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Citizenship: Polish and Canadian; Singapore PR

Education:

Ph.D. (1979), Dept. of Mathematics (Computer Science Division), Warsaw University, *Thesis*: "A Generic Program Optimizer for a Compiler-Compiler"

M. Sc. (1972), Dept. of Mathematics, Warsaw University, *Thesis*: "Product K-Machines"

Teaching areas: Software Engineering (year 3), Software Engineering Project (year 3), Object-Oriented Methods (year 4), Software Architectures (level 4), Software Re-engineering (graduate level), Software Reuse (graduate level), Compilers (year 4), Data Structures (year 3), Formal Language Theory (year 4)

Professional career at glance:

1992-now Associate Professor, Department of Computer Science, School of Computing, National University of Singapore (tenure in 97)

2000- Adjunct Associate Professor, Department of Electrical & Computer Engineering, University of Waterloo, Waterloo, Ontario, Canada

1999 Sabbatical leave: January-June: Visiting Scientist at Fraunhofer Institute for Experimental Software Engineering, Kaiserslautern, Germany; short visits to centers of Prof. Mehdi Jazayeri, Technical University of Vienna and Prof. Carlo Ghezzi, Politecnico de Milano; **July-October:** Visiting Associate Professor at Software Engineering Group, Department of Electrical and Computer Engineering, University of Waterloo, Canada

1990-92 Research Manager, CSA Research Pte. Ltd. in Singapore and Adjunct Senior Lecturer, National University of Singapore

CSA Research, a CASE tool development company, engaged me to plan the next generation company product with reverse engineering and re-engineering capabilities. I also participated in management of a CASE tool development project.

1984-89 Assistant Professor, Department of Computer Science and Systems, McMaster University, Hamilton, Ontario, Canada

I did research on software engineering environments; designed a generation system for language-based programming environments; designed an incremental attribute evaluation mechanism propagating attributes across a forest of inter-related syntax trees. I did consulting on compiler technology and C++ for industries in Toronto.

1982-84 Lecturer I at the University of Maiduguri, Nigeria

1972-82 Research Fellow, Institute of Computers - an industrial research institute in Warsaw

I worked on a compiler-compiler project; designed a generic program optimizer for a class of n-tuple compiler intermediate languages; implemented a number of cross-compilers.

Research

I work on software reuse (product line approach) and evolution methods for component-based systems. The design of generic solutions to avoid repetition, at analysis, architecture, design and code levels, is the heart of systematic reuse via product line architectures. However, high presence of redundancies in programs hints at difficulties of achieving genericity and non-redundancy. Our studies have shown that contemporary OO programming techniques and component-based technologies (.NET, J2EE) do not free developers from the above problem: well-designed new programs (not only heavily maintained, old ones) are polluted by counter-productive redundancies which often signify unexploited reuse opportunities.

The design of generic solutions to avoid repetition, at analysis, architecture, design and code levels, is the heart of systematic reuse. However, in many cases, genericity and non-redundancy are difficult to achieve with conventional techniques (such as OO generics, design patterns, architectural approaches or component-based technologies). This is evidenced by high presence of redundancies in programs (i.e., recurring similar program structures, so-called clones). Redundancies cause update anomalies that hinder program understanding and maintenance. Therefore, generic design solutions have to do with both reusability and maintainability, the two economically desirable – but also difficult to achieve - software engineering goals. Common sense suggests that for simplicity and productivity reasons, developers should be able to express their design and code without unwanted repetitions, whenever they wish to do so.

Our studies have shown that contemporary OO programming techniques and component-based technologies (.NET, J2EE) do not free developers from the above problem: well-designed new programs (not only heavily maintained, old ones) are polluted by counter-productive redundancies which often signify unexploited reuse opportunities. We have studied the “weak generics” problem in a range of application domains (business systems, Web portals, command and control, class libraries), programming languages (Java, C++, C#, ASP) and platforms (J2EE, .NET, Unix, Windows). We observed high presence of redundancies, 50%-68%. For example, the extent of the redundant code in Java Buffer library was 68%, in parts of STL (C++) - over 50%, in C# command and control application (J2EE and C#) – 68%, and in certain ASP Web portal modules – up to 90%. (The last two results are from industrial applications of XVCL by our industry partner SES Systems Pte Ltd.) Analysis of the empirical results revealed that, in many cases, redundancies occurred as there was no simple way of avoiding them with conventional methods, without compromising other important design goals. *I believe weak generics are inherent in contemporary programming paradigms*, therefore, developers are doomed to produce counter-productive redundancies.

