

CV

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Education:

Habilitation (2014), Institute of Computer Science, Warsaw Technical University

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:

2014-now Professor (Nadzwyczajny), Faculty of Computer Science, Bialystok University of Technology, Poland

1992-2015 Associate Professor, Department of Computer Science, School of Computing, National University of Singapore (tenure in 97)

2000-06 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

My long-term research area is software engineering, in which I specialize in software architecture design and evaluation, software reuse (design of re-configurable software, adaptable to varying user requirements), software requirements engineering, modeling, software generation, software maintenance and re-engineering. I derive inspiration for my research from industrial software development practice, and work closely with industry partners applying and evaluating our methods in real-world projects.

I lead software reuse research at Software Engineering Lab, NUS, where we develop productivity methods and tools that we apply in lab studies first, and then evaluate them in industrial projects. With students and industrial collaborators, we developed ART (Adaptive Reuse Technique, art.comp.nus.edu.sg) for flexible software configuration and adaptation, and Clone Miner for detecting similarity patterns in software systems. We applied both techniques in industrial software development and documented the results in publications.

Software reuse is based on the premise that much similarity exists in software systems. This is particularly true for system families in a given application domain. Reuse attempts to identify and automate routine, repetitive development tasks. While the progress towards practical solutions is slow, reuse remains the most promising approach in the horizon to improving software quality and productivity.

The main technical challenge in reuse is variability management in reusable assets such as code, architecture, documentation (e.g., written in WORD), models, or test cases. Reusable assets must be adapted to multiple contexts in which they are reused. In this context, our ART is a variability management technique that helps design code components and other software assets (documentation, test cases) for ease of adaptation. We have applied ART (and its predecessor XVCL xvcl.comp.nus.edu.sg) for reuse in a range of application domains (command & control systems, business applications, games for mobile phones, Web portals, class libraries, Linux operating system), written in variety of programming technologies (C, Java, ASP, .NET, JEE). Much of my published work since 2000 demonstrates efficacy and scalability of ART.

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, ST Electronics (Info-Software Systems) Pte Ltd and Netron, Inc, Toronto. This project led to ART.

Another line of our research is re-engineering legacy code for reuse. We can reuse components that are similar across systems; therefore analysis of software similarities is the prerequisite to re-engineering for reuse. We developed software **structural clone detection** method for finding similar program structures in systems such as classes, files or directories. Our method extends earlier research on software clones that addressed similar code fragments only. We developed a tool called Clone Miner [2] that detects structural clones, and Clone Analyzer [56] that allows a human expert to participate in post-detection analysis of software clones. Our experimental work demonstrated usefulness of structural clones in software re-engineering for reuse, program understanding and design recovery.

In recent years, I extended my work to **mHealth**, the use of mobile technology in healthcare to improve health outcomes. My team taps the unique potentials of mobile technology for effective delivery of healthcare interventions: Equipped with suitable software apps and sensing technology, mobile phones can collect patient's data to remotely monitor patient's condition. The data can be feedback to the doctor in real-time, before the patient's next visit to her doctor. Based on the feedback, the doctor may check the progress of the therapy and the patient's compliance to the recommended course of treatment; identify early symptoms of risks (heart failure); prevent relapse; monitor the impact of newly prescribed medications on patient's condition, adjust the dosage of the medication or change the medication in case of side-effects. All this can be done before the patient's next visit to the clinic. mHealth solutions may be beneficial for people living in remote areas, without easy access to doctors.

I work with doctors at the Psychological Medicine at NUS on innovative mobile apps that assist patients in following the doctor-recommended Cognitive Behavioral Therapy (CBT) interventions [Video-demo of CBT Assistant](#) . We explore advanced computer technologies for effective delivery of CBT interventions: cloud computing for scalability, context-awareness for understanding the user environment and inferring the user's

emotional states from mobile phone usage and physiological sensor data (supported by a grant from Microsoft Research Asia). I am also interested in using mobile phones in large-population well-being surveys. For that we developed mobile versions of validated pen-paper mood self-assessment scales [MMS Video Demo](#) [PAD-SAM Video Demo](#).

