Rick Kazman, Ph.D.

Danny and Elsa Lui Distinguished Professor of Information Technology Management
University of Hawaii, Honolulu, HI, USA
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Education

Ph.D., Carnegie Mellon University, Pittsburgh, PA, 1991

M.Math, University of Waterloo, Waterloo, Canada, 1986

M.A., York University, Toronto, Canada, 1982

B.A., University of Waterloo, Waterloo, Canada, 1981

Research Interests

Software Design, Technical Debt, IT Economics, Socio-Technical Congruence, Automated Software Analysis, Software System Sustainability

Academic Employment History

Professor, Department of Information Technology Management, University of Hawaii, August 2000 - present.

Visiting Researcher, Software Engineering Institute, Carnegie Mellon University, September 2000 - 2024.

Senior Member of Technical Staff, Software Engineering Institute, Carnegie Mellon University, September 1996 - August 2000.

Adjunct Associate Professor, Department of Computer Science, University of Waterloo, September 1996 - 2003.

Adjunct Associate Professor, Department of Computer Science, University of Toronto, September 1997 - 2000.

Assistant Professor, Department of Computer Science, University of Waterloo, September 1992 - August 1996.

Instructor, Department of Linguistics, University of Pittsburgh, September 1991 - August 1992.

Member of Technical Staff, Software Engineering Institute, Carnegie Mellon University, June 1991 - August 1992.

Research Assistant, Software Engineering Institute, Carnegie Mellon University, June 1988 - May 1991.

Awards and Honors

Invited Presentations

1. Keynote Speaker, 2nd International Workshop on Designing Software, International Conference on Software Engineering (ICSE) 2025, Ottawa, Canada, April 2025.

2. Keynote Speaker, 3rd International Workshop on Responsible AI Engineering, International Conference on Software Engineering (ICSE) 2025, Ottawa, Canada, April 2025.

3. Keynote Speaker, Conference on Systems Engineering Research (CSER) 2023, Hoboken, NJ, March 2023.

4. Keynote Speaker, Digital Sustainability Center at Vrije Universiteit Amsterdam, January 2023.

5. Keynote Speaker, The 13th ACM SIGCHI Symposium on Engineering Interactive Computing Systems, Eindhoven, Netherlands, June 2021.

6. Keynote Speaker, 32nd IEEE International Conference on Software Engineering Education & Training (CSEE&T 2020), November 2020.

7. Keynote Speaker, 6th International Workshop on Software Engineering for Systems-of-Systems and 13th Workshop on Distributed Software Development, Software Ecosystems and Systems-of-Systems at the International Conference on Software Engineering (ICSE) 2019, Montreal, Canada, May 2019.

8. Keynote Speaker, 12th European Conference on Software Architecture (ECSA 2018), Madrid, Spain, September 2018.

9. Keynote Speaker, 1st International Workshop on Establishing a Community-Wide Infrastructure for Architecture-Based Software Engineering at the International Conference on Software Engineering (ICSE) 2017, Buenos Aires, Argentina, May 2017.

10. Keynote Speaker, 4th International Workshop on Crowdsourcing in Software Engineering (CSI-SE) at the International Conference on Software Engineering (ICSE) 2017, Buenos Aires, Argentina, May 2017.

11. Keynote Speaker, 4th International Workshop on Green and Sustainable Software at the International Conference in Software Engineering (ICSE) 2015, Florence, Italy, May 2015.

12. Keynote Speaker, 3rd International Workshop on Software Engineering for Systems-of-Systems at International Conference in Software Engineering (ICSE) 2015, Florence, Italy, May 2015.

13. Keynote Speaker, 4th International Workshop on the Twin Peaks of Requirements and Architecture at International Conference in Software Engineering (ICSE) 2014, Hyderabad, India, June 2014.

14. Keynote Speaker, Korean Software Engineering Society, Seoul, Korea, August 2010.

15. Keynote Speaker, Application Landscapes in Banks and Insurance Workshop at Informatik 2008, Germany, September 2008.

16. Keynote Speaker, Boeing Software Architecture Conference, July 2008.

17. Keynote Speaker, 1st International Workshop on Management and Economics of Software Product Lines at the Asia-Pacific Software Engineering Conference (APSEC) 2007, Nagoya, Japan, December 2007.

18. Keynote Speaker, Software Engineering Conference (Russia) 2007, Moscow, Russia, November

2007.

19. Keynote Speaker, International Computer Symposium 2006, Taipei, Taiwan, December 2006.

20. Keynote Speaker, Asia-Pacific Software Engineering Conference (APSEC) 2005, Taipei, Taiwan, December 2005.

21. Keynote Speaker, ASERC Workshop on Software Architecture 2003, Banff, Canada, February 2003.

22. Keynote Speaker, SoftExpo 2001, Seoul, Korea, November 2001.

23. Keynote Speaker, NCR TIES Conference, Orlando, FL, October 2000.

24. Keynote Speaker, Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA '99), Denver, CO, November 1999.

25. Keynote Speaker, Philips Software Conference, Eindhoven, Holland, June 1999.

26. Keynote Speaker, National Security Administration (NSA) Reuse Symposium, Washington, D.C., August 1998.

27. Keynote Speaker, Lockheed Martin COTS/Reuse Symposium, Owego, N.Y., September 1997.

Awards

- IEEE Computer Society Distinguished Visitor, 2024.

- IEEE TCSE Distinguished Service Award, 2024.

- University of Hawaii Dennis Ching Teaching Award, 2005.

- Productivity Award for "Software Architecture in Practice", *Software Development Magazine*, 1999.

- SEI Achievement Award for "Software Architecture in Practice", 1998.

- Best Paper Award for "Accessing Multimedia through Concept Clustering", HICSS 30, 1997.

Research Contributions

Books

1. H. Cervantes, R. Kazman, *Designing Software Architectures: A Practical Approach, 2nd ed.,* Addison-Wesley, 2024.

2. L. Bass, P. Clements, R. Kazman, *Software Architecture in Practice*, 4th ed., Addison-Wesley, 2021.

3. N. Ernst, J. Delange, R. Kazman, *Technical Debt in Practice—How to Find It and Fix It*, MIT Press, 2021.

4. H. Cervantes, R. Kazman, *Designing Software Architectures: A Practical Approach,* Addison-Wesley, 2016.

5. L. Bass, P. Clements, R. Kazman, *Software Architecture in Practice*, 3rd ed., Addison-Wesley, 2012.

6. L. Northrop, P. Feiler, R. Gabriel, J. Goodenough, R. Linger, T. Longstaff, R. Kazman, M. Klein, D. Schmidt, K. Sullivan, and K. Wallnau, *Ultra-Large-Scale Systems: The Software Challenge of the Future*. Software Engineering Institute, Carnegie Mellon University, Pittsburgh, PA, 2006

7. L. Bass, P. Clements, R. Kazman, *Software Architecture in Practice*, 2nd ed., Addison-Wesley, 2003.

8. P. Clements, R. Kazman, M. Klein, *Evaluating Software Architectures: Methods and Case Studies*, Addison-Wesley, 2001.

9. L. Bass, P. Clements, R. Kazman, *Software Architecture in Practice*, 1st ed., Addison-Wesley, 1998.

Patents

1. "Identifying and quantifying architectural debt and decoupling level; a metric for architectural maintenance complexity", Yuanfang Cai, Lu Xiao, Rick Kazman, Ran Mo, Filed 2017.

2. "Feature Decoupling Level", Yuanfang Cai, Ran Mo, Rick Kazman, Filed 2019.

