gacek, Los Angeles, CA, November 1997.
- [5] Proceedings for 8th Focused Workshop on Rapid Application Development, with Barry Boehm and Sunita Chulani, Los Angeles, CA, June 1997.
- [6] Proceedings for 6th Focused Workshop on Groupware for Software Engineering, with Barry Boehm and Ming-June Lee, Los Angeles, CA, June 1996.

Theses

- [1] Egyed, A. “Heterogeneous View Integration and its Automation,” Technical Report, Center for Software Engineering, University of Southern California, Los Angeles, CA 90089-0781, April 1999 (PhD Thesis as part of Doctoral Program).
- [2] Egyed, A. “Integrating Architectural Views in UML,” Technical Report USCCSE-99-514, Center for Software Engineering, University of Southern California, Los Angeles, CA 90089-0781, April 1999 (Qualifying Report as part of Doctoral Program).
- [3] Egyed, A. “Client-Server-Anwendungsentwicklung und GUI mit dem CASE Tool Systems Engineer,” Technical Report, Department for Systems Engineering and Automation, Johannes Kepler University, Linz, Austria, October 1994 (Master’s Thesis).

Ph.D., M.S., and B.S. Committee

- Habilitation Committee Member
[2008] Dr. Wieland Schwinger
- Doctoral Students Advisor
[2008-] Sven Johann on “Program Understanding”
[2008-] Alexander Nöhner on “Design Decisions”
- Master Student Advisor
[2008-] Michael Vierhauser on “Consistency Checking in Product Lines”
[2008-] Wu Lei on “Design Model Integration”
- Bachelor Student Advisor
[2008-] Carina Punz on “Uncertainties in Requirements to Code Trace analysis”
[2008-] Thomas Schartmüller on “Hyperlinked Project Data for Software Engineering Experiments”
- Doctoral Students Committee Member
[2007] David M. Woollard “Supporting Production Workflows Through First-Class Connectors,” University of Southern California, USA (in progress, passed screening exam in 2007)
[2006] Chiyong Seo “Energy-Awareness in Distributed Java-Based Software Systems,” University of Southern California, USA (in progress, passed qualifying exam in 2006)
[2006] Jesal Bhuta “Framework for Intelligent Assessment and Resolution of Commercial-Off-The-Shelf Product Incompatibilities,” University of Southern California, USA, (in progress, passed qualifying exam in 2006)
[2005] Vladimir Jacobak “Facilitating the Reasoning of an OO Software System’s Architecture,” University of Southern California, USA, 2005 (graduated)
- Master’s Thesis Committee Member and Co-Advisor
[2006] Gernot Binder “Identifying Model to Code Traceability through Testing,” Johannes Kepler University, Austria (in progress)
[2004] Sven Johann “Incremental Transformation of Models,” University of Applied Sciences Mannheim, Kaiserslautern, Germany (graduated)
- Bachelor Thesis Committee Member and Co-Advisor

- [2006] Gernot Binder “Identifying Model to Code Traceability through Testing,” Johannes Kepler University, Austria (in progress)
- [2004] Sven Johann “Incremental Transformation of Models,” University of Applied Sciences Mannheim, Kaiserslautern, Germany (graduated)
- Doctoral Symposium Chair for the 21st International Conf. on Automated Software Engineering (ASE) together with Dr. Bernd Fischer. I formed and led an expert panel to judge the thesis progress of six Ph.D. students. These students were:
 - Mehrdad Sabetzadeh on “Management of Incomplete and Inconsistent Views”
 - Michal Antkiewicz on “Round-Trip Engineering of Framework-Based Software using Framework-Specific Modeling Languages”
 - Ajitha Rajan on “Coverage Metrics to Measure Adequacy of Black-Box Test Suites”
 - Chris A. Mattmann on “Software Connectors for Highly Distributed and Voluminous Data Intensive Systems”
 - Deepak Dhungana on “Integrated Variability Modeling of Features and Architecture in Software Product Line Engineering”
 - Chiyong Seo on “Energy-Awareness in Distributed Java-Based Software Systems”

Supervisor

- [2005-2006] Co-Advisor of Vladimir Jacobak (Graduate Student) at University of Southern California. I helped him define his research goals and monitored his progress.
- [2003-2004] Supervisor of Sven Johann (Full-Time Programmer) at Teknowledge Corporation. He was hired by Teknowledge Corporation for one year and worked on the incremental transformation of product-line models. His master’s thesis resulted from this work. During this time I defined his goals, deliverables, and supervised his progress.
- [2002-2003] Supervisor of Tom Pelkey (Full-Time Programmer) at Teknowledge Corporation. He worked on the model-based integration of embedded systems. During this time I defined his goals, deliverables, and supervised his progress.