My team at NUS, together with industrial collaborators, have addressed the problem with meta-level parameterization, unrestricted by programming language rules. When combined with suitable generation capabilities, such parameterization offers engineering benefits that reach beyond what conventional methods can do for us. We have developed XVCL: XML-based Variant Configuration Language that implements the above concept. We use XVCL as an experimentation device to explore the meta-level approach to enhancing reusability and maintainability of conventional programs. XVCL is in the spirit of advanced separation of concerns (hyperspaces from IBM and Aspect-Oriented Programming). We have applied XVCL – in case studies and industrial projects - to build software product line architectures for systematic reuse, to manage multiple versions of programs released to different clients during software evolution, and to help in day-to-day maintenance. The approach is practical as it complements, rather than competes with conventional

programming methods. XVCL is an open source, public domain software (<http://fxvcl.sourceforge.net/>).

XVCL allows us to tell commonalities from variabilities in a natural and explicit way, at any granularity and abstraction level (analysis, architecture or code). This capability, neglected in conventional approaches, is the key to XVCL's effectiveness in achieving software genericity, non-redundancy and changeability, qualities that are so hard to ensure with the OO and component technologies.

My research plan builds on the above results. I will continue to work in close collaboration with industry. The following are the main directions for my future work:

1. Meta-level parameterization and generation methods for enhanced reusability (design of product line architectures) and maintainability.
2. Re-engineering (migrating) old programs into meta-level architectures designed for ease of reuse and maintenance.
3. Automatic detection of redundant code structures in programs and reverse engineering meta-level structures unifying differences among redundant code structures.
4. Experimentation and validation of proposed methods in the industrial pilot projects. As meta-level parameterization is not without pitfalls, we need study trade-offs involved in adopting meta-level techniques.
5. Research on formal concepts underlying meta-level parameterization techniques based on "composition with adaptation" mechanism.
6. An XVCL Workbench comprising tools for effective application of proposed methods. My goal is to continue promoting XVCL to the research community and industry.
7. Analysis methods for software product lines: modeling variability across software products, analysis of both functional and non-functional requirements for product lines.

Expected research contributions: I believe further research in the above direction may have significant impact on both software practice and our understanding of software engineering fundamentals. It may also shed new light on programming language features (such as generics) that have to do with better language support for software engineering goals.

Industry collaborations: I work in close collaboration with our industry partner SES Systems Pte Ltd. In 2000-02, I was a Principal Investigator in the Singapore-Ontario Joint Research project: *Reuse Framework for Reliable Mission-Critical Software Systems*. The project was funded by A*STAR (Agency for Science, Technology and Research), and the Canadian Ministry of Energy, Science and Technology. Project partners included NUS, University of Waterloo, SES Systems Pte Ltd and Netron, Inc, Toronto. In this project, I have gained experience in managing collaborative projects.

Supervision of students

In last two years, I have worked with 2 Postdoctoral Fellows, 3 PhD students, 4 Master students, 1 Research Assistant, 1 visitor from China (PhD level), 4 graduate exchange students (from Lancaster, Russia, Sweden) and 20 students doing Honours research projects. Supervision of graduate student projects is one of my favorite academic activities.

Publications

Articles in refereed journals:

