Biographical Sketch for Paolo A. G. Sivilotti

Department of Computer Science and Engineering (614) 292-5835 The Ohio State University paolo@cse.ohio-state.edu 395 Dreese Lab, 2015 Neil Avenue http://cse.osu.edu/~paolo/ Columbus, OH 43210-1277 **Education** Ph.D. in Computer Science Dec 1997 California Institute of Technology, Pasadena, CA M.S. in Computer Science June 1993 California Institute of Technology, Pasadena, CA B.Sc.H. in Biochemistry and Computing and Information Science Apr 1991 Queen's University, Kingston, Ontario, Canada Academic Appointments Associate Professor Oct 2004 – present Department of Computer Science and Engineering The Ohio State University Visiting Researcher August 2013 – August 2014 Dipartimento di Ingegneria Elettrica, Gestionale e Meccanica Università degli Studi di Udine, Italy Visiting Associate Professor Oct 2005 - June 2006 Department of Computer Science and Engineering University of Minnesota Assistant Professor Sept 1998 - Sept 2004 Department of Computer and Information Science The Ohio State University Postdoctoral Scholar Jan 1998 – Sept 1998 Computer Science Department California Institute of Technology Awards Joel & Ruth Spira Excellence in Teaching Award 2015 Ohio State University Alumni Award for Distinguished Teaching 2012 CSE Department Award for Outstanding Teaching 2000, 2005, 2011 Best Paper Award at ICDCS '04 2004 Finalist for Best Paper Award at PDCS '02 2002 SBC Ameritech Faculty Fellow 2002-03 3rd Place ACM Graduate Student Research Competition 2001

1998

1995-97

(International award won by advisee Scott Pike)

Best Paper Award at CASCON '98

IBM Computer Science Fellowship

Best Paper Award at HPDC '96	1996
NSERC '67 Science and Engineering Fellowship Canadian equivalent of NSF graduate fellowship	1991-95
Prince of Wales Prize (Hon. Mention) second-highest graduating GPA in Arts and Science	1991
Arts and Science Undergraduate Scholarship academic excellence and contribution to university community	1991

Refereed Publications

(*underlining indicates myself or my postdoc/graduate/undergraduate student advisees)

Wayne Heym, Paolo Bucci, <u>Paolo A. G. Sivilotti</u>, Kevin Plis, Murali Sitaraman, Joseph E. Hollingsworth, Joan Krone and Nigamanth Sridhar, "Integrating Components, Contracts, and Reasoning in CS Curricula with RESOLVE: Experiences at Multiple Institutions", *Proceedings of the Conference on Software Engineering Education and Training (CSEE&T)*, Savannah, GA, November 7–9, 2017. (to appear)

<u>Alan Weide</u>, "Enabling Modular Verification of Concurrent Programs", *ECOOP Doctoral Symposium* at the European Conference on Object-Oriented Programming (ECOOP 2017), Barcelona, Spain, June 18–23, 2017.

Alan Weide, Paolo A. G. Sivilotti, Murali Sitaraman, "Enabling Modular Verification with Abstract Interference Specifications for a Concurrent Queue", *Verified Software. Theories, Tools, and Experiments: 8th International Conference (VSTTE 2016)*, p. 119–128, Toronto, ON, Canada, July 17–18, 2016.

<u>Theodore P. Pavlic</u>, Sai Prathyusha Peddi, <u>Paolo A. G. Sivilotti</u>, and Bruce W. Weide, "Getting Out of the Way—Safety Verification Without Compromise", *Proceedings of the Third International Conference on Cyber-Physical Systems (ICCPS) WIP Session*, poster abstract, Beijing, China, April 2012.

<u>Theodore P. Pavlic, Paolo A. G. Sivilotti, Alan D. Weide,</u> and Bruce W. Weide, "Verification of Smooth and Close Collision-Free Cruise Control", *Proceedings of the 2011 Symposium on Control and Modeling: Cyber-Physical Systems*, poster abstract, Urbana, IL, October 20–21, 2011.

Umit Ozguner, Ashok Krishnamurthy, Fusun Ozguner, Keith Redmill, <u>Paolo A. G. Sivilotti</u>, Bruce Weide, and <u>Theodore P. Pavlic</u>, "CPS: Autonomous Driving in Urban Environments", *Proceedings of the 2011 NSF CPS PI Meeting*, poster abstract, National Harbor, MD, August 1–2, 2011.

<u>Paolo A. G. Sivilotti</u>, "Kinesthetic Learning Activities in an Upper-Division Computer Science Course", *National Academy of Engineering's Frontiers of Engineering Education Symposium*, poster presentation, Irvine, CA, December 14–16, 2010.