Professional Services

Editor

- [2007] Editor of the Proceedings for the 22nd International Conference on Automated Software Engineering (ASE) together with Bernd Fischer.
- [2005] Guest Editor for IEEE Software on “Incorporating COTS Software into the Development Process” together with Hausi Müller and Dewayne Perry.

Chair

- [2008] Session Chair for International Conference on Software Engineering (ICSE)
- [2007] Chair and Organizer of the 1st International Workshop on Living with Uncertainties (IWLWA) together with Marsha Chechik, Betty Cheng, Alex Orso, and Kevin Sullivan – co-located with ASE 2007.
- [2007] Chair and Organizer of the 2nd International Workshop on Incorporating COTS Software into Software Systems (IWICSS) together with Hausi Müller, Dewayne Perry, Dennis B. Smith, and Scott Tilley – co-located with ICSE 2007.

- [2007] Program Chair for the 22nd International Conference on Automated Software Engineering (ASE) together with Bernd Fischer.
- [2006] Doctoral Symposium Chair for the 21st International Conference on Automated Software Engineering (ASE) together with Bernd Fischer.
- [2005] Chair and Organizer for the 4th International Workshop on Scenarios and State Machines: Models, Algorithms, and Tools (SCESM) together with Yves Bontemps – co-located with ICSE 2005.
- [2005] Tool Demonstration Chair for the 20th International Conference on Automated Software Engineering (ASE) together with Thomas Alspaugh.
- [2004] Chair and Organizer of the 1st International Workshop on Integrating COTS into Software Systems: Tools and Techniques (IWICSS) together with Dewayne Perry – co-located with ICCBSS 2004.
- [2004] Publicity Chair for the 19th International Conference on Automated Software Engineering (ASE).
- [2002] Chair and Organizer for the 1st International Workshop on Scenarios and State Machines: Models, Algorithms, and Tools” together with Tarja Systä, Vincenzo Ambriola, Francis Bordeleau, Martin Glinz, Rudolf Keller, Jeff Kramer, Stefan Leue, Bran Selic, Wilhelm Schäfer, Sebastian Uchitel, Jon Whittle, and Albert Zündorf – co-located with ICSE 2002.

Board

- [2007-] Editorial Board Member for the International Journal of Software and Informatics, <http://www.ijsi.org>.
- [2007-] Steering Committee Member for the Automated Software Engineering Conference series.

Panelist (Grant Proposal Reviewing)

- [2006] Panelist for the National Science Foundation (NSF) (Sol Greenspan).
- [2003] Panelist for the National Science Foundation (NSF) (Sol Greenspan).

Reviewer

- [2009] Program Committee member for the International Conference on Foundational Aspects of Software Engineering (FASE)
- [2008] Program Committee member for the International Conference on Model Driven Engineering Languages and Systems (MoDELS)
- [2008] Reviewer for IEEE Transactions on Software Engineering (TSE)
- [2008] Reviewer for the Journal Information & Software Technology (IST)
- [2008] Expert Research Panel for the 23rd International Conference on Automated Software Engineering (ASE)
- [2008] Reviewer for the Journal on Systems and Software (JSS)
- [2008] Workshop Program Committee member for the 30th International Conference on Software Engineering (ICSE)
- [2008] Tool Demonstration Program Committee member for the 30th International Conference on Software Engineering (ICSE)
- [2008] Program committee member for the 8th Working International Conference on Software Architecture (WICSA)
- [2008] Program committee member for the Formal Tools Demonstration track of the 30th International Conference on Software Engineering (ICSE)