1. Jarzabek, S. and Li, S. "[Unifying clones with a generative programming technique: a case study](#)," *Journal of Software Maintenance and Evolution: Research and Practice*, John Wiley & Sons, Volume 18, Issue 4, July/August 2006, pp. 267-292, extended version of ESEC-FSE'03 paper that received ACM Distinguished Paper Award
2. Sun, J., Dong, J.S, and Jarzabek, S. "CAD System Family Architecture and Verification: An Integrated Formal Approach," *IEE Proceedings Software*, IEE and British Computer Society, Vol. 153, No. 3, July 2006, p. 87-136
3. Jarzabek, S, Yang, B. and Sam, S. "Addressing Quality Attributes in Domain Analysis for Product Lines," *IEE Proceedings Software*, IEE and British Computer Society, Vol. 153, No. 2, April 2006, pp. 61-73
4. Jarzabek, S., Zhang, H., Ru, S., Lam, V.T., and Sun, Z. "Analysis of meta-programs: a case study," *Journal of Software Engineering and Knowledge Engineering*, Vol. 16, No. 1, Feb. 2006, pp. 77-101, extended version of **best papers** from *Proc. 16th Int. Conference on Software Engineering and Knowledge Engineering (SEKE'04)*, Banff, Canada, June 2004
5. Zhang, H. and Jarzabek, S. "A Bayesian Network Approach to rational architectural design," *Int. Journal of Software Engineering and Knowledge Engineering*, Vol. 15, No. 4, August 2005, pp. 695-719
6. Zhang, H. and Jarzabek, S. "[A Mechanism for Handling Variants in Software Product Lines](#)," special issue on Software Variability Management of Elsevier's journal *Science of Computer Programming*, Volume 53, Issue 3, Dec. 2004, pp. 381-407
7. Stan Jarzabek, Wai Chun Ong and Hongyu Zhang "[Handling Variant Requirements in Domain Modeling](#)," *Journal of Software and Systems*, Vol. 68, Issue 3, 15 Dec. 2003, pp.171-182; extended version of **best papers** on Software Engineering from conf. SEKE'01
8. Jarzabek, S. and R. Seviora "[Engineering components for ease of customization and evolution](#)," *IEE Proceedings - Software*, Vol. 147, No. 6, December 2000, pp. 237-248, a special issue on Component-based Software Engineering
9. Jarzabek, S. and G. Wang "[Model-based Design of Reverse Engineering Tools](#)", *Journal of Software Maintenance: Research and Practice*, No. 10, 1998, John Wiley & Sons, pp. 353-380
10. Jarzabek, S. "[Design of Flexible Static Program Analyzers with PQL](#)," *IEEE Transactions on Software Engineering*, March 1998, pp. 197-215
11. Chee, C.L., Jarzabek, S. and Paul, R. "[F-metric: a WWW-based framework for intelligent formulation and analysis of metric queries](#)," *Journal of Systems and Software*, No. 43, 1998, Elsevier Science Inc., pp. 119-132
12. Jarzabek, S. and Huang, R. "[The case for User-Centered CASE Tools](#)," *Communications of ACM*, August 1998, pp. 93-99
13. Jarzabek, S. and T.W. Ling "Model-based Support for Business Re-engineering," *Journal of Information and Software Technology*, vol. 38, No. 5, May 1996, pp. 355-374
14. Jarzabek, S "Lifecycle approach to strategic re-engineering of software," *Journal of Software Maintenance: Research and Practice*, vol. 6, no. 6, December 1994, John Wiley & Sons, 287-317
15. Jarzabek, S., CL Tan and Tham, K. An Object-oriented Model for Recovered Designs in Software Reengineering. *Information Technology Journal*, vol. 6, no. 2, December 1994, 80-94
16. Jarzabek, S. "Domain Model-Driven Software Reengineering and Maintenance," *Journal of Systems and Software*, January 1993, 20:37-51
17. Jarzabek, S. "Research Trends in Software Development Environments," *Information Technology Journal*, April 1991, vol. 4, no. 1, 9-14
18. Jarzabek, S. "Specifying and Generating Multi-Language Software Development Environments," *Software Engineering Journal*, IEE and British Computer Society, March 1990, 125-137
19. Jarzabek, S. "The Role of Specifications and Abstractions in the Design of a Software Environment Generation System," *International Journal on Policy and Information*, vol. 13, no. 2, December 1989, 145-164
20. Jarzabek, S. and Krawczyk, T. "LL-Regular Grammars," *Information Processing Letters*, No. 2, vol. 4, 1975

Letters to editors:

1. Jarzabek, S. "Will MDD Fulfill It's Promises?" *IEEE Software*, Jan/Feb 2004, pp.5-6

Articles in refereed international conference proceedings:

1. Basit, H., Puglisi, S., Smyth, W., Turpin, A. and Jarzabek, S. "Efficient Token Based Clone Detection with Flexible Tokenization," *ESEC-FSE'07, European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering*, ACM Press, September 2007, Dubrovnik, pp. 513-516
2. Grudzien, A., Traczyk, T. and Jarzabek, S. „Application of Generative Programming to Evolution of Object-Relational Mapping Layer," *Proc. 2nd AIS SIGSAND European Symposium on System Analysis and Design*, Gdansk, June 5, 2007, pp. 64-71, ISBN 978-83-7326-447-2

