Oleg Sokolsky

Curriculum Vitae Updated April 2016

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Education

Ph.D., Computer Science, State University of New York at Stony Brook, 1996.

B.S./M.S., Computer Science (with honors), St. Petersburg State Technical University, Russia, 1988.

Academic Positions Held

7/2007-pres.	Research Associate Professor, Department of Computer and Information Science, University of Pennsylvania
7/2001-6/2007	Research Assistant Professor, Department of Computer and Information Science, University of Pennsylvania
9/1998-7/2001	Research Associate, Department of Computer and Information Science, University of Pennsylvania
9/1991-5/1996	Teaching and Research Assistant, Department of Computer Science, State University of New York at Stony Brook
9/1989-9/1991	Research Staff Member, Department of Computer Science, St. Petersburg Technical University, Russia
4/1988-8/1989	Software Engineer, Department of Research Automation, St. Petersburg Technical University, Russia

Industrial Positions Held

1/1996-9/1998	Computer Scientist, Computer Command and Control Company, Philadelphia, PA

Honors and Awards

Best paper award, 2014 IEEE/ACM International Conference on Cyber-Physical Systems.

Best student paper award, 2012 IEEE Real-Time and Embedded Technology and Applications Symposium.

ACM Recognition of Service Awards for 2013 CPSWeek and 2011 IEEE/ACM International Conference on Cyber-Physical Systems.

IEEE Certificates of Appreciation for service in 2012 IEEE/ACM International Conference on Cyber-Physical Systems and 2007 IEEE Real-Time and Embedded Technology and Applications Symposium.

DARPA IPTO Special Commendation for outstanding achievement in the development of Bio-SPICE technology. May 2005.

Publications (H-index: 39, reported by Google Scholar as of March 2016)

Journal Publications:

1. D. Soudbakhsh, L.T.X. Phan, A.M. Annaswamy, O. Sokolsky, "Co-Design of Arbitrated Network Control Systems with Overrun Strategies," *IEEE Transactions on Control of Network Systems*, Accepted for publication, February 2016.

2. X. Hei, X. Du, S. Lin, Insup Lee, Oleg Sokolsky, "Patient Infusion Pattern based Access Control Schemes for Wireless Insulin Pump System," *IEEE Transactions on Parallel & Distributed Systems*, 26(11), pp. 3108-3121, November 2015.

3. M. Xu, L.T.X. Phan, O. Sokolsky, S. Xi, C. Lu, C. Gill, I. Lee, "Cache-Aware Compositional Analysis of Real-Time Multicore Virtualization Platforms," *Real-Time Systems Journal*, 51(6), pp. 675–723, November 2015.

4. M. Pajic, Z. Jiang, I. Lee, O. Sokolsky, R. Mangharam, "Safety-critical medical device development using the UPP2SF model translation tool," *ACM Transactions on Embedded Computing Systems*, 13(4s), pp. 127:1-127:26, April 2014. Citations: 10.

5. M. Pajic, R. Mangharam, O. Sokolsky, D. Arney, J. M. Goldman, and I. Lee, "Model-Driven Safety Analysis of Closed-Loop Medical Systems," *IEEE Transactions on Industrial Informatics*, 10(1), pp. 3-16, January 2014. Citations: 32.

6. J. Chang, K.K. Venkatasubramanian, A.G. West, S. Kannan, I. Lee, B.T. Loo, and O. Sokolsky, "AS-CRED: Reputation and Alert Service for Inter-domain Routing," *IEEE Systems Journal*, 7(3), pp. 396-409, September 2013. Citations: 6.

7. E.Y. Vasserman, K.K. Venkatasubramanian, O. Sokolsky, and I. Lee, "Security and Interoperable Medical Device Systems, Part 2: Failures, Consequences and Classifications," *IEEE Security & Privacy*, 10(6), pp. 70–73, November-December 2012. Citations: 3.

8. K.K. Venkatasubramanian, E.Y. Vasserman, O. Sokolsky, and I. Lee, "Security and Interoperable Medical Device Systems: Part 1," *IEEE Security & Privacy.* 10(5), pp 61–63, September-October 2012. Citations: 7.

9. I. Lee, O. Sokolsky, S. Chen, J. Hatcliff, E. Jee, B.G. Kim, A. King, M. Mullen-Fortino, S. Park, A. Roederer, K.K. Venkatasubramanian, "Challenges and Research Directions in Medical CyberPhysical Systems," *Proceedings of the IEEE*, 100(1), pp. 75–90, January 2012.Citations: 84.

10. A. Philippou, I. Lee, and O. Sokolsky, "PADS: An Approach to Modeling Resource Demand and Supply for the Formal Analysis of Hierarchical Scheduling," *Theoretical Computer Science*, 413(1), pp. 2–20, January 2012. Citations: 4.

11. N. Dinesh, A.K. Joshi, I. Lee, and O. Sokolsky. "Permission to speak: A logic for access control and conformance," *Journal of Logic and Algebraic Programming*, 80(1), pp. 50–74, January 2011. Citations: 11.

12. M. Blaze, S. Kannan, A.D. Keromytis, I. Lee, W. Lee, O. Sokolsky, and J.M. Smith, "Dynamic Trust Management," *IEEE Computer*, 42(2), pp. 44–52, February 2009. Citations: 57.

13. S. Fischmeister, O. Sokolsky, and I. Lee, "A Verifiable Language for Programming Communication Schedules," *IEEE Transactions on Computers*, Vol. 56, pp. 1505–1519, November 2007. Citations: 29.

14. I. Lee, A. Philippou, and O. Sokolsky, "Resources in Process Algebra," *Journal of Logic and Algebraic Programming*, Vol. 72, pp. 98–122, May/June 2007. Citations: 25.

15. Á. Halász, V. Kumar, M. Imieliński, C. Belta, O. Sokolsky, S. Pathak, H. Rubin, "Analysis of Lactose Metabolism in E. Coli Using Reachability Analysis of Hybrid Systems," *IET Systems Biology*, Vol. 1, Issue 2, pp. 130–148, March 2007. Citations: 35.

16. O. Mondragon, A. Gates, H. Mendoza, and O. Sokolsky, "Generating Properties for Runtime Monitoring from Software Specification Patterns," *International Journal of Software Engineering and Knowledge Engineering*, 17(1), February 2007, pp. 107–126. Citations: 7.

17. R. Alur, R. Grosu, I. Lee, and O. Sokolsky, "Compositional Modeling and Refinement for Hierarchical Hybrid Systems," *Journal of Logic and Algebraic Programming*, Vol. 68, pp. 105–128, March 2006. Citations: 21.

18. M. Kim, S. Kannan, I. Lee, O. Sokolsky, M. Viswanathan, "Java-MaC: a Rigorous Run-time Assurance Tool for Java Programs," *Formal Methods in Systems Design*, Vol 24, No 2, March 2004. Citations: 224.

19. R. Alur, T. Dang, J. Esposito, R. Fierro, Y. Hur, F. Ivancic, V. Kumar, I. Lee, P. Mishra, G. Pappas, O. Sokolsky, "Hierarchical Modeling and Analysis of Embedded Systems," *Proceedings of the IEEE*, Vol. 90 (1), January 2003, pp. 11–28. Citations: 184.

20. I. Lee, A. Philippou, and O. Sokolsky, "Process Algebraic Modelling and Analysis of Power-Aware Real-Time Systems," *IEE Computing and Control Engineering Journal*, 13(4), August 2002, pp. 180–188. Citations: 11.

21. K. Bhargavan, C.A. Gunter, M. Kim, I. Lee, D. Obradovic, O. Sokolsky, and M. Viswanathan, "Verisim: Formal Analysis of Network Simulations," *Transactions on Software Engineering*, Vol. 28, No. 2, Feb. 2002, pp. 129–145. Citations: 92.