- [2008] Program committee member for the Software Process and Product Improvement (SPPI) track of the EUROMICRO 2008 conference on Software Engineering and Advanced Applications
- [2007] Reviewer for Journal on Software Maintenance and Evolution
- [2007] Reviewer for IEEE Transactions on Software Engineering (TSE)
- [2007] Reviewer for the Journal Software and System Modeling (SoSyM)
- [2007] Program committee member for the 4th Workshop on Traceability in Emerging Forms of Software Engineering (TEFSE)
- [2007] Program committee member for the 2nd Workshop on Event-Based Information Technology Systems (EBITS), co-located with the ARES 2007 conference
- [2007] Program committee member for the 6th International Workshop on Scenarios and State Machines (SCESM) co-located with the ICSE 2007 conference
- [2007] Program committee member for the 6th Working IEEE/IFIP Conference on Software Architecture (WICSA)
- [2007] Program committee member for the 33rd EUROMICRO Conference on Software Engineering and Advanced Applications (SEAA), Track on Software Process and Product Improvement (SPPI)
- [2006] Reviewer for the IEEE Software Magazine
- [2006] Reviewer for the 28th International Conference on Software Engineering (ICSE)
- [2006] Reviewer for IEEE Transactions on Software Engineering
- [2006] Reviewer for the Journal on Automated Software Engineering (JASE)
- [2006] Program committee member for the 1st Workshop on Quality in Modeling, Co-located with the ACM/IEEE 9th International Conference on Model Driven Engineering Languages and Systems (MoDELS)
- [2005] Reviewer for IEEE Transaction on Software Engineering (TSE)
- [2005] Reviewer for the ACM Transactions on Software Engineering and Methodology (TOSEM)
- [2005] Reviewer for Journal of Systems and Software (JSS)
- [2005] Reviewer for IEEE Software Magazine
- [2005] Program committee member for the 5th Working IEEE/IFIP Conference on Software Architecture (WICSA)
- [2005] Program committee member for the 3rd Traceability in Emerging Forms of Software Engineering (TEFSE)
- [2005] Program committee member for the 20th IEEE/ACM International Conference on Automated Software Engineering (ASE)
- [2005] Program Committee member for the 31st Workshop on Software Process and Product Improvement
- [2004] Reviewer for the IEEE Journal Transactions on Software Engineering (TSE).
- [2004] Reviewer for the ACM Transactions on Software Engineering and Methodology (TOSEM).
- [2004] Reviewer for the IEE Proceedings – Software Journal (IEE Software)
- [2004] Reviewer for the Journal Software and System Modeling (SoSyM).
- [2004] Reviewer for the Journal Information & Software Technology (IST).

- [2004] Reviewer of book chapters for the Value-Based Software Engineering (VBSE), Springer Verlag.
- [2004] Reviewer of book chapters for the Model-Driven Software Development (MDSD2), Springer Verlag.
- [2004] Program committee member for the 1st Workshop on Software Architecture Description & UML
- [2004] Program committee member for the 19th IEEE International Conference on Automated Software Engineering (ASE).
- [2004] Program Committee member for the 30th Workshop on Software Process and Product Improvement.
- [2003] Reviewer for the IEEE Journal Transactions on Software Engineering (TSE).
- [2003] Reviewer for the Journal Software and System Modeling (SoSyM).
- [2003] Program committee member for the 2nd International Workshop on Traceability of Emerging Forms of Software Engineering (TEFSE).
- [2003] Program committee member for the 18th IEEE International Conference on Automated Software Engineering (ASE).
- [2003] Program committee member for the 5th International Workshop on Learning Software Organizations (LSO).
- [2003] Program Committee member for the 29th Workshop on Software Process and Product Improvement.
- [2002] Reviewer for the Journal IEEE Transactions on Software Engineering (TSE).
- [2002] Reviewer for the Requirements Engineering Journal.
- [2002] Reviewer for the Journal Software and System Modeling (SoSyM).
- [2002] Program Committee for the 4th International Workshop on Learning Software Organizations (LSO).
- [2002] Program committee member for the 17th IEEE International Conference on Automated Software Engineering (ASE).
- [2002] Program Committee for the 28th Workshop on Software Process and Product Improvement.
- [2001] Program Committee for the 1st International Workshop on Model-Based Requirements Engineering (MBRE).
- [2001] Program Committee Member for 27th Workshop on Software Process and Product Improvement.
- [2000] Reviewer for the Journal of Automated Software Engineering (JASE).
- [2000] Reviewer for the Journal Computer Standards & Interfaces (CS&I).
- [2000] Reviewer for the Doctoral Symposium of the Automated Software Engineering Conference (ASE).
- [2000] Program Committee Member for 26th Workshop on Software Process and Product Improvement.
- [1999] Reviewer for the Journal IEEE Transactions on Software Engineering (TSE).
- [1999] Reviewer for the Journal Computer Standards & Interfaces (CS&I).
- [1999] Conference Committee Member for the 21st International Conference on Software Engineering (ICSE).
- [1999] Program Committee Member for the 25th Workshop on Software Process and Product Improvement.
- [1999] Program Committee Member for the 3rd Ground Systems Architecture Workshop in El Segundo, CA.
- [1998] Reviewer for the Journal Computer Standards & Interfaces (CS&I).
- [1998] Program Committee Member for the 24th Workshop on Software Process and Product Improvement.