3. Rajapakse, D.C. and Jarzabek, S. "[Using Server Pages to Unify Clones in Web Applications: A Trade-off Analysis.](#)" *Int. Conf. Software Engineering, ICSE'07*, Minneapolis, USA, May 2007, pp. 116-125
4. Jarzabek, S. "[Genericity - a "Missing in Action" Key to Software Simplification and Reuse.](#)" *13th Asia-Pacific Software Engineering Conference, APSEC'06*, IEEE Comp. Soc., 6-8 December 2006, Bangalore, India, pp. 293-300
5. Basit, H.A., Rajapakse, D.C., and Jarzabek, S. "[Beyond Templates: a Study of Clones in the STL and Some General Implications.](#)" *Int. Conf. Software Engineering, ICSE'05*, St. Louis, USA, May 2005, pp. 451-459
6. Basit, A.H. and Jarzabek, S. "[Detecting Higher-level Similarity Patterns in Programs.](#)" *ESEC-FSE'05, European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering*, ACM Press, September 2005, Lisbon, pp. 156-165
7. Pettersson, U., and Jarzabek, S. "[Industrial Experience with Building a Web Portal Product Line using a Lightweight, Reactive Approach.](#)" *ESEC-FSE'05, European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering*, ACM Press, September 2005, Lisbon, pp. 326-335
8. Zhang, W. and Jarzabek, S. "[Reuse without Compromising Performance: Experience from RPG Software Product Line for Mobile Devices.](#)" *9th Int. Software Product Line Conference, SPLC'05*, September 2005, Rennes, France, pp. 57-69
9. Yang, J. and Jarzabek, S. "[Applying a Generative Technique for Enhanced Reuse on J2EE Platform.](#)" *4th Int. Conf. on Generative Programming and Component Engineering, GPCE'05*, Sep 29 - Oct 1, 2005, Tallinn, Estonia, pp. 237-255
10. Rajapakse, D.C and Jarzabek, S. "[A Need-Oriented Assessment of Technological Trends in Web Engineering.](#)" *Int. Conf. on Web Engineering, ICWE'05*, July 2005, Sydney, pp. 30-35
11. Rajapakse, D.C and Jarzabek, S. "[An Investigation of Cloning in Web Portals.](#)" *Int. Conf. on Web Engineering, ICWE'05*, July 2005, Sydney, pp. 252-262 (also poster at WWW'05)
12. Rajapakse, D.C, Basit, A.H. and Jarzabek, S. "[An Empirical Study on Limits of Clone Unification Using Generics](#)" for *17th Int. Conference on Software Engineering and Knowledge Engineering, SEKE'05*, July 2005, Taipei, Taiwan, pp. 109-114
13. Jarzabek, S. and Eng, P.K. "[Teaching an Advanced Design, Team-oriented Software Project Course](#)", *18th Int. Conference on Software Engineering Education and Training (CSEE&T)*, IEEE CS, April 2005, Ottawa, pp. 223-230
14. Jarzabek, S., Ru, S., Zhang, H. and Sun, Z. "Analysis of meta-programs: a case study," *Proc. 16th Int. Conference on Software Engineering and Knowledge Engineering (SEKE'04)*, Banff, Canada, June 2004, pp. 68-73; **selected as one of the best papers** for a special issue of *Journal of Software and Systems*
15. Loughran, N., Rashid, A., Zhang, W. and Stan Jarzabek "Supporting Product Line Evolution with Framed Aspects," *3rd AOSD Workshop on Aspects, Components, and Patterns for Infrastructure Software, ACPAIS'04*, March 22-26, 2004, Lancaster UK
16. Jarzabek, S. and Li, S. "[Eliminating Redundancies with a "Composition with Adaptation" Meta-programming Technique.](#)" *Proc. ESEC-FSE'03, European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering*, ACM Press, September 2003, Helsinki, pp. 237-246; **the paper received ACM SIGSOFT distinguished paper award**
17. Zhang, H. and Jarzabek, S. "An XVCL approach to handling variants: A KWIC product line example," *10th Asia-Pacific Software Engineering Conference, APSEC'03*, IEEE Comp. Soc., 10-12 December 2003, Chiangmai, Thailand
18. Zhang, W., Jarzabek, S., Loughran, N and Rashid, A. "Reengineering a PC-based System into the Mobile Device Product Line," *Proc. 4th Int. Workshop on Principles of Software Evolution IWPSE'03*, IEEE Comp. Soc., September 2003, Helsinki, Finland, pp. 149-160
19. Zhang, H. and Jarzabek, S. "[An XVCL-based Approach to Software Product Line Development.](#)" *Conf. on Software Engineering and Knowledge Engineering, SEKE'03*, San Francisco, July 2003, pp. 267-275
20. Zhang, H., Jarzabek, S. and Yang, B. "Quality Prediction and Assessment for Product Lines," *Conf. on Advanced Information Systems Engineering CAiSE'03*, Austria, June 2003, Springer-Verlag LNCS 2681, pp. 681-695
21. Soe, M.S., Zhang, H. and Jarzabek, S. "XVCL: A Tutorial," *Proc. of 14th Int. Conf. on Software Engineering and Knowledge Engineering, SEKE'02*, ACM Press, July 2002, Italy, pp. 341-349
22. Jarzabek, S. and Zhang, H. "Software Decomposition and Instrumentation for Enhanced Flexibility and Reusability," *Proc. of IASTED Int. Symp. on Software Engineering, Databases and Applications*, ACTA Press, Feb. 2002, Innsbruck, pp. 91-96
23. Zhang, H., Jarzabek, S. and Myat Swe, S. "XVCL Approach to Separating Concerns in Product Line Assets," *Proc. of 3rd International Conference on Generative and Component-Based Software Engineering*, LNCS, Springer Verlag, September 2001, Erfurt, Germany, pp. 36-47
24. Jarzabek, S. "[Flexible components with frame technology: a case study.](#)" *27th EUROMICRO Conference on Component-based Software Engineering*, IEEE Comp. Soc., September 2001, Warsaw, Poland, pp. 146-153