Industry collaborations: We have been working with industry partners, namely ST Electronics (Info-Software Systems) Pte Ltd, Paul Basset (Cutter Consortium), and Fudan Wingsoft Ltd. Collaboration with ST Electronics led to the first application of XVCL in industry setting [65]. Paul Bassett is an inventor of frame concepts, and former Research Director of Netron Inc., a company that developed Frame Technology™, a predecessor of XVCL. We have 10 year history of fruitful collaboration with ST Electronics and Paul Bassett, documented in published papers. Fudan Wingsoft Ltd is a university-affiliated software company China, a developer of financial software for universities. Our collaboration centers on Fudan Wingsoft's financial software SPL [53]. We study conventional variability management techniques Wingsoft uses to manage variability in core assets, and apply XVCL to achieve similar goals, evaluating the benefits and trade-offs.

Teaching

We live in the world of rapid technological changes. I believe the role of universities is to teach students new technologies, but even more important - fundamental concepts behind technologies. Understanding fundamentals creates a reference point and shapes judgment that will help graduates quickly learn new technologies and adapt to changes throughout their careers.

I teach courses on software reuse and maintenance for PhD and Master students. For undergraduates, I teach software engineering project course. I like teaching courses with active participation of students.

I specialize in practice-oriented, team-based software project courses (CS3201/2) in which students learn how to apply proven engineering principles and best practices to develop a sizable software system. My project course is based on these premises: Most of the students must see good design and experience its benefits before they can come up with good design on their own. I identified a model problem that is particularly useful in teaching design-in-the-large (just like stacks and queues serve the purpose of teaching abstract data types and design-in-the-small). Students work in teams of six, do modular decomposition, architecture design and learn to specify component interfaces. This part is closely monitored by supervisors during weekly consultation sessions, to give students early feedback and opportunity to refine their design. Students follow up with implementation (10-15KLOC) in iterative development. We emphasize design for change, reliability and quality documentation. At the end, students present their projects, and we test programs using our regression testing tool comprising 400 test cases.

In 1990s, industry often hinted at poor development skills of our graduates. I developed the above project course to address this challenge. I developed courseware and have been teaching the course ever since, every year refining the course teaching method and tool infrastructure. Despite heavy load (project course is equivalent to two normal courses) students like the course. We observe huge difference in student's ability to tackle the project work at the beginning and at the end of the course.

The teaching concept, methodology and experiences teaching project courses have been published in:

Jarzabek, S. "Teaching Advanced Software Design in Team-Based Project Course," *26th IEEE-CS Conf. on Software Engineering Education and Training (CSEET)*, San Francisco, May 2013, pp. 35-44

Courses taught at NUS:

- CS301/CS3202 Software Engineering Project course, year 3
- Object-Oriented Methods, year 3
- Software Engineering, year 3
- Software Architecture, year 4
- Software Re-engineering, graduate course
- S CS6201 Software Reuse, graduate course

Courses taught 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

Currently supervised students:

2 PhD students, titles of PhD thesis:

Service Variability and Profitability Models

The Concept and Detection of Collaborative Clones

9 Final Year Research Projects working on mHealth apps

Graduated Students under my Supervision:

5 PhD students, 16 Master students, 6 Research Assistant, 50 Undergraduate Research students, 10 overseas interns

PhD thesis titles:

Managing Variability in Reuse, Software Product Line Approach (Zhang Hongyu, 2003)

Structural Clones: Concepts and Effective Algorithms for Their Detection (Hamid Basit, 2006)

Using Similarity Patterns in Developing Web Applications: An Approach to Enhance Reuse and Maintainability (Damith Rajapakse, 2006)

Reengineering Legacy Software into Software Product Line (Xue Yinxing, 2012)

Exploiting Similarity Patterns to Build Generic Test Case Templates for Software Product Line Testing, (Suriya Priya Asaithambi, 2014)

Consultancy

Software design, expert witness in disputes about potential plagiarism of design and code.