[1998] Program Committee Member for the 2nd Ground Systems Architecture Workshop in El Segundo, CA.

[1997] Program Committee Member for the 1st Ground Systems Architecture Workshop in El Segundo, CA.

Invited Seminars

- “Detecting, Tracking, and Fixing Software Design Errors” at the Technical University of Vienna, Austria, May 2008.
- “Detecting and Tracking Inconsistencies in Software Design Models” at the Open University, Milton Keynes, UK, December 2007.
- “Detecting and Tracking Inconsistencies in Software Design Models” at the University of Texas (UT), Austin, November 2007.
- “Detecting and Tracking Inconsistencies in Software Design Models” at the George Mason University (GMU), Fairfax, VA, April 2007.
- “Detecting and Tracking Inconsistencies in Software Design Models” at the North Carolina State University (NCSU), Raleigh, NC, April 2007.
- “Detecting and Tracking Inconsistencies in Software Design Models” at the Johannes Kepler University (JKU), Linz, Austria, March 2007.
- “Integrating Software Modeling,” at the University of Oxford, UK, February 2007.
- “Traceability in the Software Lifecycle,” at the NASA IV&V Facility in Fairmont, WV, July 2006.
- “Design Traceability through Scenario Observations,” at the University of Newcastle upon Tyne, England, UK, September 2002.
- “Dynamic Simulation and Simulating Dynamism,” at Technical University Munich (TUM), Munich, Germany, January 2002.
- “A Scenario-Driven Approach to Software Model Traceability,” at Carnegie Mellon University (CMU), Pittsburgh, PA, April 2001.
- “Model Integration and its Automation,” at Jet Propulsion Lab (JPL), Pasadena, CA, February 2001.
- “A View Integration Framework for Consistency Checking of UML Models,” at the University of Maryland (UMD), College Park, MD, April 2000.
- “A View Integration Framework for Consistency Checking of UML Models,” at the Southern California Software Process Improvement Network (SC SPIN), Los Angeles, CA, April 2000.
- “A View Integration Framework for Consistency Checking of UML Models,” at the USC Information Science Institute (ISI), Marina Del Rey, CA, February 2000.
- “A Framework for Scaleable Consistency Checking,” at the Johannes Kepler University, March 2000.
- “Experiences with the WinWin Groupware System,” at the University of California, Irvine, June 1999.
- “Experiences with the WinWin Groupware System,” at the Joint Meeting of the Los Angeles ACM Chapter and the Special Interest Group in Programming Languages (SIGPLAN), November 1998.