25. Jarzabek, S. and Zhang, H. "[XML-based Method and Tool for Handling Variant Requirements in Domain Models](#)", *Proc. of 5th IEEE International Symposium on Requirements Engineering, RE'01*, IEEE Comp. Soc., August 2001, Toronto, Canada, pp. 166-173
26. Stan Jarzabek, Wai Chun Ong and Hongyu Zhang "Handling Variant Requirements in Domain Modeling," *Proc. of 13th International Conference on Software Engineering and Knowledge Engineering, SEKE'01*, Knowledge System Institute, June 2001, Buenos Aires, Argentina, pp. pp. 61-68; **selected as one of the best papers** for a special issue of *Journal of Software and Systems*
27. Stan Jarzabek and Hongyu Zhang, "Enhancing Component Reuse with Control Flow Abstraction Analysis," *Proc. of 13th International Conference on Software Engineering and Knowledge Engineering, SEKE'01*, Knowledge System Institute, June 2001, Buenos Aires, Argentina, pp. 171-178
28. Wong, T.W., Jarzabek, S., Myat Swe, S., Shen, R. and Zhang, H.Y. "[XML Implementation of Frame Processor](#)," *Proc. ACM Symposium on Software Reusability, SSR'01*, ACM Press, Toronto, Canada, May 2001, pp. 164-172
29. Zhang, H., Jarzabek, S. and Myat Swe, S., "x-Frame Approach for Handling Variants within Concerns," *Workshop on Advanced Separation of Concerns at 23rd International Conference on Software Engineering, ICSE'01*, Toronto, Canada, 2001, pp. 146-151
30. Jarzabek, S. and Knauber, P. "[Synergy between Component-based and Generative Approaches](#)," *Proc. ESEC/FSE'99 Joint 7th European Software Engineering Conference and 7th ACM SIGSOFT Symposium on the Foundations of Software Engineering*, ACM Press, Toulouse, France, September 1999, Lecture Notes in Computer Science No. 1687, Oscar Nierstrasz and Michel Lemoine (Eds.) Springer Verlag, pp. 429-445
31. Cheong, Y.C. and Jarzabek, S. "[Frame-based Method for Customizing Generic Software Architectures](#)," *Symposium on Software Reusability, SSR'99*, ACM Press, Los Angeles, May 1999, pp. 103-112
32. Teh H.Y., Jarzabek, S. and Tiako, P. "WWW-based Communication Tool for Distributed Team-based Software Development," *Proc. Conf. Systemics, Cybernetics and Informatics and the International Conference on Information Systems Analysis and Synthesis, SCI'99/ISAS'99*, Florida, August 1999
33. Jarzabek, S. "Component Criteria for Software System Families," *Proc. 11th CAiSE'99*, Heidelberg, June 1999, Lecture Notes in Computer Science No. 1626, *Advanced Information Systems Engineering*, Springer Verlag
34. Jarzabek, S. and Hitz, M. "Business-oriented and Component-based Software Development and Evolution," *International Workshop on Large-Scale Software Composition*, August 28, 1998, Vienna, Austria
35. Lau, K. W. and Jarzabek, S. "A Generic Discretionary Access Control System for Reuse Frameworks", *COMPSAC'98*, IEEE Comp. Soc., August 19-21, 1998, Vienna, Austria, pp. 356-361
36. Jarzabek, S. and Woon, I. "Interplay between an Enterprise Information Architecture and Domain Analysis," *Proc. Third World Conference on Integrated Design and Process Technology*, July 6, 1998, Berlin, pp. 154-161
37. Cheong, Y.C. and Jarzabek, S. "Modeling Variant User Requirements in Domain Engineering for Reuse," *Proc. 8th European-Japanese Conference on Information Modeling and Knowledge Bases*, Vammala, Finland, May 1998, pp. 231-250; also published in *Information Modelling and Knowledge Bases*, Eds. Hannu Jaakkola, Hannu Kangassalo and Eiji Kawaguchi, IOS Press, Netherlands, ISSN: 0922-6389, pp. 220-234
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40. Jarzabek, S. and Woon, I. "Towards precise Description of Reverse Engineering Heuristics," *Proc. EUROMICRO Working Conference on Software Maintenance and Reengineering*, IEEE Comp. Soc., March 1997, Berlin, pp. 3-9
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68. Jarzabek, S. "The Role of Specifications and Abstractions in the Design of a Software Environment Generation System," *Proc. International Computer Conference*, Taipei, Dec. 1988, vol. I, pp. 671-676