3. "System for achieving insights through interactive facet-based architecture recovery (I-FAR)", Filed 2021.

Refereed Journal Publications

1. A. Abdelfattah, T. Cerny, M. Chy, M. Uddin, S. Perry, C. Brown, L. Goodrich, M. Hurtado, M. Hassan, Y. Cai, R. Kazman, *Multivocal Study on Microservice Dependencies Reference*, *Journal of Systems and Software*, accepted for publication, 2025.

2. H. Fang, Y. Cai, E. Tempero, R. Kazman, Y-C Tu, J. Lefever, E. Pisch "A Holistic Approach to Design Understanding through Concept Explanation", *IEEE Transactions on Software Engineering*, 2025, to appear.

3. C. Paradis, R. Kazman, M. Konrad, "A Socio-technical Perspective on Software Vulnerabilities: A Causal Analysis", *Information and Software Technology*, 176, December 2024

4. S. Ahmadjee, C. Mera-Gomez, S. Farshidi, R. Bahsoon, R. Kazman, "Decision Support Model for Selecting the Optimal Blockchain Oracle Platform: An Evaluation of Key Factors", *ACM Transactions on Software Engineering and Methodology*, to appear, 2024.

5. S. Fungprasertkul, R. Bahsoon, R. Kazman, "Technical Debt Monitoring Decision Making with Skin in the Game", *ACM Transactions on Software Engineering and Methodology*, 33:7, August 2024.

6. C. Paradis, R. Kazman, D. Tamburri, "Analyzing the Tower of Babel with Kaiaulu", *Journal of Systems and Software*, 210, April 2024.

7. Y. Cai, R. Kazman, "Software Design Analysis and Technical Debt Management based on Design Rule Theory", *Information and Software Technology,* 164, December 2023.

8. G. Marquez, H. Astudillo, R. Kazman, "Architectural Tactics in Software Architecture: A Systematic Mapping Study", *Journal of Systems and Software*, 197, March 2023.

9. D. Santos, B. Oliveira, R. Kazman, E. Nakagawa, "Evaluation of Systems-of-Systems Software Architectures: State of the Art and Future Perspectives", *ACM Computing Surveys*, 55:4, November 2022.

10. L. Duboc, F. Alrebeish, V. Nallur, R. Bahsoon, R. Kazman, P. Bianco, M. A. Babar, R. Buyya, "Systematic Scalability Modeling of QoS-Aware Dynamic Service Composition", *ACM Transactions on Autonomous and Adaptive Systems*, 16:3-4, November 2022, 1-39.

11. S. Chowdhury, R. Holmes, A. Zaidman, R. Kazman, "Revisiting the Debate: Are Code Metrics Useful for Measuring Maintenance Effort?", *Empirical Software Engineering*, 27:6, November 2022.

12. P. Antonino, R. Capilla, R. Kazman, T. Kuhn, F. Schnicke, T. Treichel, A. Bachorek, Z. Zhang, V. Salamanca, "Continuous Engineering for Industry 4.0 Architectures and Systems", *Software Practice and Experience*, 55:10, October 2022, 2241-2262.

13. W. Jin, D. Zhong, Y. Cai, R. Kazman, X. Zhang, T. Liu, "Evaluating the Impact of Possible Dependencies on Architecture-level Maintainability", *IEEE Transactions on Software Engineering*, 49:3, April 2022, 1064 - 1085.

14. L. Xiao, R. Kazman, Y. Cai, R. Mo, Q. Feng, "Detecting the Locations and Predicting the Costs of Compound Architectural Debts", *IEEE Transactions on Software Engineering*, 48:9, September 2022, 3686 - 3715.

15. D. Sobhy, L. Minku, R. Bahsoon, R. Kazman, "Continuous and Proactive Software Architecture Evaluation: An IoT Case", *ACM Transactions on Software Engineering and Methodology,* 31:3, July 2022, 1-54.

16. S. Rebai, V. Alizadeh, M. Kessentini, H. Fehri, R. Kazman, "Enabling Decision and Objective Space Exploration for Interactive Multi-Objective Refactoring", *IEEE Transactions on Software Engineering*, 48:5, May 2022, 1560-1578.

17. W. Mauerer, M. Joblin, D. Tamburri, C. Paradis, R. Kazman, S. Apel, "In Search of Socio-Technical Congruence: A Large-Scale Longitudinal Study", *IEEE Transactions on Software Engineering*, 48:8, May 2022, 3159-3184.

18. S. Ahmadjee, C. Mera-Gomez, R. Bahsoon, R. Kazman, "A Study on Blockchain Architecture Design Decisions and their Security Attacks and Threats", *ACM Transactions on Software Engineering and Methodology*, 31:2, April 2022, 1-45.

19. C. Abid, M. Kessentini, V. Alizadeh, M. Dhaouadi, R. Kazman "How Does Refactoring Impact Security When Improving Quality? A Security-Aware Refactoring Approach", *IEEE Transactions on Software Engineering*, 48:3, March 2022, 864-878.

20. D. Tamburri, R. Kazman, H. Fahimi, "On the Relationship Between Organisational Structure Patterns and Architecture in Agile Teams", *IEEE Transactions on Software Engineering*, 49:1, February 2022, 325 - 347.

21. A. Tang, R. Kazman, "Decision-Making Principles for Better Software Design Decisions", *IEEE Software*, 38, 6, November-December 2021, 98-102.

22. C. Abid, V. Alizadeh, M. Kessentini, M. Dhaouadi, R. Kazman, "Prioritizing Refactorings for Security Critical Code", *Automated Software Engineering,* 28:2, November 2021.

23. D. Sobhy, R. Bahsoon, L. Minku, R. Kazman, "Evaluation of Software Architectures under Uncertainty: A Systematic Literature Review", *ACM Transactions on Software Engineering and Methodology*, 30:4, June 2021, 1-50.

24. W. Yanez, R. Bahsoon, Y. Zhang, R. Kazman, "Architecting Internet of Thing Systems with Blockchain: A Catalog of Tactics", *ACM Transactions on Software Engineering and Methodology*, 30:3, May 2021, 1-46.

25. D. Tamburri, F. Palomba, R. Kazman, "Success and Failure in Software Engineering: A Followup Systematic Literature Review", *IEEE Transactions on Engineering Management,* 68, 2, April 2021, 599-611.

26. W. Jin, T. Liu, Y. Cai, R. Kazman, R. Mo, Q. Zheng, "Service Candidate Identification from Monolithic Systems based on Execution Traces", *IEEE Transactions on Software Engineering*, 47:5, May 2021, 987-1007.

27. R. Mo, Y. Cai, R. Kazman, L. Xiao, Q. Feng "Architecture Anti-patterns: Automatically Detectable Violations of Design Principles", *IEEE Transactions on Software Engineering*, 47:5, May 2021, 1008-1028.

28. D. Tamburri, F. Palomba, R. Kazman, "Exploring Community Smells in Open-Source: An

Automated Approach", *IEEE Transactions on Software Engineering*, March 2021, 47:3, 630-652.

29. M. Kessentini, S. Rebai, A. Amich, S. Molaei, R. Kazman, "Multi-Objective Code Reviewer Recommendations: Balancing Expertise, Availability and Collaborations", *Automated Software Engineering*, 27, September 2020.

30. R. Capilla, R. Kazman, C. Romera, C. Carillo, "Usability Implications in Software Architecture: The Case Study of a Mobile App", *Software: Practice and Experience*, 50:12, December 2020.

31. D. Tamburri, K. Blincoe, F. Palomba, R. Kazman, ""The Canary in the Coal Mine...": A Cautionary Tale from the Decline of SourceForge", *Software: Practice and Experience*, 50:10, October 2020.