Presentations at Conferences and Workshops

- 29th International Conference on Software Engineering (ICSE), Minneapolis, MN 2007 (paper presentation, tool demo presentation, and poster presentation).
- 28th International Conference on Software Engineering (ICSE), Shanghai, China, May 2006 [Chair: Leon Osterweil] (paper presentation).
- 20th IEEE International Conference on Automated Software Engineering (ASE), Long Beach, CA, November 2005 [Chair: David Redmiles] (short paper/poster presentation).
- 3rd International Workshop on Traceability in Emerging Forms of Software Engineering (TEFSE), co-located with ASE 2005, Long Beach, November 2003 (paper presentation).
- 12th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE), Newport Beach, CA, USA, November 2004 (paper presentation).
- 2nd Workshop on Self-Managed Systems (WOSS), Newport Beach, CA, USA, November 2004 (paper presentation).
- 2nd IFIP/ACM Working Conference on Component Deployment (CD), Edinburgh, Scotland, UK, May 2004 (paper presentation).
- 4th International Workshop on Adoption-Centric Software Engineering (ACSE), Edinburgh, Scotland, UK, May 2004 (paper presentation).
- 3rd International Conference on COTS-Based Software Systems (ICCBSS), Redondo Beach, CA, February 2004 (workshop summary).
- 6th International Conference on the Unified Modeling Language (UML), San Francisco, USA, October 2003 (paper presentation).
- 2nd International Workshop on Traceability in Emerging Forms of Software Engineering (TEFSE), co-located with ASE 2003, Montreal, Canada, October 2003 (paper presentation).
- 2nd Second International Workshop from Software Requirements to Architectures (STRAW), co-located with ICSE 2003, Portland, Oregon, May 2003 (paper presentation).
- 17th IEEE International Conference on Automated Software Engineering (ASE), Edinburgh, Scotland, UK, September, 2002 [Chair: Julian Richardson] (paper presentation).
- 1st International Workshop on Traceability, co-located with ASE 2002, Edinburgh, Scotland, UK, September 2002 (paper presentation).
- 16th IEEE International Conference on Automated Software Engineering (ASE), San Diego, CA, November 2001 [Chair: Debra Richardson] (paper presentation).
- 5th IEEE International Symposium on Requirements Engineering (RE), Toronto, Canada, August 2001 [Chair: Bashar Nuseibeh] (paper presentation).
- 2nd Working International Conference on Software Architecture (WICSA), Amsterdam, The Netherlands, August 2001 [Chair: Philippe Kruchten] (paper presentation).
- 23rd International Conference on Software Engineering (ICSE), Toronto, Canada, May 2001 [Chair: Hausi Müller] (paper presentation).
- 2nd International Workshop on Living with Inconsistencies (IWLWI), co-located with ICSE 2001, Toronto, Canada, May 2001 [Chairs: Steve Easterbrook and Marsha Chechik] (paper presentation).

- 1st Workshop on Describing Software Architecture with UML, co-located with ICSE 2001, Toronto, Canada, May 2001 [Chairs: Alan Brown, Wojtek Kozaczynski, Philippe Kruchten, and Grant Larsen] (paper presentation).
- 1st International Workshops From Requirements to Architecture (STRAW), co-located with ICSE 2001, Toronto, Canada, May 2001 [Chairs: Jaelson Castro and Jeff Kramer] (paper presentation).
- 1st Workshop on Evaluating Software Architecture Solutions (WESAS), Irvine, CA, May 2000 [Chair: Richard Taylor] (presentation).
- 3rd International Conference on Foundational Aspects of Software Engineering (FASE), Berlin, Germany, March 2000 [Chair: Tom Maibaum] (paper presentation).
- 4th International Workshop on Software Architectures for Product Families (IWSAPF), Las Palmas, Gran Canaria, Spain, March 2000 [Chair: Henk Obbink] (paper presentation).
- 2nd International Conference on the Unified Modeling Language (UML), Fort Collins, CO, October 1999 [Chair: Robert France] (paper presentation).
- 14th IEEE International Conference on Automated Software Engineering (ASE), Cocoa Beach, FL, October 1999 [Chair: Dorothy Setliff] (paper presentation).
- 2nd Workshop on Object-Oriented Reengineering (WOOR) co-located with the 7th European Software Engineering Conference held jointly with the 7th ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE), Toulouse, France, September 1999, [Chairs: Serge Demeyer and Harald Gall] (paper presentation).
- 21st International Conference on Software Engineering (ICSE), Los Angeles, CA, May 1999 [Chair: Barry Boehm] (formal demonstration).
- 3rd Ground System Architecture Workshop (GSAW), El Segundo, CA, March 1999 [Chair: Judy Kerner] (presentation).
- 32nd Hawaii International Conference on Systems Sciences (HICSS), Wailea, Hawaii, January 1999 (paper presentation).
- 15th IFIP World Computer Congress on “The Global Information Society on the Way to the Next Millennium,” Vienna (Austria) and Budapest (Hungary), September 1998 (paper presentation).
- 1st European Software Day as part of the 24th Euromicro Conference, Västerås, Sweden, August 1998 [Chair: Gerhard Chroust] (paper presentation).
- 8th Annual International Symposium on “People, Teams and Systems”, International Council on Systems Engineering (INCOSE), Vancouver, Canada, June 1998 [Chair: Jas Madhur] (paper presentation).
- 10th Focused Workshop on Software Engineering and Systems Engineering, University of Southern California, Los Angeles, CA, June 1998 [Chair: Barry Boehm] (presentation).
- 20th International Conference on Software Engineering (ICSE) on “Forging New Links”, Kyoto, Japan, April 1998 [Chair: Koji Torii] (paper presentation).
- 9th Focused Workshop on Software Architecture II, University of Southern California, Los Angeles, CA, November 1997 [Chair: Barry Boehm] (presentation and demonstration).
- 7th Annual International Symposium on “Systems Engineering: A Necessary Science”, International Council on Systems Engineering (INCOSE), Los Angeles, CA, August 1997 (paper presentation).