69. Jarzabek, S. "A Method for Specifying and Prototyping User Interfaces Based on the Structure Editor Technology," *Proc. Second International Conference on Human-Computer Interaction*, Hawaii, August 1987, p. 146 (abstract)
70. Jarzabek, S. "Software Environments for Development, Maintenance, and Reuse of Software Descriptions," *Proc. CIPS CONGRESS'87*, Winnipeg, Manitoba, May 1987, 201-208
71. Jarzabek, S. "Language-Independence of Project Information Bases," *Proc. Second Kansas Conference on Knowledge-Based Software Development*, Manhattan, Kansas, October 1986
72. Jarzabek, S. "Generation of Software Production Environments," *Proc. ACM Computer Science Conference*, (ACM), February 1986, Cincinnati (Research in Progress Abstract)
73. Jarzabek, S. "Introduction to the Compiler Production System," *Proc. of the INFOGRYF'80*, 1980, Kolobrzeg, Poland
74. Jarzabek, S. "Automatic Generation of Program Optimizers," *Proc. of the INFORMATICA'79*, 1979, Bled

Short papers in refereed international conference proceedings

1. Jarzabek, S. "[Variability Management for Product Lines with XVCL](#)," *11th Int. Software Product Line Conf., SPLC'07*, Kyoto, Sept. 2007, pp. 13-14
2. Jarzabek, S. and Pettersson, U. "Research Journey Towards Industrial Application of Reuse Technique," *Int. Conf. Software Engineering, ICSE'06*, Shanghai, May 2006, pp. 608-611
3. Jarzabek, S. and Pettersson, U. "[Cost-Effective Engineering of Web Applications—Pragmatic Reuse: Building Web Application Product Lines](#)," *Int. Conf. Software Engineering, ICSE'06*, Shanghai, May 2006, pp. 1053-1054 (description of the tutorial presented at ICSE)
4. Sinson, R., Jarzabek, S., Ow, S.H., Rivepiboon, Nguyen, N.H "Software Practices in Five ASEAN Countries: An Exploratory Study," *Int. Conf. Software Engineering, ICSE'06*, Shanghai, May 2006, pp. 628-631
5. Jarzabek, S. and Pettersson, U. "Project-Driven University-Industry Collaboration: Modes of Collaboration, Outcomes, Benefits, Success Factors," *3rd Int. Summit on Software Engineering Education, SSEE'06*, Shanghai, May 2006, pp. 9-12
6. Jarzabek, S., Basset, P., Zhang, H. and Zhang, W. "[XVCL: XML-based Variant Configuration Language](#)," *Proc. Int. Conf. on Software Engineering, ICSE'03*, IEEE Comp. Soc., May 2003, Portland, pp. 810-811, also, formal presentation and open session demo of the XVCL system

Book chapters:

1. Zhang, W., Jarzabek, S., Zhang H., Loughran, N. and Rashid, A. "Software evolution with XVCL," chapter in *Software Evolution with UML and XML*, Idea Group Inc.
2. Cheong, Y.C. and Jarzabek, S. "Modeling Variant User Requirements in Domain Engineering for Reuse," in *Information Modelling and Knowledge Bases*, Eds. Hannu Jaakkola, Hannu Kangassalo and Eiji Kawaguchi, IOS Press, Netherlands, ISSN: 0922-6389, pp. 220-234
3. Jarzabek, S. and Tang, S.T. "Conceptual Modeling of Families of Software Systems," in book *Information Modeling and Knowledge Bases VI*, Edts. H. Kangassalo, H. Jaakkola, S. Ohsuga and B. Wangler, IOS Press Amsterdam, 1995, pp. 299-312
4. Jarzabek, S. "EPDS: An Educational Program Development System," in *The Information Edge: The Future for Educational Computing*, Rasmussen, Bruce (Editor), Brisbane, July 1985
5. Some of the conference papers have been published as chapters in Lecture Notes in Computer Science, Springer Verlag; they are listed in the Section "Conference papers".