32. S. Hassan, R. Bahsoon, R. Kazman, "Microservice Transition and its Granularity Problem: A Systematic Mapping Study", *Software: Practice and Experience*, 50:9, September 2020.

33. D. Sobhy, L. Minku, R. Bahsoon, T. Chen, R. Kazman, "Run-time Evaluation of Architectures: A Case Study of Diversification in IoT", *Journal of Systems and Software*, 159, January 2020.

34. S. Rebai, M. Kessentini, V. Alizadeh, R. Kazman, "Recommending Refactorings via Commit Message Analysis", *Information and Software Technology*, 126, October 2020.

35. Y. Cai, L. Xiao, R. Kazman, R. Mo, Q. Feng, "Design Rule Spaces: A New Model for Representing and Analyzing Software Architecture", *IEEE Transactions on Software Engineering*, 45:7, July 2019.

36. A. Fonseca, R. Kazman, P. Lago, "A Manifesto for Energy-Aware Software", *IEEE Software*, 36:6, November/December 2019, 79-82.

37. R. Kazman, S. Haziyev, A. Yakuba, D. Tamburri, "Managing Energy Consumption as an Architectural Quality Attribute", *IEEE Software*, 35:5, September/October 2018.

38. D. Tamburri, R. Kazman, "General Methods for Software Architecture Recovery: A Potential Approach and its Evaluation", *Empirical Software Engineering*, 23, June 2018.

39. A.H. Eden, E. Gasparis, J. Nicholson, R. Kazman, "Round-Trip Engineering with the Two-Tier Programming Toolkit", *Software Quality Journal*, May 2017.

40. H. Chen, R. Kazman, R. Schuetz, F. Matthes, "How Lufthansa Capitalized on Big Data for Business Model Renovation", *MIS Quarterly Executive*, March 2017, 16:1, 19-34.

41. D. Tamburri, R. Kazman, H. Fahimi, "The Architect's Role in Community Shepherding", *IEEE Software*, 33:6, November/December 2016, 70-79.

42. H. Chen, R. Kazman, S. Haziyev, "Agile Big Data Analytics for Web-based Systems: An Architecture-centric Approach", *IEEE Transactions on Big Data*, 2016, 2:3, September 2016, 234-248.

43. H. Cervantes, R. Kazman, J. Ryoo, D. Choi, D. Jang, "Architectural Approaches to Security: Four Case Studies", *IEEE Computer*, November 2016, 60-67.

44. H-M Chen, R. Kazman, S. Haziyev, "Strategic Prototyping for Developing Big Data Systems", *IEEE Software*, 33:2, March/April 2016, 36-43.

45. R. Kazman, D. Goldenson, I. Monarch, W. Nichols, G. Valetto, "Evaluating the Effects of Architectural Documentation: A Case Study of a Large Scale Open Source Project", *IEEE Transactions on Software Engineering*, March 2016, 42:3, 220-260.

46. J. Ryoo, P. Anand, R. Kazman, "Architectural Analysis of Security Vulnerabilities", *IEEE Security and Privacy*, November/December 2015,13:6, 52-59.

47. S. Bellomo, I. Gorton, R. Kazman, "Insights from 15 Years of ATAM Data: Towards Agile Architecture", *IEEE Software*, September/October 2015, 32:5, 38-45.

48. M. Naedele, H-M Chen, R. Kazman, Y. Cai, L. Xiao, C. Silva, "Manufacturing Execution Systems: A Vision for Managing Software Development", *Journal of Systems and Software*, March 2015, 101, 59-68.

49. M. Naedele, R. Kazman. Y. Cai, "Making the Case for a "Manufacturing Execution System" for Software Development", *Communications of the ACM*, December 2014, 57:12, 33-36.

50. A. Eden, E. Gasparis, J. Nicholson, R. Kazman, "Automated Verification of Design Patterns: A Case Study", *Science of Computer Programming*, February 2014, 80:B, 211–222.

51. H. Cervantes, P. Velasco, R. Kazman, "A Principled Way of Using Frameworks in Architectural Design", *IEEE Software*, March/April 2013, 30:2, 46-53.

52. A. Eden, E. Gasparis, J. Nicholson, R. Kazman, "Modeling and Visualizing Object-Oriented Programs with Codecharts", *Formal Methods in System Design*, 2013, 43:1, 1-28.

53. R. Kazman, M. Gagliardi, W. Wood, "Scaling Up Software Architecture Analysis", *Journal of Systems and Software*, 2012, 85, 1511–1519.

54. N. Nunes, L. Constantine, R. Kazman, "iUCP - Estimating interactive software projects with enhanced use-case points", *IEEE Software*, 2011, 28:4, 64-73.

55. D. Falessi, G. Cantone, R. Kazman, P. Kruchten, "Decision-making Techniques for Software Architecture Design: A Comparative Survey", *ACM Computing Surveys*, 2011, 43:4.

56. H-M Chen, R. Kazman, O. Perry, "From Software Architecture Analysis to Service Engineering: An Empirical Study of Enterprise SOA Implementation", *IEEE Transactions on Services Computing*, April-June 2010, 3:2, 145-160.

57. J. Ryoo, P. Laplante, R. Kazman, "In Search of Architectural Patterns for Software Security", *IEEE Computer,* June 2009, 42:6, 98-100.

58. R. Kazman, H-M Chen, "The Metropolis Model: A New Logic for the Development of Crowdsourced Systems", *Communications of the ACM*, July 2009, 76-84.

59. S. Kim, H. In, J. Baik, R. Kazman, K. Han, "Escaping from Red Ocean with Value-Innovative Requirements", *IEEE Software*, January/February 2008, 80-87.

60. Q. Chen, H-M Chen, R. Kazman, "Investigating Antecedents of Technology Acceptance of Initial eCRM Users Beyond Generation X and the Role of Self-Construal", *Electronic Commerce Research*, 7:3-4, December, 2007**,** 315-339.

61. H-M Chen, Q. Chen, R. Kazman, "The Affective and Cognitive Impacts of Perceived Touch on

Online Customers' Intention to Return in the Web-Based eCRM Environment", *Journal of Electronic Commerce in Organizations*, 2007, 5:1, 69-91.

62. A. Eden, Y. Hirshfeld, R. Kazman, "Abstraction Classes in Software Design", *IEE Proceedings - Software,* August 2006, 153:4 163–182.

63. B. Schmerl, J. Aldrich, D. Garlan, R. Kazman, H. Yan, "Discovering Architectures from Running Systems", *IEEE Transactions on Software Engineering*, July 2006, 32:7, 454-466.

64. R. Kazman, M. Klein, L. Bass, "The Essential Components of Software Architecture Design and Analysis", *Journal of Systems and Software*, 2006, 79, 1207–1216.

65. A. Garg, R. Kazman, H-M Chen, "Interface Descriptions for Enterprise Architecture", *Journal of the Science of Computer Programming*, 2006, 61:1, 4-15.

66. R. Kazman, L. Bass, M. Klein, T. Lattanze, L. Northrop, "A Basis for Evaluating Software Architecture Analysis Methods", *Software Quality Journal*, 2005, 13, 329-355.

67. R. Kazman, H. In, H-M Chen: "From Requirements Negotiation to Software Architecture Decisions", *Information & Software Technology,* 2005, 47:8, 511-520.

68. H-M Chen, R. Kazman, A. Garg, "BITAM: An Engineering-principled Method for Managing Misalignments between Business and IT Architectures", *Journal of Science of Computer Programming*, 2005, 57:1, 5-26.