22. H.-H. Kwak, I. Lee and O. Sokolsky, "Parametric approach to the specification and analysis of real-time scheduling based on ACSR-VP," *Science of Computer Programming*, Vol. 42, Issue 1, Jan. 2002, pp. 49–60. Citations: 6.

23. A. Philippou, O. Sokolsky, I. Lee, R. Cleaveland, and S.A. Smolka, "Hiding Resources that Can Fail: An Axiomatic Perspective," *Information Processing Letters*, Vol. 80, Issue 1, Oct. 2001, pp. 3–13.

24. O. Sokolsky, I. Lee, and H. Ben-Abdallah, "Specification and analysis of real-time systems with PARAGON," *Annals of Software Engineering*, vol. 7 (1999), pp. 211–234. Citations: 23.

25. B.L. Gelman, B.S. Hotz, and O. Sokolsky, "Strata Algebra and Parallel Architecture," *Int. Journal on Systems Research and Information Science*, vol. 4, 1990, pp. 45-68.

Refereed conference proceedings:

26. J. Park, M. Pajic, I. Lee, and O. Sokolsky, "Scalable Verification of Linear Controller Software," 22^{nd} International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS); 17 pages. Eindhoven, the Netherlands, April 2016.

27. L. Duan, S. Rayadurgam, M. Heimdahl, O. Sokolsky, I. Lee, "Representation of Confidence in Assurance Cases Using the Beta Distribution," 17^{th} IEEE International Symposium on High Assurance Systems Engineering (HASE 2016); 8 pages. Orlando, FL, January 2016.

28. B.G. Kim, L. Feng, O, Sokolsky, I. Lee, "Platform-Specific Code Generation from Platform-Independent Timed Models," IEEE Real-Time Systems Symposium (RTSS 2015); 10 pages. San Antonio, TX, December 2015.Citations: 6.

29. D. You, S. Rayadurgam, M. Heimdahl, J. Komp, B.G. Kim, and O. Sokolsky, "Executing Model-based Tests on Platform-specific Implementations," IEEE/ACM International Conference on Automated Software Engineering (ASE 2015); 10 pages. Lincoln, NE, November 2015.

30. S. Chen, L. Feng, M. Rickels, A. Peleckis, O. Sokolsky, and I. Lee, "A Data-Driven Behavior Modeling and Analysis Framework for Diabetic Patients," The IEEE International Conference on Healthcare Informatics (ICHI 2015); 9 pages. San Antonio, TX, October 2015.

31. M. Pajic, J. Park, I. Lee, G. Pappas, O. Sokolsky, "Automatic Verification of Linear Controller Software," International Conference on Embedded Software (EMSOFT 2015); 10 pages. Amsterdam, Netherlands, October 2015.

32. S. Chen, M. O'Kelly, J. Weimer, O. Sokolsky, I. Lee, "An Intraoperative Glucose Control Benchmark for Formal Verification," 5^{th} IFAC Conference on Analysis and Design of Hybrid Systems (ADHS); 7 pages. October 2015.

33. A.L. King, L. Feng, S. Procter, S. Chen, O. Sokolsky, J. Hatcliff, and I. Lee, "Towards Assurance for Plug & Play Medical Systems," International Conference on Computer Safety, Reliability and Security (SAFECOMP); 14 pages. Delft, Netherlands, September 2015.

34. K.K. Venkatasubramanian, E.Y. Vasserman, V. Sfyrla, O. Sokolsky, and I. Lee, "Requirement Engineering for Functional Alarm System for Interoperable Medical Devices," International Conference on Computer Safety, Reliability and Security (SAFECOMP); 14 pages. Delft, Netherlands, September 2015.

35. S. Wang, Y. Geoffroy, G. Gössler, O. Sokolsky, and I. Lee, "A Hybrid Approach to Causality Analysis," 15^{th} Conference on Runtime Verification (RV 2015); 15 pages. Vienna, Austria, September 2015.

36. S. Xi, C. Li, C. Lu, C. Gill, M. Xu, L. T. X. Phan, I. Lee and O. Sokolsky, "RT-OpenStack: CPU Resource Management for Real-Time Cloud Computing," IEEE International Conference on Cloud Computing (CLOUD); 9 pages. New York, NY, June 2015.

37. W. Meng, J. Park, O. Sokolsky, S. Weirich, I. Lee, "Verified ROS-Based Deployment of Platform-Independent Control Systems," Proceedings of the 7^{th} NASA Formal Methods Symposium (NFM 2015); pp. 248–262. Pasadena, CA, April 2015.

38. B.G. Kim, L. Feng, L.T.X. Phan, O. Sokolsky, I. Lee, "Platform-Specific Timing Verification Framework in Model-Based Implementation," Proceedings of Design, Automation, and Test in Europe Conference (DATE '15); 6 pages. Grenoble, France, March 2015.

39. S. Xi, M. Xu, C. Lu, L.T.X. Phan, C. Gill, O. Sokolsky, I. Lee, "Real-time multi-core virtual machine scheduling in Xen," Proceedings of International Conference on Embedded Software (EMSOFT '14); 10 pages. New Delhi, India, October 2014. Citations: 30.

40. N. Bezzo, J. Weimer, M. Pajic, O. Sokolsky, G. J. Pappas, and I. Lee, "Attack Resilient State Estimation for Autonomous Robotic Systems," In IEEE International Conference on Intelligent Robots and Systems (IROS); 7 pages. September 2014.

41. J. Weimer, O. Sokolsky, N. Bezzo, and I. Lee, "Towards Assurance Cases for Resilient Control Systems," 2^{nd} Conference on Cyber-Physical Systems, Networks, and Applications (CPSNA '14); 6 pages. Hong Kong, China, August 2014. **Invited paper.**

42. J. Weimer, N. Bezzo, M. Pajic, O. Sokolsky, I. Lee, "Attack-resilient minimum mean-squared error estimation," American Control Conference, pp. 1114-1119, June 2014.

43. M. Pajic, J. Weimer, N. Bezzo, P. Tabuada, O. Sokolsky, I. Lee and G. J. Pappas, "Robustness of Attack-resilient State Estimators," Proceedings of the International Conference on Cyber-Physical Systems (ICCPS '14); 12 pages. Berlin, Germany, April 2014. (**Best paper award.**) Citations: 16.

44. A. Murugesan, O. Sokolsky, S. Rayadurgam, M. Whalen, M. Heimdahl and I. Lee, "Linking abstract analysis to concrete design: A hierarchical approach to verify medical CPS safety," Proceedings of the International Conference on Cyber-Physical Systems (ICCPS '14); 12 pages. Berlin, Germany, April 2014. Citations: 5.

45. K.K. Venkatasubramanian, E.Y. Vasserman, O. Sokolsky and I. Lee, "Functional Alarms for Systems of Interoperable Medical Devices," Proceedings of the 15^{th} IEEE International Symposium on High Assurance Systems Engineering (HASE 2014); 2 pages. Miami, Florida, January 2014.

46. M. Xu, L.T.X. Phan, I. Lee, O. Sokolsky, S. Xi, C. Lu, and C. Gill, "Cache-Aware Compositional Analysis of Real-Time Multicore Virtualization Platforms," Proceedings of the IEEE Real-Time Systems Symposium (RTSS 2013), December 2013. Citations: 20.

47. B.G. Kim, L.T.X. Phan, O. Sokolsky, and I. Lee, "Platform-Dependent Code Generation for Embedded Real-Time Software," Proceedings of the International Conference on Compilers, Architecture, and Synthesis for Embedded Systems (CASES 2013), September/October 2013. Citations: 10.