Articles under submission to international referred journals:

1. Jarzabek, S. "[Applying Generative Programming Technique to Unify Software Similarity Patterns](#),"
2. Jarzabek, S. "[Controlling Software Complexity by Unifying Similarity Patterns](#)"

Articles under submission to refereed international conferences:

1. Jarzabek, S. and Pettersson, U. "[University-Industry Collaboration Journey Towards Product Lines - An Experience Report](#),"
2. Jarzabek, S., Seow, J. and Pettersson, U. "[A Case Study in Software Evolution with CVS: Some Problems and Alternatives](#),"
3. Basit, A.H., Rajapakse, D.C. and Jarzabek, S. "[Structural Clones – Higher Level Similarity Patterns in Programs](#),"
4. Basit, H., Puglisi, S., Smyth, B., Turpin, A. and Jarzabek, S. "Efficient Token Based Clone Detection with Flexible Tokenization,"
5. Low, M. Basit, H., and Jarzabek, S. "Recovering Useful Design-Level Similarity Patterns based on Clone Detection Output,"

Books:

Jarzabek, S. *Effective Software Maintenance and Evolution: Reuse-based Approach*, CRC Press Taylor & Francis, 2007

Conference Organization and PC Member

I am a General Chair for the 5th Int. Conference on Generative Programming and Component Engineering ([GPCE'06](#)), October 22-26, 2006, Portland, Oregon, co-located with OOPSLA.

I have been a PC member at WWW, Int. Conf. on Software Maintenance (ICSM), Int. Conference on Software Reuse (ICSR), Int. Workshop on System/SW Architectures, Int. Conf. on Software Engineering Advances, Int. Workshop On Evaluation Of Novel Approaches To Software Engineering, Int. Workshop on Web Site Evolution, Working Conference on Reverse Engineering

Workshops and Tutorials at international conferences

1. ½ day tutorial: *Cost-Effective Engineering of Web Applications—Pragmatic Reuse: Building Web Applications*, at *Int. World Wide Web Conference, WWW'07*, Banff, May 2007
2. Full-day tutorial: *Cost-Effective Engineering of Web Applications—Pragmatic Reuse: Building Web Application Product Lines*, at *Int. Conf. Software Engineering, ICSE'06*, Shanghai, May 2006, pp. 1053-1054; speakers: Jarzabek, S. and Pettersson, U.
3. ½ day tutorial: *Cost-Effective Engineering of Web Applications*, at *Int. Conf. on Web Engineering*
4. Organized Workshop on *Implementation of Software Product Lines and Reusable Components*, in conjunction with the 8th International Conference on Software Reuse (ICSR 8), July 5 to 9, 2004 in Madrid, Spain
5. Half-day tutorials on XVCL at ICSR July 04 and ICSM Sept 04.
6. Half-day tutorials on “Pragmatic approach to reuse-based Engineering of Web Applications” at [ESEC-FSE'05](#), [ICWE'05](#).

Reviews for Journals and Other Reviews

I review 30-50 papers per year for international conferences and journals and review research grant proposals for Jacquard program, Netherlands, and SIIRD Singapore-Israel R&D agency.

Public courses

2-day course: *Cost-Effective Engineering of Web Applications Pragmatic Reuse: Building Web Application Product Lines*, 15-16 February, 2006 in Kuala Lumpur and 20-21 February, 2006 in Singapore

five 2-day courses on reuse and reengineering given in 1992-1996 in Singapore

Invited talks

“Using Clone Analysis to Improve Program Quality: CCFinder Experience,” keynote at the Software Engineering Workshop on Code Clone Detection Technique and its Applications, Cosponsored by Software Engineering Studio Project in Osaka University, IT forum OACIS, EASE project, Tokyo, March 15, 2005

“A Pragmatic Method for Enhanced Reusability and Evolution,” seminar at Toshiba, Tokyo, March 16, 2005

I have given seminars and tutorials at universities and for software professionals. During my sabbatical leave, I gave 14 invited seminars at universities in Europe and Canada.