Expert consultant on software design: Evaluation and second opinion on software design of a system under development, or existing system; propose and evaluate alternative designs; finding potential faults.

Expert witness in software plagiarism: Cases of dispute about potential plagiarism in court cases involving design plagiarism, code plagiarism, IP. Providing opinion regarding the reasons for project failures.

Publications

Books:

Jarzabek, S. [*Effective Software Maintenance and Evolution: Reused-based Approach*](#), Auerbach, CRC Press Taylor and Francis, May 2007 (480 pages)

Rajapakse, D.C. and Jarzabek, S. [*Using Similarity Patterns in Developing Web Applications: An Approach to Enhance Reuse and Maintainability*](#), VDM Verlag, 2010 (156 pages)

Basit, H. and Jarzabek, S. "[Towards Structural Clones: Analysis and semi-automated detection of design-level similarities in software](#)," VDM Verlag, 2010 (172 pages)

Articles in refereed journals:

1. Rajapakse, D. and Jarzabek, S. "[Towards generic representation of web applications: solutions and trade-offs](#)," *Software, Practice & Experience*, Volume 39 Issue 5, April 2009, pp. 501 – 530, Published Online: 27 Nov 2008
2. Basit, H. A., Jarzabek, S. "[Data Mining Approach for Detecting Higher-level Clones in Software](#)," *IEEE Trans. on Soft. Eng.*, July/August 2009 (vol. 35 no. 4) pp. 497-514; Published online January 2009

3. 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
4. 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
5. 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
6. 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
7. 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
8. 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
9. 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
10. 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
11. 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
12. Jarzabek, S. "[Design of Flexible Static Program Analyzers with POL](#)," *IEEE Transactions on Software Engineering*, March 1998, pp. 197-215
13. 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
14. Jarzabek, S. and Huang, R. "[The case for User-Centered CASE Tools](#)," *Communications of ACM*, August 1998, pp. 93-99
15. 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
16. 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
17. 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
18. Jarzabek, S. "Domain Model-Driven Software Reengineering and Maintenance," *Journal of Systems and Software*, January 1993, 20:37-51
19. Jarzabek, S. "Research Trends in Software Development Environments," *Information Technology Journal*, April 1991, vol. 4, no. 1, 9-14
20. Jarzabek, S. "Specifying and Generating Multi-Language Software Development Environments," *Software Engineering Journal*, IEE and British Computer Society, March 1990, 125-137
21. 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
22. Jarzabek, S. and Krawczyk, T. "LL-Regular Grammars," *Information Processing Letters*, No. 2, vol. 4, 1975

Letters to editors, editorials:

23. Gnesi, S. and Jarzabek, S Editorial, Special Section on the 17th Int. Software Product Line Conference, *Int. Journal on Software Tools and Technology Transfer*, October 2015, vol. 17, Issue 5 , pp. 555-557
24. Jarzabek, S. "Will MDD Fulfill It's Promises?" *IEEE Software*, Jan/Feb 2004, pp.5-6

Articles in refereed international conference proceedings:

Published

25. Le Minh Khue, Eng Lih Ouh and Stan Jarzabek. "[Mood Self-Assessment on Smartphones](#)", *Wireless Health*, October 2015, National Institutes of Health, Bethesda, USA, art 19, 8 pages
26. Jarzabek, S. and Kumar, K. "Weak Separation of Tightly Coupled Concerns with Generic Program Representation," *17th KKIO Software Engineering Conference*, Miedzyzdroje, September 2015; published in *From Requirements to Software: Research and Practice*, Ed. P. Kosiuczenko and M. Smialek, Polish Information Processing Society, Chapter 8, pp. 119-136, (**Best Paper award**)