48. P. Masci, A. Ayoub, P. Curzon, I. Lee, O. Sokolsky, and H. Thimbleby, "Model-based development of the Generic PCA infusion pump user interface within PVS," Proceedings of the 32^{nd} International Conference on Computer Safety, Reliability and Security (SAFECOMP 2013), pp. 228-240; September 2013. Citations: 9.

49. S. Wang, A. Ayoub, B.G. Kim, G. Gössler, O. Sokolsky, and I. Lee, "A Causality Analysis Framework for Component-based Real-time Systems," Runtime Verification (RV 2013), pp. 285-303, Rennes, France, September 2013. Citations: 7.

50. A.L. King, L. Feng, O. Sokolsky, and I. Lee, "A Modal Specification Approach for On-Demand Medical Systems," Proceedings of the 3^{rd} International Symposium on Foundations of Health Information Engineering and Systems (FHIES 2013), pp. 199-216; Macau, China, August 2013. Citations: 8.

51. A.L. King, L. Feng, O. Sokolsky, I. Lee, "Assuring the Safety of On-Demand Medical Cyber-Physical Systems," Proceedings of the 1^{st} International Conference on Cyber-Physical Systems, Networks, and Applications (CPSNA 2013), Taipei, Taiwan, August 2013.

52. J. Chang, P. Gebhard, A. Haeberlen, Z.G. Ives, I. Lee, O. Sokolsky, K.K. Venkatasubramanian, "TrustForge: Flexible access control for collaborative crowd-sourced environment," 11^{th} International Conference on Privacy, Security, and Trust (PST 2013), Tarragona, Spain, pp. 291-300, July 2013.

53. S. Wang, A. Ayoub, R. Ivanov, O. Sokolsky, I. Lee, "Contract-based Blame Assignment by Trace Analysis," Proceedings of the 2^{nd} International Conference on High-Confidence Networked Systems (HiCoNS 2013), Philadelphia, PA, April 2013. Citations: 7.

54. M. Pajic, N. Bezzo, J. Weimer, O. Sokolsky, R. Alur, R. Mangharam, N. Michael, G.J. Pappas, P. Tabuada, S. Weirich, I. Lee, "Towards Synthesis of Platform-aware Attack-Resilient Control Systems," Proceedings of the 2^{nd} International Conference on High-Confidence Networked Systems (HiCoNS 2013), Philadelphia, PA, April 2013. Citations: 8.

55. D. Soudbakhsh, L.T.X. Phan, O. Sokolsky, I. Lee, A. Annaswamy, "Co-design of Control and Platform with Dropped Signals," Proceedings of the 4^{th} International Conference on Cyber-Physical Systems (ICCPS 2013), Philadelphia, PA, April 2013. Citations: 12.

56. L.T.X. Phan, M. Xu, J. Lee, I. Lee, O. Sokolsky, "Overhead-Aware Compositional Analysis of Real-Time Systems," Proceedings of the 19^{th} IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2013), Philadelphia, PA, April 2013. Citations: 20.

57. A. Ayoub, J. Chang, O. Sokolsky, and I. Lee, "Assessing the Overall Sufficiency of Safety Arguments," Proceedings of the 21^{st} Safety-critical Systems Symposium (SSS'13), February 2013. Citations: 4.

58. B.G. Kim, L.T.X. Phan, I. Lee, and O. Sokolsky, "A Model-Based I/O Interface Synthesis Framework for the Cross-Platform Software Modeling," Proceedings of the IEEE International Symposium on Rapid System Prototyping (RSP 2012), October 2012.

59. A. Ayoub, B.G. Kim, I. Lee, and O. Sokolsky, "A Systematic Approach to Justifying Sufficient Confidence in Software Safety Arguments," Proceedings of the 31^{st} International Conference on Computer Safety, Reliability and Security (SAFECOMP 2012), Magdeburg, Germany, September 2012. Citations: 14.

60. M. Pajic, Z. Jiang, I. Lee, O. Sokolsky, and R. Mangharam, "From Verification to Implementation: A Model Translation Tool and a Pacemaker Case Study," Proceedings of the 18^{th} IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2012), April 2012. **Best student paper award.** Citations: 40.

61. J. Lee, S. Xi, S. Chen, L.T.X. Phan, C. Gill, I. Lee, C. Lu, O. Sokolsky, "Realizing Compositional Scheduling through Virtualization," Proceedings of the 18^{th} IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2012), April 2012. Citations: 39.

62. A. Ayoub, B. G. Kim, I. Lee and O. Sokolsky, "A Safety Case Pattern for Model-Based Development Approach," NASA Formal Methods Symposium (NFM), April 2012. Citations: 13.

63. P. Asare, D. Cong, S. Vattam, B. G. Kim, S. Lin, O. Sokolsky, M. Mullen-Fortino, and I. Lee, "The Medical Device Dongle: An Open-Source Standards-Based Platform for Interoperable Medical Device Connectivity," 2^{nd} ACM SIGHIT International Health Informatics Symposium (IHI 2012), January 2012. Citations: 10.

64. B. G. Kim, A. Ayoub, O. Sokolsky, I. Lee, P. Jones, Y. Zhang, and R. Jetley, "Safety-Assured Development of the GPCA Infusion Pump Software," 11^{th} International Conference on Embedded Software (EMSOFT 2011), October 2011. Citations: 53.

65. O. Sokolsky, I. Lee, M. Heimdahl, "Challenges in the Regulatory Approval of Medical Cyber-Physical Systems," 11^{th} International Conference on Embedded Software (EMSOFT 2011), October 2011. Citations: 10.

66. S. Wang, A. Ayoub, O. Sokolsky, and I. Lee, "Runtime Verification of Traces under Recording Uncertainty," 2^{nd} International Conference on Runtime Verification (RV 2011), San Francisco, CA, October 2011. Citations: 7.

67. D. Arney, K. K. Venkatasbramanian, O. Sokolsky, and I. Lee, "Biomedical Devices and Systems Security," 33^{rd} Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2011), September 2011. Citations: 17.

68. J. Chang, K. Venkatasubramanian, A.G. West, S. Kannan, B.T. Loo, O. Sokolsky, and I. Lee, "AS-TRUST: A Trust Quantification Scheme for Autonomous Systems in BGP," 4^{th} International Conference on Trust and Trustworthy Computing (TRUST 2011), pp. 262–276; Pittsburgh, PA, June 2011. Citations: 9.

69. L.T.X. Phan, I. Lee, O. Sokolsky, "A Semantic Framework for Mode Change Protocols," Proceedings of the 17^{th} IEEE Real-Time and Embedded Technology and Applications Symposium, April 2011. Citations: 14.

70. S. Chen, L.T.X. Phan, J. Lee, I. Lee, O. Sokolsky, "Removing Abstraction Overhead in the Composition of Hierarchical Real-Time Systems," Proceedings of the 17^{th} IEEE Real-Time and Embedded Technology and Applications Symposium, April 2011. Citations: 10.

71. E. Jee, I. Lee, and O. Sokolsky, "Assurance Cases in Model-Driven Development of the Pacemaker Software," Proceedings of 4^{th} International Symposium on Leveraging Applications (ISoLA 2010), LNCS 6416, pp. 343–356, October 2010. Citations: 32.

72. A. Philippou, I. Lee, O. Sokolsky, and J.-Y. Choi, "A Process Algebraic Framework for Modeling Resource Demand and Supply," 8^{th} International Conference on Formal Modeling and Analysis of Timed Systems (FORMATS 2010), LNCS 6246, pp. 183–197, September 2010. Citations: 6.