Awards

1. ACM SIGSOFT distinguished paper award: Jarzabek, S. and Li, S. "[Eliminating Redundancies with a "Composition with Adaptation" Meta-programming Technique](#)," *Proc. ESEC-FSE'03, European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering*, ACM Press, September 2003, Helsinki, pp. 237-246
2. Best papers on Software Engineering from 13th *International Conference on Software Engineering and Knowledge Engineering, SEKE'01*, Knowledge System Institute, June 2001, Buenos Aires, Argentina: Stan Jarzabek, Wai Chun Ong and Hongyu Zhang "[Handling Variant Requirements in Domain Modeling](#)," *Journal of Software and Systems*, Vol. 68, Issue 3, 15 Dec. 2003, pp.171-182
3. Best papers from 16th *Int. Conference on Software Engineering and Knowledge Engineering (SEKE'04)*: Jarzabek, S., Ru, S., Zhang, H. and Sun, Z. "Analysis of meta-programs: a case study," *Proc. 16th Int. Conference on Software Engineering and Knowledge Engineering (SEKE'04)*, Banff, Canada, June 2004, pp. 68-73; to appear in a special issue of *Journal of Software and Systems*

Research Grants

- 2008-10 NUS Research Grant, Towards a Model for Comparing and Evaluating Generative Techniques, S\$69,500
- 2005-08 NUS Research Grant, *Meta-level parameterization and generation for enhanced genericity*, S\$200,000
- 2005-06 NUS Research Grant, *Assessment and Dynamic Analysis of Meta-Programs*, S\$59,000
- 2004-05 NUS Research Grant, *Meta-programming: Elimination of Redundancies*, S\$61,000
- 1999-2002 Singapore-Ontario Joint Research Grant, NSTB, *Software Reuse Framework For Reliable Mission-Critical Systems*, S\$204,000 (Singapore component); competition was open to all the disciplines (engineering and science), with 1 project among 4 being selected for funding; our project was the only IT project that received funding
- 1999-2003 NUS Research Grant, *Engineering Variant Requirements in Component-based Software Product Lines*, S\$131,700
- 1995-99 NUS Research Grant, *Integrated Business-Software Evolution*, S\$58,500
- 1995-99 NUS Research Grant, *Multi-Domain Reuse Framework*, S\$106,500
- 1995-97 National Science and Technology Board, a grant for employment of a Postdoctoral Fellow
- 1992-95 NUS Research Grant, *Domain-driven Software Re-engineering*, S\$45,000
- 1986-89 National Science and Engineering Research Council, *Programming environments*, CND\$30,000
- 1984-85 Science & Engineering Research Board McMaster University, CND\$6,350

Teaching

At the graduate level, I like teaching courses that require active participation of students. I taught a course on software re-engineering and recently a course on product line approach to reuse [CS6201 Software Reuse](#) (PhD level).

Software engineering education is under a lively debate. I believe the role of universities is to teach students fundamental concepts, not over-emphasizing specific technologies which change so fast. Understanding fundamentals creates a reference point and shapes judgment that will help graduates adapt to changes throughout their careers. I am interested in developing software engineering curricula, in particular in software engineering project courses. I think the role of project courses is to teach how to apply proven principles in large-scale team-based software development. Based on that, I developed course [CS3215 Software Engineering Project](#). I was a Guest Editor of a special issue on Teaching Software Project Courses in Forum for Advancing Software Engineering Education (FASE), an internet journal.

Courses at NUS:

[CS3215 Software Engineering Project](#) , year 3
Object-Oriented Methods, year 3
Software Engineering, year 3
Software Architecture, year 4
Software Re-engineering, graduate course
[TCS6201 Software Reuse](#), graduate course

Courses at McMaster:

Introduction to Computer Programming for Science, year 1
Computer Architecture, year 1
Data Structures, year 2
Compiler Design, year 4
Formal Language Theory, year 4
Software Engineering, graduate course

Administrative responsibilities

at NUS (since 1995):

Coordinator of the Software Engineering Research Lab
Member of IT Management Committee
University representative to the Asian Universities Network
Member of the Incubator Management Committee
School Coordinator of Honours Year Projects
School Editorial Committee Member
Supervisor of the School's Technical Information Center
School Representative to the Science Library Committee
Member of the Curriculum Committee
Academic Advisor, Software Engineering Area of Focus
University Host to Exchange Students
Member of the Social and Recreation Committee

at McMaster:

Appointment Committee Member
Technical Report Editor

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