Software Development

I developed a range of software packages. The following lists a few significant ones that are (or have been) used by people other than myself.

- MoBIES ACL Translator and Exporter: supports the capture, visualization, and sharing of the Boeing Bold Stroke product line avionics component model. Used by Boeing Company, Vanderbilt University and Carnegie Mellon University.
- UML Interface: provides an UML-compliant API and change notification mechanism for IBM Rational Rose (a premiere, commercial UML modeling tool). Used by Boeing Company and Carnegie Mellon University.
- ANTS Visualization, Debugging, and Analysis Tool: supports the visualization of autonomous negotiating agents on the ANTS infrastructure (a sensor network). Used by MITRE Corporation, SRI, and the University of Massachusetts.
- FLUP: commercial tool that supports cost/billing computations for Austrian veterinarians. Used by over a dozen veterinarians.
- HURT Visualization and Debugging tool: uses introspection to visualize arbitrary ontology-based data sources in terms of their contents and changes over time (history). Used by Northrop-Grumman Company and Honeywell.
- Class Abstraction tool: simplifies complex UML class structures by using transitive reasoning rules.
- UML/Analyzer tool: performs batch and incremental consistency checking on UML class, sequence, and statechart diagrams.
- Ambiguous Reasoning tool: identifies infeasible design choices in UML models by evaluating known consistency and conformance constraints.
- SDS Simulator tool: open/closed simulator for a variant of Harel's statechart diagrams.
- Trace/Analyzer tool: computes model-to-model trace dependencies based on model-to-code input dependencies.

Professional Societies

- ACM (Association for Computing Machinery)
- ACM SigSoft (Special Interest Group on Software Engineering).
- IEEE (Institute of Electrical and Electronics Engineers)
- IEEE Computer Society.

Collaborations

Ongoing and past collaborations with researchers and practitioners from industry and academia

Industry Collaborations

- Aerospace Corporation
- Boeing Corporation
- Honeywell
- Integrated Systems and Internet Solutions
- Lockheed-Martin

- Northrop-Grumman Company
- Mitre Corporation
- Rational Software Corporation
- SoHaR Incorporated
- Teknowledge Corporation

Academic Collaborations

- Carnegie Mellon University
- Fraunhofer Institute in Germany
- Johannes Kepler University in Austria
- Massachusetts Institute of Technology
- Technical University of Vienna
- University College London
- University of California at Irvine
- University of Michigan
- University of South Carolina
- University of Southern California
- University of Southampton
- University of Texas at Austin
- Vanderbilt University
- Vienna Technical University
- Western Michigan University

Languages

100% oral and wrüitten proficiency in English and German.

References

- Dr. Antony Finkelstein
Professor of Software Systems Engineering and Head of Department of Computer Science
Department of Computer Science
University College London
Gower Street
London WC1E 6BT, United Kingdom
+44 020 7679 7293 (a.finkelstein@cs.ucl.ac.uk)
- Dr. John Grundy
Professor of Software Engineering and Deputy Head of Department
Department of Electrical and Computer Engineering and Department of Computer Science
Private Bag 92019
The University of Auckland
Auckland, New Zealand
+64 (9) 373-7599 88761 (john-g@cs.auckland.ac.nz)
- Dr. Nenad Medvidovic
Associate Professor, University of Southern California
941 West 37th Place, Room 338
Computer Science Department
University of Southern California
Los Angeles, CA 90089-0781, USA
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- Dr. Hausi A. Müller
Professor and Director Bachelor of Software Engineering (BSENG) Program
Department of Computer Science, Faculty of Engineering
University of Victoria
Victoria, BC V8W 3P6, Canada
+1-250-472-5719 (hausi@cs.uvic.ca)
- Dr. Bashar Nuseibeh
Professor of Computing and Director of Research
Computing Department, Faculty of Maths & Computing
The Open University
Milton Keynes, MK7 6AA, United Kingdom
+44 (0) 1908-655185 (B.Nuseibeh@open.ac.uk)
- Dr. Dewayne Perry
Professor and Motorola Regents Chair of Software Engineering
Electrical and Computer Engineering in the College of Engineering
Computer Science in the College of Natural Sciences
1 University Station Stop C0803
University of Texas at Austin
Austin, TX 78712-1084, USA
+1-512-471-2050 (perry@ece.utexas.edu)