73. E. Jee, S. Wang, J. Kim, J. Lee, O. Sokolsky, and I. Lee, "A Safety-Assured Development Approach for Real-Time Software," The 16^{th} IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA), August 2010. Citations: 31.

74. L.T.X. Phan, I. Lee, and O. Sokolsky, "Compositional Analysis of Multi-Mode Systems," The 22^{nd} Euromicro Conference on Real-Time Systems (ECRTS10), July 2010. Citations: 43.

75. I. Lee and O. Sokolsky, "Medical cyber physical systems," Proceedings of the 47^{th} Design Automation Conference, pp. 743–748, June 2010. Citations: 75.

76. D. Arney, M. Pajic, J. Goldman, I. Lee, R. Mangharam, O. Sokolsky, "Toward Patient Safety in Closed-Loop Medical Device Systems," International Conference on Cyber-Physical Systems (ICCPS '10), pp. 139–148, April 2010. Citations: 78.

77. A. Easwaran, I. Lee, O. Sokolsky, and S. Vestal, "A Compositional Scheduling Framework for Digital Avionics Systems," IEEE Real-Time Computing Systems and Applications (RTCSA 2009), August 2009 . Citations: 37.

78. O. Sokolsky, I. Lee, and D. Clarke, "Process-Algebraic Interpretation of AADL Models," 14^{th} International Conference on Reliable Software Technologies (Ada-Europe 2009), LNCS 5570, pp. 222–236 (**Invited paper**), June 2009. Citations: 17.

79. A. Wang, P. Basu, B. Loo, and O. Sokolsky, "Declarative Network Verification," 11^{th} International Symposium on Practical Aspects of Declarative Languages (PADL '09), pp. 61–75, January 2009. Citations: 53.

80. N. Dinesh, A. K. Joshi, I. Lee, and O. Sokolsky, "Reasoning about Conditions and Exceptions to Laws in Regulatory Conformance Checking," International Conference on Deontic Logic in Computer Science (DEON '08), July 2008. Citations: 36.

81. A. Easwaran, I. Lee, I. Shin, and O. Sokolsky, "Compositional Schedulability Analysis of Hierarchical Real-Time Systems", International Symposium on Object-Oriented Real-Time Distributed Computing (ISORC '07), May 2007. Citations: 22.

82. A. Easwaran, I. Shin, O. Sokolsky, and I. Lee, "Incremental Schedulability Analysis of Hierarchical Real-Time Components," 6^{th} ACM International Conference on Embedded Software (EMSOFT 2006), October 2006. Citations: 51.

83. M. Anand, I. Lee, O. Sokolsky, and G. Pappas, "Unit and Dynamic Typing in Hybrid Systems Modeling with CHARON," IEEE International Symposium on Computer-Aided Control Systems Design (CACSD 2006), October 2006. Citations: 4.

84. S. Fischmeister, O. Sokolsky, and I. Lee, "Network-Code Machine: Programmable Real-Time Communication Schedules," 12^th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS'06), pp. 311-324, April 2006. Citations: 13.

85. F. Kratz, O. Sokolsky, G. J. Pappas, I. Lee, "R-Charon, a Modeling Language for Reconfigurable Hybrid Systems," 9th International Workshop on Hybrid Systems: Computation and Control (HSCC 2006), pp. 392-406, March 2006. Citations: 31.

86. O. Sokolsky, S. Kannan, and I. Lee, " Simulation-Based Graph Similarity," 12^th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'06), LNCS 3920, pp. 426-440, March 2006. Citations: 51.

87. U. Sammapun, I. Lee, and O. Sokolsky, "RT-MaC: Runtime Monitoring and Checking of Quantitative and Probabilistic Properties," 11^{th} IEEE Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA '05), pp. 147-153, August 2005. Citations: 56.

88. O. Mondragon, A. Gates, H. Mendoza, and O. Sokolsky, "Generating Properties for Runtime Monitoring from Software Specification Patterns," 17^{th} International Conference on Software Engineering and Knowledge Engineering (SEKE '05), July 2005. Citations: 5.

89. L. Tan, J. Kim, O. Sokolsky, and I. Lee, "Model-based Testing and Monitoring for Hybrid Embedded Systems", IEEE International Conference on Information Reuse and Integration (IEEE IRI-2004), November 2004. Citations: 40.

90. L. Tan, O. Sokolsky, and I. Lee, "Specification-based Testing with Linear Temporal Logic," IEEE International Conference on Information Reuse and Integration (IEEE IRI-2004), November 2004. Citations: 68.

91. R. Alur, F. Ivancic, J. Kim, I. Lee, and O. Sokolsky, "Generating Embedded Software from Hierarchical Hybrid Models", International Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES '03), pp. 171–182, June 2003. Citations: 70.

92. H.S. Hong, S.D. Cha, I. Lee, O. Sokolsky, and H. Ural, "Data Flow Testing as Model Checking", International Conference on Software Engineering (ICSE '03), pp. 232–242, May 2003, Citations: 124.

93. O. Sokolsky, A. Philippou, I. Lee, and K. Christou, "Modeling and Analysis of Power-Aware Systems", International Conference on Tools and Algorithms for Construction and Analysis of Systems (TACAS '03), LNCS 2619, pp. 409–424, April 2003. Citations: 16.

94. R. Alur, C. Belta, F. Ivancic, V. Kumar, H. Rubin, J. Schug, O. Sokolsky, and J. Webb, "Visual programming for modeling and simulation of biomolecular regulatory networks", International Conference on High Performance Computing, LNCS 2552, pp. 702–712, December 2002. Citations: 13.

95. H.S. Hong, I. Lee, O. Sokolsky, and H. Ural, "A Temporal Logic Based Theory of Test Coverage and Generation," International Conference on Tools and Algorithms for Construction and Analysis of Systems (TACAS '02), pp. 327–341, April 2002. Citations: 160.

96. R. Alur, T. Dang, J.M. Esposito, R.B. Fierro, Y. Hur, F. Ivancic, V. Kumar, I. Lee, P. Mishra, G.J. Pappas, and O. Sokolsky. "Hierarchical Hybrid Modeling of Embedded Systems," Proceedings of EMSOFT'2001, pp. 14–31. Citations: 128.

97. I. Lee, J.-Y. Choi, H. H. Kwak, A. Philippou, O. Sokolsky, "A Family of Resource-Bound Real-Time Process Algebras," Proceedings of International Conference on Formal Techniques for Networked and Distributed Systems (FORTE 2001), pp 443-458, August 2001. Citations: 26.

98. R. Alur, R. Grosu, I. Lee, and O. Sokolsky, "Compositional Refinement for Hierarchical Hybrid Systems," International Workshop on Hybrid Systems: Computation and Control, LNCS 2034, pp. 33–48. March, 2001. Citations: 87.

99. A. Philippou, I. Lee, and O. Sokolsky, "Weak Bisimulation for Probabilistic Systems," CONCUR '00, pp. 334–349, August 2000. Citations: 100.

100. D. Gordon, W. Spears, O. Sokolsky, and I. Lee, "Distributed Spatial Control and Global Monitoring of Mobile Agents," IEEE International Conference on Information, Intelligence, and Systems, November 1999. Citations: 38.

101. I. Lee, S. Kannan, M. Kim, O. Sokolsky, and M. Viswanathan, "Runtime Assurance Based On Formal Specifications", International Conference on Parallel and Distributed Processing Techniques and Applications, June 28 - July 1, 1999. Citations: 176.

102. M. Kim, M. Viswanathan, H. Ben-Abdallah, S. Kannan, I. Lee, and O. Sokolsky, "Formally Specified Monitoring of Temporal Properties," European Conference on Real-Time Systems, pp. 114-121, June 1999. Citations: 127.