69. R. Gunther, R. Kazman, C. MacGregor, "Using 3D Sound as a Navigational Aid in Virtual Environments", *Behavior and Information Technology*, 2004, 23:6, 435-446.

70. R. Kazman, J. Asundi, J.S. Kim, B. Sethananda, "A Simulation Testbed for Mobile Adaptive Architectures", *Computer Standards and Interfaces*, 2002, 25:3, 291-298.

71. R. Kazman, L. Bass, "Making Architecture Reviews Work in the Real World", *IEEE Software*, Jan./Feb. 2002, 19:1, 67-73.

72. R. Kazman, S. J. Carriere, S. G. Woods, "Toward a Discipline of Scenario-based Architectural Engineering", *Annals of Software Engineering*, 2000, 9, 5-33.

73. R. Kazman, M. Klein, P. Clements, "Evaluating Software Architectures for Real-Time Systems", *Annals of Software Engineering*, 1999, 7, 71-93.

74. R. Kazman, S. J. Carriere, "Playing Detective: Reconstructing Software Architecture from Available Evidence", *Automated Software Engineering,* April 1999, 6:2, 107-138.

75. S. J. Carriere, R. Kazman, "Webquery: Searching and Visualizing the Web Through Connectivity", *Computer Networks and ISDN Systems,* 1997, *29,* 1257-1267.

76. R. Kazman, G. Abowd, L. Bass, P. Clements, "Scenario-Based Analysis of Software Architecture", *IEEE Software*, Nov. 1996, 13:6, 47-55.

77. R. Kazman, R. Al-Halimi, W. Hunt, M. Mantei, "Four Paradigms for Indexing Video Conferences", *IEEE Multimedia*, Spring 1996, 3:1, 63-73.

78. R. Kazman, "HIDRA: An Architecture for Highly Dynamic Physically Based Multi-Agent Simulations", *International Journal in Computer Simulation*, 1995, 5:2, 149-164.

79. R. Kazman, "Simulating the Child's Acquisition of the Lexicon and Syntax—Experiences with *Babel*", *Machine Learning*, May 1994, 16, 89-122.

Refereed Conference Publications

1. J. Lefever, Y. Cai, R. Kazman, E. Pisch, "Deicide: Decomposing Complex Classes into Responsibility Modules", *Proceedings of the International Conference on Software Architecture (ICSA),* April 2025.

2. N. Hoess, C. Paradis, R. Kazman, W. Mauerer, "Does the Tool Matter? Exploring Some Causes of Threats to Validity in Mining Software Repositories", *IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER)*, March 2025.

3. A. Peruma, T. Huo, A. Araújo, J. Imanaka, R. Kazman "A Developer-Centric Study Exploring Mobile Application Security Practices and Challenges", *International Conference on Software Maintenance and Evolution (ICSME)*, October 2024.

4. E. Pisch, Y. Cai, R. Kazman, J. Lefever, H. Fang, "M-score: An Empirically Derived Software Modularity Metric", *Proceedings of the 18th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM 2024)*, October 2024.

5. H-M Chen, R. Kazman, G. Catolino, M. Manca, D. Tamburri, W-J van de Heuvel, "An Empirical Study of Social Debt in Open-Source Projects: Social Drivers and the 'Known Devil' Community Smell", *Proceedings of HICSS 57*, January 2024.

6. C. Paradis, R. Kazman, A. Peruma, "Making Team Projects with Novices More Effective: An Experience Report", *Proceedings of HICSS 57*, January 2024.

7. G. Wilder II, R. Miyamoto, S. Watson, R. Kazman, A. Peruma, "An Exploratory Study on the Occurrence of Self-Admitted Technical Debt in Android Apps", *Proceedings of ACM/IEEE International Conference on Technical Debt,* May 2023.

8. J. Garcia, M. Mirakhorli, L. Xiao, Y. Zhao, I. Mujhid, K. Pham, A. Okutan, S. Malek, R. Kazman, Y. Cai, N. Medvidovic, "SAIN: A Community-Wide Software Architecture Infrastructure", *Proceedings of the International Conference on Software Engineering*, May 2023.

9. J. Lefever, Y. Cai, R. Kazman, H. Fang, "Towards the Assisted Decomposition of Large-Active Files", *Proceedings of the International Conference on Software Architecture*, March 2023.

10. H. Fang, Y. Cai, R. Kazman, J. Lefever, "Identifying Anti-Patterns in Distributed Systems With Heterogeneous Dependencies", *Proceedings of the International Conference on Software Architecture*, March 2023.

11. R. Kazman, H-M Chen, "The Architecture of Complexity Revisited: Design Primitives for Ultra-Large-Scale Systems", *Proceedings of HICSS 56*, January 2023.

12. H. Mumtaz, C. Paradis, F. Palomba, D. Tamburri, R. Kazman, K. Blincoe, "A Preliminary Study on the Assignment of GitHub Issues to Issue Commenters and the Relationship with Social Smells", *Proceedings of 15th International Conference on Cooperative and Human Aspects of Software Engineering*, May 2022.

13. H. Fang, Y. Cai, R. Kazman, J. Lefever, "CIDER: Concept-based Interactive Design Recovery", *Proceedings of the 44th International Conference on Software Engineering, (ICSE),* May 2022.

14. C. Paradis, R. Kazman, "Building the MSR Tool Kaiaulu: Design Principles and Experiences", *Software Architecture: 15th European Conference (ECSA)*, Sept. 2021, 107-129.

15. C. Paradis, R. Kazman, M. Davies, B. Hooey, "A Survey Protocol to Assess Meaningfulness and Usefulness of Automated Topic Finding in the NASA Aviation Safety Reporting System", *Proceedings of the 2021 AIAA Aviation Forum and Exposition*, August 2021.

16. C. Paradis, R. Kazman, M. Davies, B. Hooey, "Identifying Emerging Safety Threats Through Topic Modeling in the Aviation Safety Reporting System: A COVID-19 Study", *Proceedings of the 2021 IEEE/AIAA 40th Digital Avionics Systems Conference*, September 2021.

17. D. Falessi, R. Kazman, "Worst Smells and Their Worst Reasons", *Proceedings of the 4th International Conference on Technical Debt*, May 2021.

18. J. Lefever, Y. Cai, H. Cervantes, R. Kazman, H. Fang, "On the Lack of Consensus Among Technical Debt Detection Tools", *Proceedings of the 43rd International Conference on Software Engineering, (ICSE),* May 2021.

19. J. Garcia, M. Mirakhorli, L. Xiao, Y. Zhao, I. Mujhid, K. Pham, A. Okutan, S. Malek, R. Kazman, Y. Cai, N. Medvidovic, "Constructing a Shared Infrastructure for Software Architecture Analysis and Maintenance", *Proceedings of the International Conference on Software Architecture*, March 2021.

20. C. Paradis, R. Kazman, M. Davies, B. Hooey, "Augmenting Topic Finding in the NASA Aviation Safety Reporting System using Topic Modeling", *Proceedings of the AIAA Scitech 2021 Forum*, January 2021.

21. C. Paradis, R. Kazman, D. Tamburri, "Architectural Tactics for Energy Efficiency: Review of the Literature and Research Roadmap", *Proceedings of HICSS 54*, January 2021.

22. W. Jin, Y. Cai, R. Kazman, G. Zhang, Q. Zheng, T. Liu, "Exploring the Architectural Impact of Possible Dependencies in Python Software", *Proceedings of the 35th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, September 2020.