27. Ouh Eng Lich and Stan Jarzabek "[A Conceptual Model to Evaluate Decisions for Service Profitability](#)," *7th Int. Conf. on Advanced Service Computing, Nice, France, March 2015*, pp. 61-66
28. Basit, H.A, Hammad, M. Jarzabek, S. and Koschke, R. "What do we need to know about clones? Deriving information needs from user goals," *IEEE 9th Int. Workshop on Software Clones, IWSC*, March 2015, Montreal, pp. 51-57
29. Suriya Priya R Asaithambi and Stan Jarzabek "Pragmatic Approach to Test Case Reuse - A case study in Android OS BiDiTests Library," *Int. Conference on Software Reuse, ICSR'2015*, Florida, USA, January 2015, pp. 122-138
30. Kuldeep Kumar and Stan Jarzabek, "Detecting Design Similarity Patterns Using Program Execution Traces", *ACM SIGPLAN Conf. on Systems, Programming, Languages and Applications: Software for Humanity (SPLASH-2014)*, October 20-24, 2014, pp. 55-56
31. Tan, Q.Y., Jarzabek, S. and Wadhwa, B. "[CBT Assistant: mHealth App for Psychotherapy](#)," *IEEE Global Humanitarian Technologies Conference, GHTC'2014 South Asia*, Trivandrum, India, September 2014, pp. 135-140
32. Ouh, E.L. and Jarzabek, S. "[Understanding Service Variability for Profitable Software as a Service: Service Providers' Perspective](#)," *26th Int. Conf. on Advanced Information Systems Engineering, CAiSE*, Thessaloniki, June 2014, pp. 9-16
33. Gabor Novak, Darren Carlson, Stan Jarzabek "[An Extensible Mobile Platform for mHealth and Telemedicine Applications](#)," *Proc. Mobile and Information Technologies in Medicine and Health*, Prague, November 2013
34. Gabor Novak, Darren Carlson, Stan Jarzabek "[An Adaptable and Extensible Mobile Sensing Framework for Patient Monitoring](#)," *IEEE 9th Int. Conf. on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP)*, Singapore, April 2014
35. Xing, Z., Xue, Y. and Jarzabek, S. "Distilling Useful Clones by Contextual Differencing," *20th IEEE Working Conference on Reverse Engineering, WCRE*, Koblenz, October 2013, pp. 102-111
36. Dan, D., Jarzabek, S. and Ferenc, R. "Configuring Software for Reuse with VCL," *13th Symp. on Programming Languages and Software Tools, SPLST*, August 26-27, 2013, Szeged, Hungary, pp. 16-30
37. Wenyi Qian, Xin Peng, Zhenchang Xing, Stan Jarzabek and Wenyun Zhao "Mining Logical Clones in Software: Revealing High-Level Business and Programming Rules," *29th IEEE Int. Conference on Software Maintenance, ICSM*, September 2013, Eindhoven, The Netherlands, pp. 40-49
38. Xing, Z., Xue, Y. and Jarzabek, S. "A Large Scale Linux-Kernel based Benchmark for Feature Location Research," *Int. Conf. on Software Engineering*, San Francisco, May 2013, pp. 1311-1314
39. Asaithambi, S.P.R and Jarzabek, S. "Towards Test Case Reuse: A Study of Redundancies in Android Platform Test Libraries," *Int. Conf. on Software Reuse, ICSR'2013*, Pisa, Italy, June 2013, pp. 49-64
40. Jarzabek, S. "Teaching Advanced Software Design in Team-Based Project Course," *26th IEEE-CS Conf. on Software Engineering Education and Training (CSEET)*, San Francisco, May 2013, pp. 35-44
41. Asaithambi, Suriya Priya R., and Stan Jarzabek. "Generic adaptable test cases for software product line testing," *3rd ACM Annual Conference on Systems, programming, and Applications: software for humanity, SPLASH-12*, Tucson, USA, 2012, pp. 33-36
42. Xue, Y., Xing, Z. and Jarzabek, S. "[Feature Location in a Collection of Product Variants](#)," *19th Working Conf. on Reverse Engineering, WCRE*, Kingston, Canada, October 2012, pp. 145-154
43. Basit, H., Usman, A. and Jarzabek, S. "[Things Structural Clones Tell that Simple Clones Don't](#)," *28th Int. Conf. on Software Maintenance, ICSM*, Trento, Italy, Sept. 2012, pp. 275-284
44. Xing, Z., Xue, Y. and Jarzabek, S. "[CloneDifferentiator: Analyzing Software Clones by Differentiation](#)," *26th IEEE/ACM Int. Conf. on Automated Software Engineering, ASE*, Lawrence, USA, Nov. 2011, pp. 576-579
45. Jarzabek, S and Trung, H. D. "Flexible Generators for Software Reuse and Evolution," *Int. Conf. on Software Eng., ICSE'2011*, New Ideas and Emerging Results Track, Honolulu, USA, May 2011, pp. 920-923
46. Jarzabek, S, Pettersson, U. and Zhang, H. "University-Industry Collaboration Journey towards Product Lines," *Int. Conf. on Software Reuse, ICSR'2011*, S. Korea, June 2011, pp. 223-237
47. Zhu, J., Peng, X., Jarzabek, S., Xing, Z., Xue, Y., and Zhao, W. "Improving Product Line Architecture Design and Customization by Raising the Level of Variability Modeling," *Int. Conf. on Software Reuse, ICSR'2011*, S. Korea, June 2011, pp. 151-166
48. Xue, Y, Jarzabek, S., Ye, P., Peng, X., and Zhao, W. "Scalability of Variability Management: An Example of Industrial Practice and Some Improvements," *23rd Int. Conf. Soft. Eng and Knowledge Eng, SEKE*, July 2011, USA, pp. 705-710
49. Basit, H., Ali, U. and Jarzabek, S. "Viewing Simple Clones from a Structural Clones' Perspective," *Int. Workshop on Software Clones, IWSC'2011*, ICSE Workshop, Honolulu, USA, May 2011, pp. 1-6
50. Xue, Y., Xing, Z. and Jarzabek, S. "[Understanding Feature Evolution in a Family of Product Variants](#)," *17th Working Conf. on Reverse Engineering*, Boston, MA, October 2010, pp. 109-118
51. Zhang, H. and Jarzabek, S. "Hybrid Approach to Feature-Oriented Programming," *Software Product Lines Conference, SPLC'10: Going Beyond*, Lecture Notes in Computer Science, Springer, Aug. 2010, Volume 6287/2010, pp. 440-445
52. Jarzabek, S. Xue, Y., Zhang, H. and Lee, Y. "Avoiding Some Common Preprocessing Pitfalls with Feature Queries," *Proc. 16th Asia-Pacific Software Engineering Conference, APSEC'09*, Penang, Dec. 2009, pp.283-290