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104. H.-H. Kwak, J.-Y. Choi, I. Lee, A. Philippou, and O. Sokolsky, "Symbolic Schedulability Analysis of Real-time Systems," IEEE Real-Time Systems Symposium, December 1998. Citations: 42.

105. A. Philippou, O. Sokolsky, I. Lee, R. Cleaveland, and S. Smolka, "Probabilistic Resource Failure in Real-Time Process Algebra," CONCUR'98, September 1998. Citations: 24.

106. O. Sokolsky, M. Younis, I. Lee, H.-H. Kwak, and J. Zhou, "Verification of the Redundancy Management System for Space Launch Vehicle," IEEE Real-Time Applications and Technology Symposium, pp. 220-229, June 1998. Citations: 8.

107. N. Prywes, P. Rehmet, O. Sokolsky and I. Lee, "Retrospective Exploration of Safety Properties in Real-Time Concurrent Systems," IEEE Digital Avionics Systems Conference, October 1997.

108. D.Clarke, H. Ben-Abdallah, I. Lee, O. Sokolsky, "PARAGON: A Paradigm for the Specification, Verification and Testing of Real-Time Systems," 1997 IEEE Aerospace Conference, pp. 469–488, February 1997. Citations: 21.

109. R. Cleaveland, P.M. Lewis, S.A. Smolka, and O. Sokolsky, "The Concurrency Factory: A Development Environment for Concurrent Systems," Computer Aided Verification '96, pp. 398–401, July 1996. Citations: 51.

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111. R. Cleaveland, P.M. Lewis, S.A. Smolka, and O. Sokolsky, "The Concurrency Factory Software Development Environment," TACAS '96, pp. 391-395, March 1996. Citations: 6.

112. H. Ben-Abdallah, I. Lee and O. Sokolsky, "Operational Semantics for Visual Simulation in PARAGON", IEEE National Aerospace and Electronics Conference, July 1997.

113. O. Sokolsky, S.A. Smolka, "Local Model Checking for Real-Time Systems," Computer-Aided Verification '95, pp. 211–224, July 1995. Citations: 76.

114. S. Zhang, S.A. Smolka, and O. Sokolsky, "On the Parallel Complexity of Model Checking in the Modal Mu-Calculus," Proceedings of Ninth Annual IEEE Symposium on Logic in Computer Science, pp. 154–163, July 1994. Citations: 32.

115. O. Sokolsky and S.A. Smolka, "Incremental Model Checking in the Modal Mu-Calculus," Computer-Aided Verification '94, pp. 351–363, June 1994. Citations: 90.

Refereed workshop proceedings:

116. N. Bezzo, Y. Du, O. Sokolsky, and I. Lee, "A Markovian Approach for Attack Resilient Control of Mobile Robotic Systems," 2^{nd} International Workshop on Robotic Sensor Networks, April 2015.

117. O. Sokolsky, M. Pajic, N. Bezzo, and I. Lee, "Architecture-Centric Software Development for Cyber-Physical Systems," Workshop on Cyber-Physical System Architectures and Design Methodologies (CPSArch), New Delhi, India, October 2014.

118. L. Feng, A.L. King, S. Chen, A. Ayoub, J. Park, N. Bezzo, O. Sokolsky, and I. Lee, "A Safety Argument Strategy for PCA Closed-Loop Systems: A Preliminary Proposal," Workshop on Medical Cyber-Physical Systems, Berlin, Germany, April 2014.

119. J. Weimer, N. Bezzo, M. Pajic, G.J. Pappas, O. Sokolsky, and I. Lee, "Resilient Adaptive Control with Application to Vehicle Cruise Control," Workshop on Control of Cyber-Physical Systems, March 2013.

120. C. Murphy, M. S. Raunak, A. King, S. Chen, C. Imbriano, G. Kaiser, I. Lee, O. Sokolsky, L. Clarke, L. Osterweil, "On Effective Testing of Health Care Simulation Software," Proceedings of the 3^{rd} International Workshop on Software Engineering in Health Care (SEHC 2011), May 2011. Citations: 19.

121. J. Lee, L.T.X. Phan, S. Chen, O. Sokolsky, and I. Lee, "Improving Resource Utilization for Compositional Scheduling using DPRM Interfaces," 3^{rd} Workshop on Compositional Theory and Technology for Real-Time Embedded Systems (CRTS 2010), pp. 38–45; San Diego, CA, November 2010. Citations: 8.

122. A. King, D. Arney, I. Lee, O. Sokolsky, J. Hatcliff, and S. Proctor, "Prototyping Closed Loop Physiologic Control with the Medical Device Coordination Framework," Proceedings of 2nd Workshop on Software Engineering in Health Care (SEHC 2010), May 2010. Citations: 32.

123. V. Chinnapongse, I. Lee, O. Sokolsky, S. Wang, and P.L. Jones, "Model-Based Testing of GUI-Driven Applications," 7^{th} IFIP Workshop on Software Technologies for Future Embedded and Ubiquitous Systems (SEUS 2009), LNCS 5860, pp. 203–214, November 2009. Citations: 14.

124. A. Wang, L. Jia, C. Liu, B.T. Loo, O. Sokolsky, and P. Basu, "Formally Verifiable Networking," 8^{th} Workshop on Hot Topics in Networks (ACM SIGCOMM HotNets-VIII), Oct 2009. Citations: 20.

125. W. Zhou, O. Sokolsky, B.T. Loo, and I. Lee, "DMaC: Distributed Monitoring and Checking," 9^{th} Workshop on Runtime Verification (RV '09), LNCS 5779, pp. 184–201, Grenoble, France, July 2009. Citations: 39.

126. A.G. West, A.J. Aviv, J. Chang, V.S. Prabhu, M. Blaze, S. Kannan, I. Lee, J.M. Smith, and O. Sokolsky, "QuanTM: A Quantitative Trust Management System," European Workshop on System Security (EUROSEC 2009), pp. 28-35, Nuremberg, Germany, March 2009. Citations: 18.

127. O. Sokolsky and A. Chernoguzov, "Performance Analysis of AADL Models Using Real-Time Calculus," Workshop on Foundations of Computer Software, Future Trends and Techniques for Development, September 2008. Citations: 8.

128. A. Easwaran, I. Lee, and O. Sokolsky, "Interface Algebra for Analysis of Hierarchical Real-Time Systems," Workshop on the Foundations of Interface Technologies (FIT'08), Budapest, Hungary, April 2008. Citations: 7.

129. N. Dinesh, A.K. Joshi, I. Lee, and O. Sokolsky, "Checking Traces for Regulatory Conformance," 8^{th} Workshop on Runtime Verification (RV'08), March 2008. Citations: 27.

130. D. Arney, R. Jetley, P. Jones, I. Lee, and O. Sokolsky, "Formal Methods Based Development of a PCA Infusion Pump Reference Model: Generic Infusion Pump (GIP) Project," Proceedings of 2007 Joint Workshop on High Confidence Medical Devices, Software, and Systems and Medical Device Plug-and-Play Interoperability, June 2007. Citations: 51.

131. U. Sammapun, I. Lee, O. Sokolsky, and J. Regehr, "Statistical Runtime Checking of Probabilistic Properties," 7^{th} Workshop on Run-time Verification, LNCS 4839, pp. 164-175, March 2007. Citations: 20.

132. O. Sokolsky, I. Lee, and D. Clarke, "Schedulability Analysis of AADL Models," Workshop on Parallel and Distributed Real-Time Systems (WPDRTS '06), April 2006. Citations: 94.

133. H. S. Hong, I. Lee, and O. Sokolsky, "Abstract Slicing: A New Approach to Program Slicing Based on Abstract Interpretation and Model Checking," 5^th International Workshop on Source Code Analysis and Manipulation (SCAM), pp. 25-34, Sept 30–Oct 1, 2005. Citations: 35.