23. Y. Cai, R. Kazman, "Software Development Data for Architecture Analysis: Expectation, Reality, and Future Directions", *Proceedings of the 42nd International Conference on Software Engineering, (ICSE) 2020,* July 2020.

24. H. Cervantes, R. Kazman, "Software Archinaut: A Tool to Understand Architecture, Identify Technical Debt Hotspots and Manage Evolution", *Proceedings of the International Conference on Technical Debt*, June 2020.

25. A. Mikkelsen, T-M Gronli, D. Tamburri, R. Kazman, "Architectural Principles for Autonomous Microservices", *Proceedings of HICSS 53*, January 2020.

26. Q. Feng, Y. Cai, R. Kazman, D. Cui, T. Liu, H. Fang, "Active Hotspot: An Issue-Oriented Model to Monitor Software Evolution and Degradation", *Proceedings of the 34th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, Nov. 2019.

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28. M. Barbacci, J. Carrière, R. Kazman, M. Klein, H. Lipson, T. Longstaff, C. Weinstock, "Steps in an Architecture Tradeoff Analysis Method: Quality Attribute Models and Analysis", CMU/SEI-97-TR-029, Software Engineering Institute, Carnegie Mellon University, 1997.

29. R. Kazman, S. J. Carriere, "Playing Detective: Reconstructing Software Architecture from Available Evidence", CMU/SEI-97-TR-010, Software Engineering Institute, Carnegie Mellon University, 1997.

30. G. Abowd, L. Bass, P. Clements, R. Kazman, L. Northrop, A. Zaremski, "Recommended Best Industrial Practice for Software Architecture Evaluation", CMU/SEI-96-TR-025, Software Engineering Institute, Carnegie Mellon University, 1996.

31. G. Abowd, J. Pitkow, R. Kazman, "Analyzing Differences Between Internet Information System Software Architectures", GIT-VU-95-34, Graphics, Visualization, and Usability Center, Georgia Institute of Technology, 1995.

32. R. Kazman, G. Abowd, L. Bass, P. Clements, "Scenario-Based Analysis of Software

Architecture", CS-95-45, University of Waterloo Department of Computer Science, 1995.

33. R. Kazman, L. Bass, "Toward Deriving Software Architectures from Quality Attributes", CMU/SEI-94-TR-10, Carnegie Mellon University, Software Engineering Institute, 1994.

34. R. Kazman, G. Abowd, L. Bass, M. Webb, "Analyzing the Properties of User Interface Software Architectures", CMU-CS-93-201, School of Computer Science, Carnegie Mellon University, 1993.

35. R. Kazman, "On building a Model of Grammar from Information in the Lexicon", *Machine Learning of Natural Language and Ontology*, *Proceedings of the AAAI Spring Symposium*, Document D91-09, DFKI, Kaiserslautern, Germany, 1991.

36. R. Kazman, "Null Arguments and the Acquisition of Case and Infl", CMU-LCL-88-6, Laboratory for Computational Linguistics Technical Report, Carnegie Mellon University, 1988.

37. R. Kazman, "Structuring the Text of the Oxford English Dictionary through Finite State Transduction," CS-86- 20, Department of Computer Science, University of Waterloo, 1986.

Contributions to Workshops

1. E. Nakagawa, R. Kazman, "What is new when talking about sustainable software architectures?", *Proceedings of Designing 2025 Workshop*, 2024.

2. S. Malich, H. Cervantes, R. Kazman, "Developing and Applying an Essence-based Description of the Attribute-Driven Design Method", *Proceedings of Designing 2024 Workshop*, 2024.

3. N. Ernst, R. Kazman, P. Bianco, "Component Comparison, Evaluation, and Selection: A Continuous Approach", *4th Workshop on Continuous Software Engineering and 5th International Workshop on Quality-Aware DevOps (CSE/QUDOS)*, March 2019.

4. N. Ernst, R. Kazman, P. Bianco, "Towards Rapid Composition with Confidence in Robotics Software", *1st International Workshop on Robotics Software Engineering (RoSE'18)*, May 2018.

5. R. Nord, I. Ozkaya, E. Schwartz, F. Shull, R. Kazman, "Can Knowledge of Technical Debt Help Identify Software Vulnerabilities?", *9th USENIX Workshop on Cyber Security Experimentation and Test*, August 2016.

6. Y. Cai, R. Kazman, "Software Architecture Health Monitor", *International Workshop on Bringing Architecture Design Thinking into Developers' Daily Activities*, May 2016.

7. H-M Chen, R. Kazman, J. Garbajosa, E. Gonzalez, "Toward Big Data Value Engineering for Innovation", *2nd International Workshop on Big Data Software Engineering (BIGDSE)*, May 2016.

8. H-M Chen, R. Kazman, I. Monarch, P. Wang, "Predicting and Fixing Vulnerabilities Before They Occur: A Big Data Approach", *2nd International Workshop on Big Data Software Engineering (BIGDSE)*, May 2016.

9. H-M Chen, R. Kazman, F. Matthes, "Demystifying Big Data Adoption: Beyond IT Fashion and Relative Advantage", *Proceedings of Diffusion Interest Group In Information Technology (DIGIT) 2015*, Dec. 2015.

10. H-M Chen, R. Kazman, S. Haziyev, V. Kropov, D. Chtchourov, "Architectural Support for DevOps in a Neo-Metropolis BDaaS Platform", *IEEE 34th Symposium on Reliable Distributed Systems Workshop (SRDSW),* Sept. 2015.

11. H-M Chen, R. Kazman, S. Haziyev, O. Hrytsay, "Big Data System Development: An Embedded Case Study with a Global Outsourcing Firm", *1st International Workshop on Big Data Software Engineering (BIGDSE)*, May 2015.

12. M. Mirakhorli, H-M Chen, R. Kazman, "Mining Big Data for Detecting, Extracting and Recommending Architectural Design Concepts", *1st International Workshop on Big Data Software Engineering (BIGDSE)*, May 2015.

13. S. Bellomo, R. Kazman, N. Ernst, R. Nord, "Toward Design Decisions to Enable Deployability; Empirical Study of Three Projects Reaching for the Continuous-Delivery Holy Grail", *1st International Workshop on Dependability and Security of System Operation (DSSO 2014)*, June 2014.

14. H-M Chen, R. Kazman "Architecting Ultra-Large-Scale Green Information Systems", *1st International Workshop on Green and Sustainable Software (GREENS)*, June 2012.

15. J. Klein, G. Chastek, S. Cohen, R. Kazman J. McGregor, "An Early Look at Defining Variability Requirements for System of Systems Platforms", *Workshop on Requirements Engineering for Systems and Systems-of-Systems*, September 2012.

16. N. Brown, Y. Cai, Y. Guo, R. Kazman, M. Kim, P. Kruchten, E. Lim, A. MacCormack, R. Nord, I. Ozkaya, R. Sangwan, C. Seaman, K. Sullivan, N. Zazworka, "Managing Technical Debt in Software-Reliant Systems", *FSE/SDP Workshop on the Future of Software Engineering Research at ACM SIGSOFT FSE-18*, November, 2010.

17. R. Kazman, H-M Chen, "The Metropolis Model and its Implications for the Engineering of Software Ecosystems", *FSE/SDP Workshop on the Future of Software Engineering Research at ACM SIGSOFT FSE-18*, November, 2010.

18. P. Monteiro, R. Machado, R. Kazman, "Inception of Software Validation and Verification Practices within CMMI Level 2", *SEDES'2009 Workshop, Proceedings of the 4th International Conference on Software Engineering Advances - ICSEA 2009,* September, 2009.