53. Ye, P., Peng, X., Xue, Y. and Jarzabek, S. "A Case Study of Variation Mechanism in an Industrial Product Line," *11th Int. Conf. on Software Reuse, ICSR09*, Falls Church, VA, USA, Sept. 27-30, 2009, Springer, pp. 126-136
54. Stan Jarzabek, Hongyu Zhang, Youpeng Lee, Yinxing Xue, Naveed Shaikh "Increasing Usability of Preprocessing for Feature Management in Product Lines with Query-based Visualization," *Int. Conf. Software Engineering, ICSE'09*, Vancouver, Canada, May 2009, pp. 111-114 (a track on New Ideas and Emerging Results)
55. Basit, H. and Jarzabek, S. "A Case for Structural Clones," *3rd Int. Workshop on Software Clones, IWSC'2009*, Kaiserslautern, Germany, Tuesday, March 24, 2009, pp. 18-22
56. Yali Zhang, Hamid Abdul Basit, Stan Jarzabek, Dang Anh, and Melvin Low "[Query-based Filtering and Graphical View Generation for Clone Analysis](#)," *Proc. 24th IEEE Int. Conf. on Software Maintenance, ICSM'08*, Beijing, September 2008, pp. 376-385
57. Lok Fang Fang Stella, Stan Jarzabek and Bimlesh Wadhwa "A Comparative Study of Maintainability of Web Applications on J2EE, .NET and Ruby on Rails," *10th IEEE Int. Symp. on Web Site Evolution*, Beijing, October 2008
58. 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
59. 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
60. 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
61. Peng, D., Jarzabek, S., Rajapakse, D. and Zhang, H. "Reuse of Database Access Layer Components in JEE Product Lines: Limitations and a Possible Solution (Case Study)," *Proc. 9th Int. Conf. on Soft. Eng & Knowledge Eng, SEKE'07*, Boston, July 2007, pp. 308-313
62. 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
63. 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
64. 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
65. 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
66. 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
67. 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
68. 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
69. 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)
70. 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
71. 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
72. 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*
73. 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, ACP4IS'04*, March 22-26, 2004, Lancaster UK
74. 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**
75. 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