134. A. Easwaran, S. Kannan, and O. Sokolsky, "Steering of Discrete Event Systems: Control Theory Approach," 5th International Workshop on Run-time Verification, ENTCS 144(4), pp. 21-39, July 2005. Citations: 28.

135. O. Sokolsky, U. Sammapun, I. Lee, and J. Kim, "Run-Time Checking of Dynamic Properties," 5th International Workshop on Run-time Verification, ENTCS 144(4), pp. 91-108, July 2005. Citations: 21.

136. M. DeLap, B. Knutsson, H. Lu, O. Sokolsky, U. Sammapun, I.Lee, and C. Tsarouchis, "Is Runtime Verification Applicable to Cheat Detection?," ACM SIGCOMM Workshop on Network and System Support for Games (NetGames '04), August 2004. Citations: 34.

137. U. Sammapun, A. Easwaran, I. Lee, O. Sokolsky, "Simulation of Simultaneous Events in Regular Expressions for Run-Time Verification," 4^th International Workshop on Run-time Verification, ENTCS 113: 123-143, April 2004. Citations: 12.

138. O. Sokolsky, "Resource Modeling for Embedded Systems Design," Proceedings of the Workshop on Software Technologies for Future Embedded and Ubiquitous Computing (WSTFEUS 2004), May 2004. Citations: 20.

139. I. Lee, A. Philippou, and O. Sokolsky, "A General Resource Framework for Real-Time Systems", Workshop on Radical Innovations of Software and Systems Engineering in the Future, LNCS 2941, pp. 234–248, October 2002. Citations: 18.

140. M. Kim, S. Kannan, I. Lee, O. Sokolsky, and M. Viswanathan "Computational analysis of Run-Time Monitoring," International Workshop on Run-time Verification, ENTCS 70(4), pp. 80–94, July 2002. Citations: 32.

141. M. Kim, I. Lee, U. Sammapun, J. Shin, and O. Sokolsky, "Monitoring, Checking, and Steering of Real-Time Systems," International Workshop on Run-time Verification, ENTCS 70(4), July 2002. Citations: 66.

142. E. Aaron, D. Metaxas, F. Ivancic, O. Sokolsky, "A framework for reasoning about animation systems," Proceedings of Workshop on Intelligent Virtual Agents, LNAI 2190, pp. 47–60, September 2001. Citations: 11.

143. O. Sokolsky and H.S. Hong, "Qualitative Modeling of Hybrid Systems," Workshop on Formal Models in Software Development, June 2001. Citations: 13.

144. H.S. Hong, I. Lee, O. Sokolsky, and S.D. Cha, "Automatic Test Generation using Model Checking," Workshop on Formal Approaches to Testing of Software, BRICS Notes Series NS-01-4, pp. 15–31, August 2001. Citations: 84.

145. M. Kim, S. Kannan, I. Lee, O. Sokolsky, and M. Viswanathan, "Java-MaC: a Run-time Assurance Tool for Java," Proceedings of the 1^{st} International Workshop on Run-time Verification, ENTCS 55(2), July 2001. Citations: 194.

146. I. Lee and O. Sokolsky, "A Graphical Property Specification Language," 2nd IEEE Workshop on High-Assurance Systems Engineering, pp. 42–47, August 1997. Citations: 16.

147. R. Cleaveland, J.N. Gada, P.M. Lewis, S.A. Smolka, O. Sokolsky, and S. Zhang, "The Concurrency Factory - Practical Tools for Specification, Simulation, Verification, and Implementation of Concurrent Systems," Proceedings of DIMACS Workshop on Specification of Parallel Algorithms, Princeton, pp. 75–90, May 1994. Citations: 45.

Book chapters:

148. A.G. West, I. Lee, S. Kannan, and O. Sokolsky, "An Evaluation Framework for Reputation Management Systems," *Trust Modeling and Management in Digital Environments: From Social Concept to System Development* (Zheng Yan, ed.), IGI Global, 2010. Citations: 22.

149. A. Philippou and O. Sokolsky, "Process-Algebraic Analysis of Timing and Schedulability Properties," *Handbook of Real-Time and Embedded Systems*, Chapman and Hall/CRC, 2007. Citations: 6.

150. R. Cleaveland and O. Sokolsky, "Equivalence and Preorder Checking for Finite-State Systems," in *Handbook of Process Algebra*, pp. 391–424, Elsevier, 2001. Citations: 55.

151. S.A. Smolka, O. Sokolsky, and S. Zhang, "On the Parallel Complexity of Bisimulation and Model Checking," in *Modal Logic and Process Algebra*, pp. 257–288, Cambridge University Press, 1995.

Edited Volumes:

152. O. Sokolsky, G. Rosu (Eds.), Special Issue on Runtime Verification. *Formal Methods in System Design*, 41(3), 2012.

153. O. Sokolsky, K. Havelund, I. Lee (Eds.), Special Section on Runtime Verification. *Software Tools for Technology Transfer*, 14(3), 2012.

154. H. Barringer, Y. Falcone, B. Finkbeiner, K. Havelund, I. Lee, G. Pace, G. Rosu, O. Sokolsky, N. Tillmann (Eds.) "Runtime Verification," Lecture Notes in Computer Science, Vol. 6418, Springer, 2010.

155. C. Choppy and O. Sokolsky (Eds.) "Foundations of Computer Software," Lecture Notes in Computer Science, Vol. 6028. Springer, 2010.

156. F. Kordon and O. Sokolsky (Eds.) "Composition of Embedded Systems," Lecture Notes in Computer Science, Vol. 4888. Springer, 2007.

157. O. Sokolsky and S. Tasiran (Eds.) "Runtime Verification," Lecture Notes in Computer Science, Vol. 4839. Springer, 2007.

158. O. Sokolsky and C. Gill (Eds.) Special Issue on Real-time and Embedded Systems. *Journal of Computer and Information Sciences*, 73(2), March 2007.

159. X. Zhou, O. Sokolsky, L. Yan, E.-S. Jung, Z. Shao, Y. Mu, D.-C. Lee, D. Kim, Y.-S. Jeong, C.-Z. Xu (Eds.) "Emerging Directions in Embedded and Ubiquitous Computing," Lecture Notes in Computer Science, Vol. 4097. Springer, 2006.

Recent and Current Research Funding (PI grants highlighted in bold font)

1. **"RINGS: Regenerative, INtent-Guided Systems," DARPA BRASS FA8750-16-C-0007, subcontract to BAE. Total amount: $877,963, PI.**

2. "Dynamic Real-Time Virtualization and Cloud Computing," ONR. Total amount: $750,000 (10/1/2015-9/30/2018), co-PI, with I. Lee and L. Phan.

3. "Security and Privacy-Aware Cyber-Physical Systems," NSF CNS-1505799 and Intel-NSF Partnership for Cyber-Physical Systems Security and Privacy. Total amount: $2,250,000 (9/1/2015-8/31/2018), Co-PI, with I. Lee (PI), A. Haeberlen, N. Heninger.

4. "Platform-based Automotive Safety Features," Toyota ITC gift. Total amount: $25,000. 3/1/2015, Co-PI, with I. Lee.

5. "Probalogical Hybrid Defense," ONR N00014-15-1-2006. Total amount $568,610 (1/1/2015-12/31/2017), Co-PI, with J. Smith (PI), S. Kannan, S. Rakhlin, R. Alur, I.Lee.