19. R. Kazman, "The Carr-Benkler Wager and its Implications for ULS Software Engineering", Second International Workshop on Ultra-Large-Scale Software Intensive Systems (ULSSIS) at ICSE 30, May 2008.

20. H. In, R. Kazman, D. Olson, "From Requirements Negotiation to Software Architectural Decisions", *STRAW* 2001, May 2001.

21. J. Asundi, R. Kazman, "A Foundation for the Economic Analysis of Software Architectures", *Third International Workshop on Economics-Driven Software Engineering (EDSER-3)*, May 2001.

22. D. Li, H. In, R. Kazman, "A Flexible Architecture and its Tradeoff Analysis Framework for CSCW Applications", *Workshop on Software Architectures for Cooperative Systems*, December, 2000.

23. J. Asundi, R. Kazman, M. Klein, "An Architectural Approach to Software Cost Modeling", *Second International Workshop on Economics-Driven Software Engineering (EDSER-2)*, June 2000.

24. R. Kazman, M. Klein, "Performing Architecture Tradeoff Analysis", *International Software Architecture Workshop (ISAW-3)*, October 1998, 85-88.

25. S. J. Carrière, R. Kazman, "The Perils of Reconstructing Architectures", *International Software Architecture Workshop (ISAW-3)*, October 1998, 13-16.

26. M. Barbacci, L. Bass, J. Carriere, P. Clements, R. Kazman, M. Klein, and R. Linger, "Analysis and Design of Survivable Systems using Attribute-Based Architecture Styles", *Information Survivability Workshop 1998*, October 1998.

27. L. Briand, S. J. Carriere, R. Kazman, J. Wuest, "COMPARE: A Comprehensive Framework for Architecture Evaluation", *ECOOP 98 Workshop on Techniques, Tools and Formalisms for capturing and assessing Architectural Quality in Object-Oriented Software*, July 1998.

28. S. J. Carriere, R. Kazman, "Assessing Design Quality From a Software Architectural Perspective", *OOPSLA '97 Workshop on Object-Oriented Design Quality*, October 1997.

29. R. Kazman, "Tool Support for Architecture Analysis and Design", *Joint Proceedings of the*

SIGSOFT '96 Workshops (ISAW-2), October 1996, 94-97.

30. R. Reid, R. Kazman, "Reusable User Interface Metaphor Components", *CHI '96 Basic Research Symposium*, April 1996.

31. R. Kazman, L. Bass, G. Abowd, P. Clements, "An Architectural Analysis Case Study: Internet Information Systems", *Proc. of the First Int'l Workshop on Architectures for Software Systems (ISAW)*, Carnegie Mellon University Technical Report CMU-CS-95-151, 1995, 148-165.

32. R. Kazman, "Architectural Issues for Distributed Virtual Reality", *ACM CSCW'94 Workshop on Software Architectures for Cooperative Systems*. SIGOIS Bulletin, 15 (3), April 1995.

33. R. Kazman, "A Software Architectural Analysis Methodology", Invited talk for: *CASCON '94 Workshop on Software Architecture*, November 1994.

34. L. Bass, G. Abowd, R. Kazman, "Issues in the Evaluation of User Interface Tools," *Software Engineering and Human-Computer Interaction*, *ICSE '94 Workshop on SE-HCI*, (Sorrento, Italy), Springer-Verlag Lecture Notes in Computer Science 896, May 1994, 17-27.

35. M. Webb, R. Kazman, L. Bass, G. Abowd, "Assessment of Software Architecture Support for Modifiability in User Interface Architectures", *Software Measurement and Reliability for Software Maintenance Workshop*, September 1993.

36. R. Kazman, "Three Topics Ignored: Usability, Tools and Examples", *National Workshop on Software Engineering Education*, May 1993.

37. R. Kazman, "HIDRA: A Software Architecture for Dynamic Distributed Systems", *CSCW-92 Tools and Technologies Workshop*, Computer Supported Cooperative Work Conference, October 1992.

Teaching Activities

Undergraduate Courses (last 5 years)

Programming Application Systems (University of Hawaii).

Information Systems for the Global Business Environment (University of Hawaii)

Systems Analysis and Design (University of Hawaii)

Short Courses/Tutorials

Summer School on Software Engineering for Digital Society (Giulianova, Italy, June 2024).

Designing Software Architectures Using ADD 3.0 (WICSA 2016 Tutorial, Venice, Italy, April 2016).

Flexible Software Architecture: From Design to Coding (Technical University of Munich, October 2014).

Advanced Topics in Software Architecture, (Universidad de los Andes, Bogota, Colombia, June 2010).

Economics-Driven Architecting, (ICSE 2009 Tutorial, Vancouver, Canada, May 2009).

Economics-Driven Architecting, (OOPSLA 08 Tutorial, Nashville, TN, October 2008).

Economics-Driven Architecting, (WICSA 2008 Tutorial, Vancouver, Canada, February 2008).

Software Architecture: Principles and Practice (Software Engineering Institute, 2004-2010).

Software Architecture Design and Analysis (Software Engineering Institute, 2006-2010).

Designing and Analyzing Software Architectures Using ABASs, (ICSE 2000 Tutorial, Limerick, Ireland, June 2000).

Analysis and Redesign of Object-oriented Software Architectures, (OOPSLA 99 Tutorial, Denver, CO, November 1999).

Software Architecture in Practice, (ACM State-of-the-Art Summer School in Computer Science, Prague, Czech Republic, 1998).

An Introduction to Software Architecture, (Institute for Computer Research Short Course, Waterloo, ON, 1994, 1996, 1997).

Evaluating, Building, and Using User Interface Tools, (Summer School on the Design of Human Computer Interfaces for Disabled People, San Sebastian, Spain, 1994).

Evaluating User Interface Tools, (CHI '94 Tutorial, Boston, MA, April, 1994).

The Serpent User Interface Management System", (X Technical Conference Tutorial, Boston, MA, January 1990).

Curriculum/Course Development

Software Architecture: Principles and Practices (prepared for Software Engineering Institute), 1999-2024.

Software Architecture Design and Analysis (prepared for Software Engineering Institute), 2004-2024.

CASE Tools Curriculum (prepared for IBM Canada), 1992-94.

University of Waterloo Undergraduate Software Engineering option (jointly designed with Electrical & Computer Engineering), 1993-95.

Graduate Student Supervision/Co-Supervision

Ph.D.:

Carlos Paradis—(University of Hawaii), 2021.

Benjamin Strauss—(University of Hawaii), in progress.

Master's:

Aditya Garg, "Interface Descriptions for Enterprise Architecture", 2004.

George Guo, "A Software Architecture Reconstruction Method", 1998.

Andrew Park, "Graphical User Interfaces for Teleoperated Drilling in an Underground Mining Environment", 1997.

Randall Reid, "MetaCom: An Application Framework for Reusable Metaphor Components", 1997.

Ryan Gunther, "The Use of 3D Sound as a Navigational Aid in Virtual Environments", 1997.

Julie Waterhouse, "Comparison of 2D and 3D Interfaces for Editing Surfaces Reconstructed from Contours", 1996

David Bauer, "Bauer Function Grapher: A Tool for Source Code Comprehension", 1996.

Kavita Reddy, "The Empirical Derivation of a Design Space and Design Rules for Software Architecture", 1996.

Li-Te Cheng, "Evaluation of Tactile Feedback for Delicate Virtual Reality Operations", 1996.

John Kominek, "Adaptive Image Compression Using Quadtree-Refined Spline Interpolation", 1995.

Jilong Chen, "Alternative Approaches to Gesture Recognition", 1995.