76. 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
77. 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
78. 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
79. 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
80. 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
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82. 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
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84. 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*
85. 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
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88. 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
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98. 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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108. Jarzabek, S. "From Reuse Library Experiences to Application Generation Architectures," *Proc. Symposium on Software Reusability, SSR'95*, Seattle, USA, April 28-30, 1995, ACM Press, pp. 114-122
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111. Jarzabek, S. and Lim, W.M. "Modeling in Strategic Reengineering," *Proc. 6th Int. Conference on Software Engineering and Knowledge Engineering*, Riga, Latvia, June 1994, published by Knowledge System Institute, USA, pp. 249-256
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114. Jarzabek, S., Tan, C.L. and Tham, K. "An Object-oriented Model for Recovered Designs in Software Reengineering," *Proc. of the InfoScience'93*, Seoul, Korea, October 1993, pp. 217-224
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116. Jarzabek, S "Strategic Reengineering of Software: Lifecycle Approach," *Proc. 6th Int. Workshop on CASE, CASE'93*, IEEE Computer Society, Singapore, July 1993, pp. 211-220
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118. Tan, W.G. and Jarzabek, S. "Current practices and Future Needs of Software Maintenance in Singapore," *Proc. SCS Silver Jubilee Conference on Software Engineering: New technologies & Business Payoffs*, Singapore, October 1992, pp. 121-135
119. Jarzabek, S. "Domain Model-Driven Software Reengineering," In *Workshop Notes of AAAI-92 AI & Automated Program Understanding*, July 1992, San Jose, California, pp. 72-75
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122. Jarzabek, S. "From Object-Oriented Analysis and Design to Implementation," *Proc. International Conference on Object-Oriented Programming*, organized by Systems Education Centre, Singapore, February 1991, pp. 1-21
123. Jarzabek, S. "Towards Integration of CASE Back-End Tools," *Proc. CASE'90 Fourth International Workshop on CASE*, (IEEE Computer Society), December 1990, Irvine, pp. 14-15
124. Jarzabek, S. and Tan, C.L. "A Reusability Framework for Software Reengineering," *Proc. Joint Conference on Software Engineering, JCSE'93*, Fukuoka, Japan, November 1993, pp. 381-388
125. Jarzabek, S. "A Method for Specifying Form-Oriented User Interfaces," *Proc. International Computer Conference*, Taipei, Dec. 1988, vol. I, pp. 100-105
126. 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
127. 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)
128. Jarzabek, S. "Software Environments for Development, Maintenance, and Reuse of Software Descriptions," *Proc. CIPS CONGRESS'87*, Winnipeg, Manitoba, May 1987, 201-208
129. Jarzabek, S. "Language-Independence of Project Information Bases," *Proc. Second Kansas Conference on Knowledge-Based Software Development*, Manhattan, Kansas, October 1986
130. Jarzabek, S. "Generation of Software Production Environments," *Proc. ACM Computer Science Conference*, (ACM), February 1986, Cincinnati (Research in Progress Abstract)
131. Jarzabek, S. "Introduction to the Compiler Production System," *Proc. of the INFOGRYF'80*, 1980, Kolobrzeg, Poland
132. Jarzabek, S. "Automatic Generation of Program Optimizers," *Proc. of the INFORMATICA'79*, 1979, Bled