6. **"Tools and Techniques for Conformance Checking with Recovered Models," Honeywell. Total amount: $100,000 (1/1/2015-12/31/2015). PI.**

7. **"Progressive Model Generation for Adaptive Resilient System Software," ONR STTR N00014-13-P-1175 (phase I) and N00014-15-C-0126 (phase II), subcontract from Grammatech, Inc. Total amount: $60,000 (Phase I: 7/1/2013-2/28/2014), $536,646 (Phase II, 11/1/2015-10/30/2017), PI, with I. Lee.**

8. **"Safety-Feature Modeling and Adaptive Resource Management for Mixed-Criticality Cyber-Physical Systems," NSF CNS-1329984. Total amount: $600,000 (10/1/2013-9/30/2017), PI, with I. Lee and L. Phan. Collaborative with Washington University.**

9. "Theory and Virtualization Platform for Compositional Real-Time Systems," ONR N00014-13-1-0802. Total amount: $455,822 (8/1/2013-7/31/2016). Co-PI with I. Lee (PI). Collaborative with Washington University.

10. "Trustworthy Composition of Dynamic App-Centric Architectures for Medical Application Platforms," NSF CPS ACI-1239324. Total amount: $120,000 (10/1/2012-9/30/2015), Co-PI with I. Lee (PI). Collaborative with Kansas State University.

11. "SPARCS: Synthesis of Platform-aware Attack-Resilient Control Systems," DARPA HACMS FA8750-12-2-0247. Total amount: $4,813,274 (8/8/2012-2/12/2017). Co-PI, with I. Lee (PI), G. Pappas, S. Weirich, P. Tabuada.

12. **"Heterogeneous Large-Scale Telemedicine for Cardiology Patients," NSF IIS-1231547. Total amount: $300,000 (9/1/2012-9/1/2015). PI, with I. Lee. Collaborative with Temple University.**

13. **"Co-Design of Multimodal CPS Architectures and Adaptive Controllers," NSF ECCS-1135630. Total amount: $400,000 (10/1/2011-9/30/2015). PI, with L. Phan. Collaborative with MIT.**

14. "Compositional Framework for Complex Real-time Systems on Multicore Platforms," ARO W911NF-11-1-0403. Total amount: $386,000 (9/1/2011-8/31/2014). Co-PI, with I. Lee (PI), L. Phan.

15. **"TrustForge: Flexible Access Control for VehicleForge.mil Collaborative Environment," DARPA TTO HR0011-11-C-0096. Total amount: $1,026,719 (7/17/2011-8/1/2013) PI.**

16. "Assuring the Safety, Security and Reliability of Medical Device Cyber Physical Systems," NSF CNS-1035715. Total amount: $5,000,000 (10/1/2010-9/30/2015), Co-PI, with I. Lee (PI), R. Alur, G. Pappas, and W. Hanson.

17. "Assurance Cases for a Physiologically Closed-Loop PCA Systems," NSF CNS-1042829. Total amount: $25,000 (11/1/2010-10/31/2012). Co-PI, with I. Lee.

18. "Infrastructure and Technology Innovations for Medical Device Coordination", NSF CNS-0930647. Total amount: $660,000 (9/15/2009-8/31/2012), Co-PI, with I. Lee.

19. "Robust Composition and Interoperability of CPS Components", NSF CNS-0834524. Total amount: $950,000 (9/1/2008-8/31/2011), Co-PI, with I. Lee (PI), B. Loo, and R. Mangharam.

20. "Component-based Development of Cyber-Physical Systems," NSF CNS-0720703. Total amount: $245,000 (9/1/2007-8/31/2010). Co-PI, with I. Lee.

21. "Safety-Centric Analysis and Runtime Monitoring for Plug-and-Play Medical Suites," NSF STTR IIP-0712298, subcontract from Fremont Associates. Total amount: $55,000 (07/01/2007-06/30/2008).

22. "Towards Trust Management in Service-Oriented Architectures" ONR MURI N00014-07-1-0907. Total amount: $6,400,000 (4/13/2007-4/30/2010). Co-PI, with S. Kannan (PI), I. Lee, and M. Blaze.

23. "Resource Semantic Interfaces for Hierarchical Model-Driven Development of Embedded Systems," AFOSR FA9550-07-1-0216. Total amount: $494,390 (2/15/2007–11/20/2009), Co-PI, with I. Lee.

24. "Design Verification and Validation of Software Systems Using Formal Methods," FDA/TATRC IAG-224-06-6063. Total amount: $125,000 (10/02/2006–9/28/2007). Co-PI, with I. Lee.

25. "Techniques for Assuring the Safety and Reliability of Physical Computing Systems and Applications to Medical Devices," NSF CNS-0509327. Total amount: $780,000 (7/1/2005–6/30/2009). Co-PI, joint with I. Lee, G. Pappas, and V. Rich.

26. **"STTR Phases I and II: Simulation and Analysis Toolset for an Industry-Standard Embedded System Specification Language," AFOSR STTR FA9550-04-C-0187, subcontract from Fremont Associates. Total amount: $256,000 (9/1/2004–9/29/2007). PI**

27. "Run-time Validation and Verification of Safety-critical Flight Control Systems," AFOSR STTR, subcontract from Barron Associates. Total amount: $75,000 (11/1/2005–3/14/2007).

28. "Enhancing Dependability of HCES", ARO W911NF-05-1-0182. Total amount: $225,000 (4/15/2005–4/14/2007). Co-PI, joint with I. Lee.

29. "Anomaly and Misuse Detection in Network Traffic Systems," ONR MURI N00014-04-1-0735. Total amount: $1,000,000 (6/1/04–5/31/06). Co-PI, joint with Sampath K. and I. Lee.

30. "Advanced Tool Integration for Embedded System Assurance," ARO DAAD19-01-1-0473. Total amount $4,984,330 (6/1/01–4/30/06). Co-PI, joint with R. Alur, C. Gunter, S. Kannan, I. Lee.

31. "Run-time Environment and Design Application for Polymorphous Technology, Phases I and II," DARPA PCA F33615-00-C-1887, subcontract from Lockheed Martin. Total amount $700,154 (7/1/01–12/31/05).

32. "Testing Based on Hybrid System Models," NSF CCR-0209024. Total amount $450,000 (9/15/02–8/31/05). Co-PI, joint with Insup Lee.

33. "An Integrated Approach to Improving Design-Time and Run-Time Confidence." NSF CCR-9988409. Total amount $320,000 (5/1/00–6/30/03). Co-PI, joint with I. Lee.

Invited presentations:

1. "Compositional Scheduling: Spectrum of Approaches," Keynote presentation at the 14^{th} International Conference on Formal Modeling and Analysis of Timed Systems (FORMATS '16), August 2016.

2. "Ecosystem-Based Assurance for Plug-and-Play Medical Systems," Invited presentation at the Workshop on Embedded Software and Responsibility, November 2015.

3. "Ecosystem-Based Assurance for Plug-and-Play Medical Systems," Invited presentation at the 2^{nd} Workshop on Open Systems Dependability, November 2015.

4. "Model-Driven Safety Analysis of Closed-Loop Medical Cyber-Physical Systems," Invited presentation at the FDA Workshop on Physiological Closed-Loop Controlled Devices, October 2015.

5. "Compositional Scheduling and Real-Time Virtualization," Keynote presentation at the 4^{th} Embedded Operating Systems Workshop (EWiLi'14), November 2014.

6. "Towards Assurance Cases for Resilient Control Systems," Invited paper presentation at the 2^{nd} Conference on Cyber-Physical Systems, Networks, and Applications (CPSNA '14), August 2014.

7. "Assuring the Safety of On-Demand Medical Cyber-Physical Systems," McGill University, October 2013.

8. "Challenges in Medical Cyber-Physical Systems," Lecture at the Persyval Summer School on Cyber-Physical Systems, Grenoble, France, July 2013.