Stephen Mereu, "Improving Depth Perception in 3D Interfaces with Sound", 1995.

Alain Gaudrault, "Load Balancing in a Distributed Virtual Reality Environment", 1995.

Riston Tapp, "Determining the Usefulness of Colour and Fonts in a Programming Task", 1994.

Greg Hood, "A WAVES Detailed Design", 1994.

Thesis committee membership

Ph.D.:

Ernst Pitsch—(Ph.D., Drexel University), in progress.

Jason Lefever—(Ph.D., Drexel University), in progress.

Sin Kuang Lo—(Ph.D., University of New South Wales, 2021).

Priya Anand—(Ph.D., Penn State University, 2021).

Qiong Feng—(Ph.D., Drexel University), 2019.

Ran Mo—(Ph.D., Drexel University), 2018.

Lu Xiao—(Ph.D., Drexel University), 2016.

Dharmalingam Ganesan—(Ph.D., Free University of Amsterdam), 2012.

Christian del Rosso—(Ph.D., University of Groningen), 2008.

Omolade Saliu—(Ph.D., University of Calgary), 2007.

Christoph Stoermer—(Ph.D., Free University of Amsterdam), 2007.

Mugurel Ionita—(Ph.D., Technical University of Eindhoven), 2005.

Evgeni Eskenazi—(Ph.D., Technical University of Eindhoven), 2004.

Robert Waters—(Ph.D., Georgia Tech), 2004.

Alexander Fioukov—(Ph.D., Technical University of Eindhoven), 2004.

Nico Lassing—(Ph.D., Free University of Amsterdam), 2002.

Jai Asundi—(Ph.D., Carnegie Mellon University), 2001.

Thomas Dolan—(Ph.D., Technical University of Eindhoven), 2001.

Carolyn Hoover—(Ph.D., Carnegie Mellon University), 2001.

Rene Krikhaar—(Ph.D., Free University of Amsterdam), 1999.

Steven Woods—(Ph.D., University of Waterloo), 1996.

Luiza Carneiro—(Ph.D., University of Waterloo), 1994.

Professional Service Activities

Professional Societies

Member of the Board of Governors, IEEE Computer Society, 2023-2025

Member at Large, IEEE Computer Society Technical & Conference Activities Board, 2022-present

Chair IEEE Computer Society TAC (Technical Activities Committee), 2018-2021

Chair IEEE TCSE (Technical Council on Software Engineering), 2016-2020

Member TCSE Executive Committee, 2012-2015, 2020-present

Conference/Workshop Organization
ICSE 2028 (General Chair)
ICSE 2026 (Sustainability Chair)
ESEM 2025 (Finance Chair)
ICSE 2025 (SEIP Chair)
SQA4AI 2025 Workshop (Co-chair)
ICSA 2024 (SAIP Chair)
TechDebt 2024 (Program Committee)
ASE 2023 Industry Showcase (Program Committee)
ICSA 2022 (General Chair)
SANER 2022 (Local Arrangements Chair)
ICSE 2022 (SEIS Program Committee)
SANER 2021 (General Chair)
XP 2020 (Program Committee)
ICSE 2021 (SEIP Program Committee)
ICSE 2020 (SEIP Program Committee)
ICSE 2019 (SEIS Co-Chair)
HICSS 40-present (Software Technology Track Co-Chair)
GREENS Workshop (at ICSE '18) (Co-Chair)
ICSE Steering Committee (2015-present)
ICSE 2017 (Technical Briefings Program Committee)
SA-TTA 2016 (at SAC '16) (Program Committee)
SSSE 2015 (Program Committee)
DSSO 2015 Workshop (at SRDS '15) (Program Committee)
WICSA 2015 (Program Committee)
FoSADA 2015 (at WICSA '15) (Program Committee)
ISSC 2015 (Program Committee)
SEIS Track (at ICSE '15) (Program Committee)
DSSO 2014 Workshop (at DSN '14) (Program Committee)

CSI-SE Workshop (at ICSE '14) (Program Committee)

GREENS Workshop (at ICSE '14) (Program Committee)

ECSA 2014 (Program Committee; Doctoral Consortium Co-chair)

WICSA 2014 (Program Committee)

SE-SmartGrid Workshop (at ICSE '13) (Program Committee)

Twin Peaks Workshop (at ICSE '13) (Program Committee)

MTD Workshop (at ICSE '13) (Program Committee)

WICSA/ECSA 2012 (Program Committee)

EICS 2012 (Program Co-Chair)

SE-SmartGrid Workshop (at ICSE '12) (Co-Chair)

GREENS Workshop (at ICSE '12) (Co-Chair)

CSEE&T 2011 (Program Committee)

ECSA 2011 (Program Committee)

WICSA 2011 (Program Committee)

INTERACT 2011 (Program Committee)

ICSE 2011 (Organizing Committee)

ECSA 2010 (Program Committee)

WICSA 2009 (General Chair)

INTERACT 2009 (Program Committee)

EICS 2009 (Local Chair, Program Committee)

LMSA Workshop (at ICSE '09) (Program Committee)

QOSCSOA 08 (at ICSOC 08) (Program Committee)

EIS 2008 (Program Committee)

MESPUL 08 (at SPLC 08) (Program Committee)

ULSSIS Workshop (at ICSE '08) (Co-Chair)

MESPUL 07 (at APSEC 07) (Program Committee)

MOMPES 2008 (at ETAPS 2008) (Organizing Committee)

ICSP 2008 (Program Committee)

ESC1 Workshop (at ICSE '07) (Co-Chair)

ULS Workshop (at ICSE '07) (Co-Chair)

IWSSA Workshop (at SERP '07) (Program Committee)

WICSA 2007 (Program Committee)

EIS 2007 (Program Committee)

ICSP 07 (Program Committee)

IEEE EQUITY (Program Co-Chair)

DSVIS 05 (Program Committee)

ICMI 06 (Program Committee)

CAINE 05 (Program Committee)

CSEET 06 (Program Committee)

HICSS 39 (Minitrack chair)

INTERACT 2005 (Program Committee)

WICSA 2005 (Program Committee)

IWSSA Workshop (at SERP '05) (Program Committee)

CSEET 05 (Program Committee)

DSVIS 05 (Program Committee)

ICSE 05 (Program Committee)

HICSS 38 (Minitrack chair)

WICSA 2004 (Program Committee)

IWSSA Workshop (at SERP '04) (Program Committee)

SE/HCI 2004 workshop (at CHI 04) (Co-organizer)

SE/HCI 2004 workshop (at ICSE 04) (Co-organizer)

EHCI 04 (General Chair)

ICCBSS 2004 (Program Committee)

WASA 03 workshop (at SERP 03) (Program Committee)

STRAW 03 workshop (at ICSE 03) (Co-organizer)

SE/HCI 2003 workshop (at ICSE 03) (Co-organizer)

SWARM Dagstuhl workshop 03061 (Co-organizer)

INTERACT 2003 (Program committee)

WICSA 2002 (Program committee)

SARA 2002 Workshop (at ICSE 02) (Co-organizer)

EDSER 2002 Workshop (at ICSE 02) (Steering committee)

SAINT 2002 (Program committee)

ICSM 2001 (Program committee)

WICSA 2001 (Program co-chair)

EHCI 01 (General Chair)

HICSS 34 (Minitrack chair)

CSCW 2000 (Workshop organizer)

ISAW 2000 (Program Committee)

ASSETS 2000 (Program Committee)

WoCo8 (Program Committee)

WICSA1999 (Program Committee)

INTERACT 99 (Program Committee)

Metrics 99 (Program Committee)