Current and Past Research Activities

- Dr. Barry W. Boehm
TRW Professor of Software Engineering and Director of the Center for Software Engineering
941 West 37th Place, Room 328,
Computer Science Department
University of Southern California
Los Angeles, CA 90089-0781, USA
+1-213-740-8163 (boehm@sunset.usc.edu)
- Research and development of an ontology-driven visualization and debugging infrastructure for unmanned air vehicles. This effort, called HURT (Heterogeneous Urban RSTA Teams), is a complex undertaking funded by DARPA. One of the main challenges is to visualize and debug the interaction of the three main components of the HURT system: user management, platform modeling, and planning & control. This is not easily doable given that these three components are developed independently by different developer groups and given that the ontology-based model is changing constantly.
- Research and development of an intrusion detection and error prevention mechanism funded by the DARPA SRS project. Our approach is based on a scenario-guided differencing of statechart models. The goal of differencing is to validate whether a software implementation (source code) conforms to its specification (design and architecture). To date, conformance between a design and its implementation (source code) is ensured mostly through static analysis. This has limitations. Together with Dave Wile and Robert Balzer, I developed a dynamic approach to conformance analysis that identifies differences between the implementation and specification during the system's execution (run-time). In particular, we identify differences between behavioral information extracted from running software systems and expected behavioral information generated by the simulation of the model. Differences between these behaviors are a general indication of a software system's lack to conform to its specification (caused by an error or intrusion).
- Research and development on automatically reducing design choices during modeling. The desirability of maintaining multiple stakeholders' interests during the software design process argues for leaving choices undecided as long as possible. Automated techniques that validate software models generally require complete, unambiguous models. Any form of under-specification, either missing information or undecided choices, must be resolved manually before automated analysis tools can be used. Together with Dave Wile, I developed a sound technique for automatically reducing the space of choices for ambiguities, by incorporating the local effects of constraints, ultimately with more global consequences.
- Changes happen anytime and anywhere during software development. It is vital for today's software developer to manage these changes by updating other, affected development artifacts despite syntactic and semantic barriers. I developed an approach to the incremental transformation of changes among models together with Sven Johann. This approach understands where and when changes happen in the source model and it understands the impact these changes have onto the target model. It then selects translation rules as needed to update the target model. Incremental transformation is an alternative to batch transformation and we found it to be 2-3 orders of magnitudes (100-1000 times) more efficient in maintaining the synchronicity among large-scale models. Three implementations of our approach exist to date with over 160 translation rules that bridge among four kinds of models. We also measured the complexity and scalability of these implementations, which were validated on large-scale, industrial models with up to 39,331 model elements.
- Research and development on how to integrate commercial-off the shelf software (COTS) into software systems. Reusing COTS software has become highly desirable as it can significantly reduce development cost and effort, while maintaining overall software product quality and increasing product acceptance. However, incorporating COTS software into software products introduces new complexities that developers

are currently ill equipped to handle. Most significantly, they usually lack the ability to initiate interactions with other components. This often leads to problems of state and/or data inconsistency. I developed a framework for integrating COTS software as proactive components within software systems to maintain the consistency of the state and data they share with other components. The framework utilizes a combination of low-level instrumentation and high-level reasoning to expose the relevant internal activities within a COTS component required to initiate the communication needed to maintain consistency with the other components with which it shares state and data.