Short papers in refereed international conference proceedings

133. Kuldeep Kumar, Stan Jarzabek and Dan Daniel "ART: a Meta-programming Language for Configuring Variants in Software," poster at *12th Asian Symp. On Programming Languages and Systems APLAS*, Nov. 2014
134. Jarzabek, S. "Pragmatic strategies for variability management in software product lines," *Int. Conf. on Software Reuse, ICSR'2011*, S. Korea, June 2011, pp. 244-245
135. Jarzabek, S. "Pragmatic strategies for variability management in product lines in small- to medium-size companies," *Proc. 14th International Software Product Line Conference*, Jeju, S. Korea, Sept. 2010, pp. 503-504
136. Jarzabek, S. "Pragmatic strategies for variability management in product lines in small- to medium-size companies," *Proc. 13th International Software Product Line Conference*, San Francisco, Aug. 2009, p. 327
137. Jarzabek, S. "[Variability Management for Product Lines with XVCL](#)," *11th Int. Software Product Line Conf., SPLC'07*, Kyoto, Sept. 2007, pp. 13-14
138. 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
139. 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)
140. 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
141. 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
142. 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. Jarzabek, S. "Software Reuse Beyond Components with XVCL," *2nd Summer School on Generative and Transformational Techniques in Software Engineering, GTTSE'07*, Braga, Portugal, July 2007, LNCS 5235, Springer-Verlag Berlin Heidelberg, 2008, pp. 47-77
2. 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.
3. 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

4. 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
5. Jarzabek, S. “EPDS: An Educational Program Development System,” in *The Information Edge: The Future for Educational Computing*, Rasmussen, Bruce (Editor), Brisbane, July 1985
6. 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”.

Oral Presentation

Teng, J.Y., Jarzabek, S., Wadhwa, B., Kayanoth, R., Wong, J. “A psychotherapy mobile app for social anxiety”, *3rd Conference European Society for Research on Internet Interventions, ESRII’2015*, Warsaw, Poland, September 2015

Conference Organization and PC Member

ICSR Int. Conference on Software Reuse 2015: Co-Chair PhD Symposium

SPLC Int. Software Product Line Conference

2013: PC Co-Chair; 2007-2011: PC member, Demo and Poster Chair, Doctoral Symposium panel member, Panelist (session on Quality of SPL assets); Co-Editor SPLC, 2010 proceedings

ICSR, Int. Conference on Software Reuse: 2005-2013, PC member, Tutorial Chair

CSEE&T, Conference on Software Engineering Education and Training, May 22-24, 2011, co-located with ICSE’2011: Tutorial Chair, PC member

IWSC, Int. Workshop on Software Clones: 2009-2011, co-organizer and PC member

GPCE Generative Programming and Component Engineering ([GPCE’06](#)): General Chair October 22-26, 2006, Portland, Oregon, co-located with OOPSLA; PC member

Co-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

I have been a PC member at WWW, Int. Conf. on Software Maintenance (ICSM), Int. Conference on Software Reuse (ICSR), SCAM, PEPM, Software product Line Conf (SPLC), QSIC, VAMOS, 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

Guest Editor of a special issue on Teaching Software Project Courses in Forum for Advancing Software Engineering Education (FASE), an internet journal.