9. "Reliability Challenges in Medical Cyber-Physical Systems," Invited presentation at the Workshop on Reliability of Cyber-Physical Systems, October 2012.

10. "Monitoring and Checking of Safety Properties," Washington University, St. Louis, June 2012.

11. "Challenges in Certification for Medical Cyber-Physical Systems," Keynote presentation at Safe and Secure Systems and Software Symposium, June 2012.

12. "Medical Cyber-Physical Systems," Temple University, October 2011.

13. "Medical Cyber-Physical Systems," Keynote presentation at the 18^{th} IEEE International Conference on Engineering of Computer-Based Systems, April 2011.

14. "Modeling and Analysis with AADL," NASA Langley Research Center, March 2011.

15. "Modeling Resource Demand and Supply," Telecom ParisTech, July 2010.

16. "Process-Algebraic Interpretation of AADL Models," Invited paper presentation at 14^{th} International Conference on Reliable Software Technologies, June 2009.

17. "Performance Analysis of AADL Models Using Real-Time Calculus," Keynote presentation at the 4^{th} AADL&UML Workshop, June 2009.

18. "Permission to Speak: an Access Control Logic," 2nd Workshop on Formal Languages and Analysis of Contract-Oriented Software, November 2008. Citations: 11.

19. "Analysis of Simulation Traces by Run-time Verification," Invited tutorial, Conference on Quantitative Evaluation of Systems (QEST 2006), September 2006.

20. "Run-time Verification of Software Systems," North Carolina State University, January 2004.

21. "A General Resource Framework for Real-Time Systems", Workshop on Radical Innovations of Software and Systems Engineering in the Future, October 2002.

22. "Qualitative modeling of hybrid systems," Workshop on Formal Models in Software Development, June 2001.

23. "Comparative Analysis of Design Alternatives in Embedded Systems", Workshop on Modelling Software System Structures in a Fastly Moving Scenario, June 2000.

Ph.D. and M.Sc. Thesis Supervision

1. Shaohui Wang, Ph.D. (co-advised with Insup Lee), expected Fall 2016.
2. BaekGyu Kim, Ph.D. (co-advised with Insup Lee), Summer 2015. Toyota ITC.
3. Andrew West, Ph.D. (co-advised with Insup Lee), "Damage Detection and Mitigation in Open Collaboration Applications." Spring 2013. VeriSign Research Labs.
4. Arvind Easwaran, Ph.D. (co-advised with Insup Lee). "Advances in Hierarchical Real-Time Systems: Incrementality, Optimality, and Multiprocessor Clustering." Fall 2008. National Technological University, Singapore, Assitant Professor.
5. Usa Sammapun, Ph.D. (co-advised with Insup Lee). "Monitoring and checking of real-time and probabilistic properties." Spring 2007. College instructor in Thailand.
6. Jangwoo Shin, Ph.D. (co-advised with Noah Prywes). "A tool for understanding concurrent programs through state space." Fall 2001. NetXentry, Technical Director.
7. Chaitanya Penubarthi, M.Sc. "Code generation for distributed hybrid models." Fall 2004.

Undergraduate Project Supervision

Class of 2006: Will Frank.

Class of 2007: Raj Gupta, Oleksiy Syrotkin.

Class of 2009: Konstadinos Karayannis.

Thesis Committee Participation

Penn: Sanjian Chen (expected 2016), Andrew King (expected 2016), Jaewoo Lee (expected 2016), Abhishek Udupa (expected Fall 2015), Jian Chang (Spring 2013), Changbin Liu (Fall 2012), Nikhil Dinesh (Fall 2010), Tingting Sha (Spring 2009); Georgios Fainekos, Madhukar Anand (Spring 2008), Mikhail Bernadsky (Fall 2007), Sebastian Burkhardt, Wonhong Nam (Spring 2007), Jongwoo Kim (Spring 2006); James Yang (Fall 2003).

External: Somayeh Malakuti (U. Twente, the Netherlands, Fall 2011), Thomas DuBois (Villanova U., Spring 2012), Julien Delange (Telecom ParisTech, France, Summer 2010), Dezhuang Zhang (SUNY Stony Brook, Fall 2005), Stepan Nadrchal (Charles University, Czech Republic, Summer 2004).

Professional Activities

Editor, ACM SIGBED Review, since March 2009.

Associate Editor, IEEE Embedded Systems Letters, since January 2016.

Steering Committee member: Conference on Runtime Verification, since 2008; Conference on Embedded Software (EMSOFT), since 2013.

Executive Committee member, IEEE TC-RTS, 2013–2015.

Treasurer/Secretary of ACM SIGBED, since July 2015. Guest Editor: Special Issue on Architecture-Driven Semantic Analysis of Embedded Systems, Science of Computer Programming, 2015; Special Section on Runtime Verification, Software Tools for Technology Transfer, 14(3), 2012; Special Issue on Runtime Verification, Journal of Logic and Computation, 20(3), 2010; Special Issue on Real-time and Embedded Systems, Journal of Computer and System Sciences, 73(2), 2009.

General Chair, CPS Week federated conference, 2013.

Program co-Chair, Conference on Embedded Software (2013).

Program co-Chair (2011) and General co-Chair (2012), ACM/IEEE International Conference of Cyber-Physical Systems.

Program co-Chair, Conference on Runtime Verification (2010).

Program Chair (2005), General Chair (2006), and Finance Chair (2007), IEEE Real-Time and Embedded Technology and Applications Symposium.

Program Track Chair on Cyber-Physical Systems, Conference on Embedded and Ubiquitous Computing (2008, 2009).

Program Track Chair on Design and Verification, Real-Time Systems Symposium (2009).

Workshop co-Organizer: Analytical Virtual Integration of Cyber-Physical Systems, 2012; Dagstuhl Seminar on Architecture-Driven Semantic Analysis of Embedded Systems, 2012; Composition of Real-Time Systems, 2008–2010; Foundations of Computer Science, Future Trends and Techniques for Development, 2008; Software and Systems for Medical Devices and Services, 2007; High-Confidence Medical Devices, Software, and Systems, and Medical Device Plug-and-Play, 2007 and 2009; Dagstuhl Seminar on Runtime Verification, 2007; Innovative Techniques for Certification of Embedded Systems, 2006; Composition of Embedded Systems: Scientific and Industrial Issues, 2006; Run-Time Verification, 2003 and 2007.

Tutorial and Workshops Chair, IEEE Real-Time Systems Symposium, 2005.

Workshops Co-Chair, IFIP International Conference on Embedded and Ubiquitous Computing, 2006.

Local Organization Chair, International Conference on Embedded Software, 2003.

Program Committee service at major conferences:

IEEE Real-Time and Embedded Technology and Application Symposium, 2002, 2004, 2007,2008,2010–2012, 2014; IEEE Real-time Systems Symposium, 2002, 2005–2011, 2014; IEEE International Symposium on Object-oriented Real-time distributed Computing, 2000, 2002, 2004, 2008, 2009; IEEE Conference on Real-Time Computing Systems and Applications, 2005–2007; ACM Conference on Embedded Software, 2005, 2006, 2012-2015; Conference on Tools and Algorithms for the Construction and Analysis of Systems, 2009, 2010; IEEE International Symposium on Emerging Technologies and Factory Automation, 2009–2012; European Conference on Real-Time Systems, 2006, 2010; International Conference on Engineering of Complex Computer Systems, 2010–2012; International Conference on Run-time Verification, 2001–2016; NASA Formal Methods Symposium, 2016.

SAE AS-2C Standardization Committee, Architecture Analysis and Design Language, member since 2005, Vice Chair 2008-2009.