- Research and development on compositional and relational reasoning during class abstraction. Class diagrams are among the most widely used object-oriented design techniques. They are effective in modeling the structure of software systems at any stages of the software life cycle. Still, class diagrams can become as complex and overwhelming as the software systems they describe. Together with Philippe Kruchten, I developed a technique for abstracting lower-level class structures into higher-level ones by ‘collapsing’ lower-level class patterns into single, higher-level relationships (relational reasoning). Later, I extended this technique to augment the set of abstraction rules to also collapse class patterns into higher-level classes (compositional reasoning). While this augmentation is simple and in sync with traditional views of refinement and abstraction, it has to handle class features such as methods and attributes. I thus also created a technique to filter low-level class features during abstraction.
- Research and Development of an architectural style for self-healing systems. Software architecture descriptions can play a wide variety of roles in the software lifecycle, from requirements specification, to logical design, to implementation architectures. In addition, execution architectures can be used both to constrain and enhance the functionality of running systems, e.g. security architectures and debugging architectures. The DARPA’s DASADA program proposed an execution infrastructure for so-called self-healing, self-adaptive systems – systems that maintain a particular level of healthiness or quality of service (QoS). This externalized infrastructure is driven by a reflective model of the operation of a target system – whose health is to be maintained – to determine what aspects can be changed to effect repair. Herein I developed an architectural style, together with Dave Wile and Robert Balzer, which embodies this infrastructure in describing the execution architecture.
- Research and development of a testing-based approach towards trace analysis. The power of software models is in their ability to project independent views onto software systems. Through views, development concerns can be described and solved separately but no two views are truly orthogonal of one another and working with multiple views thus requires an understanding of how their model elements inter-relate. We refer to these inter-relationships between model elements as trace dependencies and only in understanding them one can truly utilize the full potential of working with multiple views (i.e., consistency checking, reverse engineering, code generation and many others vital automations). I developed an approach to trace analysis that observes the run-time execution of test scenarios to reason about similarities. This information is then combined with modeling information into a graph structure to identify trace dependencies among them.
- Research and development of the CBSP approach (Component, Bus, System, Property) in collaboration with Paul Grünbacher (Johannes Kepler University in Linz, Austria) and Nenad Medvidovic (University of Southern California, USA). Little guidance and few methods are available for the refinement of software requirements into an architecture satisfying those requirements. Part of the challenge stems from the fact that requirements and architectures use different terms and concepts to capture the model elements relevant to each. CBSP is a pragmatic and intuitive approach for deriving architecture-relevant information out of informal requirements specifications using a structured and defined process.
- Research and development of UML/Analyzer, a transformation and consistency checking environment. UML/Analyzer is capable of synthesizing and analyzing UML class and object diagrams to ensure their consistency. Views typically represented separate software models that are related in the system they describe. Modeling notations used in views differ in their levels of abstraction, generality, and behaviorism.

This work thus addressed the issue of how to compare views for static consistency checking. Complexities, such as many-to-many dependencies between model elements, ambiguities (e.g., uncertainties of traceability), and non-conformances of modeling styles, were addressed. This project constituted my PhD thesis. As of this date, the proposed solution was applied successfully to (1) the C2 architecture description language for its structural and behavioral consistency checking with UML object diagrams (in collaboration with Nenad Medvidovic); and (2) the AAA for an integration of a model-based and component-based modeling infrastructure (in collaboration with Cristina Gacek).

- Quantitative analysis of requirements negotiation dynamics in collaboration with Barry Boehm. This project aimed at understanding differences in requirements negotiations. As such, 37 projects spanning two years of library application development were analyzed resulting in interesting insights into negotiation patterns based on characterizes like team composition, experience, and evolution.

My past research work has focused strongly on the Unified Modeling Language – arguably the most dominant modeling language today. This language offers a range of graphical representations (diagrams) to describe a software system’s structure separately from its behavior or even its specific interactions. On one side, separate representations allow engineers to simplify the capture and analysis of development concerns. However, on the other hand, I observed that large-scale software models suffer from thousands of inconsistencies. Trace links alone do not solve this problem. These inconsistencies are caused by assumptions made in representations that do not accurately reflect the software system. I previously developed a consistency checker for software models that provides consistency feedback *instantly*. In collaboration with Boeing Company and SwRI, I found that this technology not only benefited the instant detection of errors but also saved the software engineers from unnecessary rework. Yet, detecting inconsistencies is only one part of the problem. I plan on investigating how to fix inconsistencies which is a complex problem because not every model change causes inconsistencies, not every inconsistency is undesirable (i.e., living with inconsistencies), and not every undesirable inconsistency is solvable without causing new inconsistencies. Related to this problem, I also plan on investigating how uncertainties introduced by during trace generation affects consistency checking.

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