Invited talks and tutorials given at international conferences

1. Incited talk: “mHealth Opportunities in Asia-Pacific,” IEEE Asia-Pacific Conference on Wireless and Mobile, August 2014, Bali, Indonesia
2. Invited seminar: “How technology can help healthcare,” Dept. Psychological Medicine, National University of Singapore
3. ½ day tutorial, Pragmatic Strategies for Variability Management in Software Product Lines in Small- to Medium-Size Companies, ICSR’2011, SPLC 2010, APSEC 2009, SPLC 2009, ICSR’2008
4. ½ day tutorial: *Problems We Can Solve with Power-Generics*, at GPCE/OOPSLA Nashville, Oct. 2008
5. Full-day tutorial: *Variability Management for Product Lines with a Generative Technique*, at ICSR’08, Beijing, May 2008
6. ½ day tutorial: *Variability Management for Product Lines with a Generative Technique*, Software Product Line Conference, SPLC’07, Sept. 2007, Kyoto
7. Invited lectures at 2nd Summer School on Generative and Transformational Techniques in Software Engineering, GTTSE’07, Braga, Portugal, July 2007
8. 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
9. 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.
10. ½ tutorial on “Pragmatic approach to reuse-based Engineering of Web Applications” at [ESEC-FSE’05](#)
11. ½ day tutorial: *Cost-Effective Engineering of Web Applications*, at Int. Conf. on Web Engineering

12. ½ day tutorials on XVCL at ICSR July 04 and ICSM Sept 04.
13. "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
14. "A Pragmatic Method for Enhanced Reusability and Evolution," seminar at Toshiba, Tokyo, March 16, 2005
15. 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.

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

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.

Awards

1. Best Paper Award: Jarzabek, S. and Kumar, K. "Weak Separation of Tightly Coupled Concerns with Generic Program Representation," 17th KKIO Software Engineering Conference, Miedzyzdroje, September 2015
2. 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
3. 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
4. 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; appeared in a special issue of *Journal of Software and Systems*

Research Grants

2013-15	Microsoft Research Asia Grant, Inferring Mood, USD20,000
2010-12	NUS Research Grant, Flexible Generators: Applying Generators in Software Reuse and Evolution, S\$31,744 (R-252-000-422-112)
2009-11	NUS Research Grant, New Tools for XVCL Workbench and Exploring Non-Software Application Domains for XVCL, S\$60,000 (R-252-000-382-112)
2008-11	NUS Research Grant, Towards a Model for Comparing and Evaluating Generative Techniques, S\$69,500 (R-252-000-336-112)
2005-09	NUS Research Grant, <i>Meta-level parameterization and generation for enhanced genericity</i> , S\$200,000
2005-06	NUS Research Grant, <i>Assessment and Dynamic Analysis of Meta-Programs</i> , S\$59,000
2004-05	NUS Research Grant, <i>Meta-programming: Elimination of Redundancies</i> , S\$61,000
1999-2002	Singapore-Ontario Joint Research Grant, NSTB, <i>Software Reuse Framework For Reliable Mission-Critical Systems</i> , 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, <i>Engineering Variant Requirements in Component-based Software Product Lines</i> , S\$131,700
1995-99	NUS Research Grant, <i>Integrated Business-Software Evolution</i> , S\$58,500
1995-99	NUS Research Grant, <i>Multi-Domain Reuse Framework</i> , S\$106,500
1995-97	National Science and Technology Board, a grant for employment of a Postdoctoral Fellow
1992-95	NUS Research Grant, <i>Domain-driven Software Re-engineering</i> , S\$45,000
1986-89	National Science and Engineering Research Council, <i>Programming environments</i> , CND\$30,000
1984-85	Science & Engineering Research Board McMaster University, CND\$6,350

Service

Curriculum Committee member (rep for software engineering)
Member of an Executive Committee of the Institute of Felicitous Computing
Member of International Advisory Committee for Cooperation between South-East Asia and European Union
Member of Plagiarism Committee
A judge in Singapore Science and Engineering Fair
Coordinator of the Software Engineering Research Lab
Member of IT Management Committee
University representative to the Asian Universities Network
Representative to Science Library
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
Founding member of Chopin Society Singapore

at McMaster:

Appointment Committee Member
Technical Report Editor

--- The End ---