ICECCS 99, ICECCS 2000 (Program Committee)

HICSS 32 (Minitrack chair)

EHCI 98 (Program co-chair)

CHI 98 (Program Committee)
ASSETS 98 (Program Committee)
Graphics Interface 96 (Program Committee)
EHCI 95 (Program Committee)

Refereeing/Reviewing

Transactions on Software Engineering

Empirical Software Engineering

ACM Computing Surveys

Journal of the Association for Information Systems

Journal of Computer Security

Communications of the ACM

Transactions on Services Computing

Transactions on Software Engineering and Methodology

European Journal of Information Systems

Journal of Systems and Software

IEEE Software

Automated Software Engineering

Journal of Software Maintenance and Evolution

Transactions on Systems, Man and Cybernetics

Software and System Modeling

Information and Software Technology

Software Practice and Experience

International Journal in Human-Computer Studies

Transactions on Computer Human Interaction

IBM Systems Journal

IEE Proceedings - Software Engineering

Encyclopedia of Software Engineering

Journal of Software Maintenance

Science of Computer Programming

Software Process Improvement and Practice

Computer Communications

Interacting with Computers

Grant Reviewing

National Science Foundation (USA)

NSERC (Canada)

Estonian Science Foundation (Estonia)

CFI (Canada)

NWO (Holland)

FWF (Austria)

Kplus (Austria)

Editorships

IEEE Transactions on Software Engineering (Editorial Board), 2019-2023.

IEEE Software, Special Issue on Software Engineering in Society (Editor, with L. Pasquale), 2019.

Managing trade-offs in Adaptable Software Architectures. (Editor, with I. Mistrik, N. Ali, J. Grundy, and B. Schmerl), Elsevier, *2016.*

Economics-Driven Software Architecture. (Editor, with I. Mistrik, R. Bahsoon, and Y. Zhang), Elsevier, *2014.*

Automated Software Engineering (Editor for Special Issue on Software Architecture Reconstruction and Modeling), 2006.

Third International Conference on COTS-Based Software Systems (Editor, with Dan Port), 2004.

Software Process Improvement and Practice Journal (Editor for Special Issue on Bridging the Process and Practice Gaps between Software Engineering and Human Computer Interaction)

International Journal of Software Engineering and Knowledge Engineering (Editor for Special Issue on Software Architecture)

International Journal of Parallel and Distributed Systems and Networks (Associate Editor)

Handbook Of Parallel And Distributed Computing (Associate editor)

Society/Working Group Memberships

IEEE Technical Council on Software Engineering (Chair, 2015-2020, Executive Committee Member, 2006-present)

IFIP Working Group 2.7/13.4 (member 1992-present, Chair 1998-2004)

IEEE Computer Society (1992-present)

Research Grants

1. *National Science Foundation, $600,000,* (Co-PI with Y. Cai), "Design Debt Detection and Quantification for Contemporary Software Systems", 2023-2025.

2. *NASA Research Grant, $114,880, "*Early Identification of Risky Aviation Concepts*", 2019-2021.*

3. *National Science Foundation, $480,000,* (Co-PI with Y. Cai), "Managing software evolution through continuous measuring and monitoring", 2018-2022.

4. *National Science Foundation, $1,*660*,000,* (Co-PI with N. Medvidovic, J. Garcia, S. Malek, M. Mirakhorli, Y. Cai, L. Xiao), "Constructing a Community-Wide Software Architecture Infrastructure ", 2018-2022.

5. *NASA Research Grant, $46,163, "*Proactive Exploration of Risky Concept Emergence for Identifying Vulnerabilities & Exposures*", 2018-2019.*

6. *National Science Foundation, $865,000,* (Co-PI with Y. Cai), "Finding and Fixing Architectural Hotspots: An Economics-Based Decision Support Approach", 2015-2018.

7. *National Science Foundation, $1,100,000,* (Co-PI with Y. Cai), "An Economics-Based Framework for Assessing Software Modularization Decisions", 2011-2015.

8. *National Science Foundation, $285,000,* (Co-PI with Y. Cai, J. Aldrich), "Teaching Software Modularity through Architectural Review", 2012-2014.

9. *NASA Human & Robotic Technology Program Grant,* $300,000, (Co-PI with D. Port), "A Model of Options and Costs for Reliable Autonomy", 2005-2007.

10. *University of Hawaii CIBER* Grant (Co-PI with H-M Chen and Q. Chen)*,* $9,500, "From High-Tech to High-Touch: An Empirical Study on the Impact of Culture Value on the electronic Customer Relationship Management System Success", 2003.

11. *Nokia Research Grant*, $22,000 (PI), "Utility-based Cooperative Resource Management", 2001.

12. *Nokia Research Grant*, $10,000 (PI), "Software Reengineering Analysis", 2000.

13. *Tricore Research Grant*, $30,000 (PI), "Software Engineering Curriculum Development for Japan", 1998- 1999.

14. *SERC Research Grant* (Co-PI, with K. Ponnambalam), $200,000, "Analyzing Software Architecture and Optimization Techniques of Software Structures", 1996-1997.

15. *NSERC/SSHRC Network of Centres of Excellence Grant*, (with L. Harisum et al), $13,400,000, "Telelearning Research Network", 1995-1999. (Local team, T. Carey et al - $700,000).

16. *IRAP Research, Development, and Adaptation Grant* (PI), $51,000, "Full Text Retrieval Empowering Technology", 1995-1996.

17. *Intel Corporation Research Grant* (PI), $97,000, "Heterogeneous Indexing Techniques for Multimedia Meetings", 1995-1996.

18. *NSERC Equipment Grant* (Co-PI, with J. Atlee), $56,500, "Creation of Software Engineering

Laboratory", 1995.

19. *NSERC Research Grant* (PI), $33,000, "Software Architecture Analysis for Human-Computer Interaction", 1994-1996.

20. *Intel Corporation Research Grant* (PI), $86,500, "Multimedia Meeting Management", 1994-1995.

21. *INCO Corporation Research Grant* (PI), $45,000, "Design and Development of a Graphical User Interface for an Intelligent, Interactive, and Integrated Tele-operation System for Mining, 1994-1995.

22. *Internal Research Award* (PI), $10,000, Faculty of Mathematics, University of Waterloo, 1993.

23. *Internal Research Award* (PI), $7,000, Faculty of Mathematics, University of Waterloo, 1992.

Industrial Consulting

Lviv Business School (Ukraine), 2021

KOSTA (Korea), 2019

Visma (Lithuania), 2019

ABB (USA), 2015-2018

Huawei (China), 2015-2018

Samsung (Korea), 2008, 2010, 2017

Softserve (Ukraine), 2014, 2016

Libero Events (Romania), 2014

Qualcomm (USA), 2013

ILTAM (Israel), 2008, 2009, 2012

Madeira Tecnopolo (Portugal), 2010

Finmeccanica (Italy), 2009

Comverse (Israel), 2008

Tekama (Russia), 2008, 2010

Seegrid (USA), 2008

KOSTA (Korea), 2007

Nokia (Finland), 2007

AIIT (Korea), 2005

Philips (USA), 2004-2005

2e Consulting (Korea), 2001

Lucent (USA), 2000

Ericsson (Spain), 1999

HP (USA), 1999

Ericsson (Sweden), 1999

Philips (Netherlands), 1999, 2001

Thomson SA (France), 1998

Alcatel SA (France), 1998

Pathlight (USA), 1998

Tektronix (USA), 1996

Tricore International (Japan), 1995-1999

IBM Corporation (Canada), 1994-1995

Xerox Corporation (Canada), 1992-1993