<u>Paolo A. G. Sivilotti</u> and <u>Matthew Lang</u>, "Interfaces First (and Foremost) With Java", *Proceedings of the 41st Technical Symposium on Computer Science Education (SIGCSE 2010)*, p. 515–519, Milwaukee, WI, March 10–13, 2010.

Matthew Lang and Paolo A. G. Sivilotti, "On the Impossibility of Maximal Scheduling for Strong Fairness with Interleaving", *Proceedings of the 29th International Conference on Distributed Computing Systems (ICDCS)*, p. 482-489, Montreal, Canada, June 22–26, 2009.

<u>Paolo A. G. Sivilotti</u> and <u>Stacey A. Laugel</u>, "Scratching the Surface of Advanced Topics in Software Engineering: A Workshop Module for Middle School Students", *Proceedings of the* 39th

Technical Symposium on Computer Science Education (SIGCSE 2008), p. 291–295, Portland, OR, March 12–15, 2008.

Matthew Lang and Paolo A. G. Sivilotti, "A Distributed Maximal Scheduler for Strong Fairness", *Proceedings of the 21st International Symposium on Distributed Computing (DISC)*, p. 358–372, Lemesos, Cyprus, Sept 24–26, 2007.

<u>Paolo A. G. Sivilotti</u> and <u>Scott M. Pike</u>, "A Collection of Kinesthetic Learning Activities for a Course on Distributed Computing: ACM SIGACT News Distributed Computing Column 26" invited paper for *SIGACT News* column on Distributed Computing, 38(2), p. 56–74, June 2007.

<u>Paolo A. G. Sivilotti</u> and <u>Scott M. Pike</u>, "The Suitability of Kinesthetic Learning Activities for Teaching Distributed Algorithms", *Proceedings of the 38th Technical Symposium on Computer Science Education (SIGCSE 2007)*. p. 362–366, Covington, KY, March 7–10, 2007.

Nigamanth Sridhar, Jason O. Hallstrom, and Paolo A. G. Sivilotti, "Container-Based Component Deployment: A Case Study", *Proceedings of the 18th International Conference on Software Engineering and Knowledge Engineering (SEKE2006)*, p. 274–277, San Francisco, CA, July 5–7, 2006.

Zhijun Liu and Paolo A. G. Sivilotti, "The Impact of Laziness on the Performance of Snapshot Algorithms", *Proceedings of the 17th International Conference on Parallel and Distributed Computing and Systems (PDCS 2005)*, p. 307–313, Phoenix, AZ, Nov 14–16, 2005.

<u>Brad T. Moore</u> and <u>Paolo A. G. Sivilotti</u>, "Plausible Clocks with Bounded Inaccuracy", *Proceedings of the 19th International Symposium on Distributed Computing (DISC)*, p. 214–228, Cracow, Poland, Sept 26–29, 2005.

Gregory T. Buehrer, Bruce W. Weide, and Paolo A. G. Sivilotti, "Using Parse Tree Validation to Prevent SQL Injection Attacks", *Proceedings of the 5th International Workshop on Software Engineering and Middleware (SEM)*, held at Joint ESEC/FSE, ACM, p. 106–113, Lisbon, Portugal, Sept 5–6, 2005.

Santosh Kumar, Bruce W. Weide, <u>Paolo A. G. Sivilotti</u>, <u>Nigamanth Sridhar</u>, Jason O. Hallstrom, and <u>Scott M. Pike</u>, "Encapsulating Concurrency as an Approach to Unification", *Proceedings of the Workshop on Specification and Verification of Component-Based Systems (SAVCBS)*, held at SIGSOFT 04/FSE-12, p. 10–17, ACM, Newport Beach, CA, Oct 31–Nov 1, 2004.

<u>Christopher Bohn, Paolo A. G. Sivilotti,</u> and Bruce W. Weide, "Designing the Control of a UAV Fleet with Model Checking", *Theory and Algorithms for Cooperative Systems, Series on Computers and Operations Research*, vol 4, Ed. Don Grundel, Robert Murphey, and Panos M. Pardalos, World Scientific, chapter 2, p. 27–44, Fall 2004.

Jason O. Hallstrom, <u>Nigamanth Sridhar</u>, <u>Paolo A. G. Sivilotti</u>, Anish Arora, William M. Leal: "A Container-Based Approach to Object-Oriented Product Lines", in *Journal of Object Technology*, vol. 3, no. 4, p. 161–175, April 2004.

<u>Scott Pike</u> and <u>Paolo A. G. Sivilotti</u>, "Dining Philosophers with Crash Locality 1", *Proceedings of the 24th International Conference on Distributed Computing Systems (ICDCS 2004)*, p. 22–29, IEEE, Tokyo, Japan, March 23–26, 2004.

(Best Paper Award)

<u>Paolo A. G. Sivilotti</u> and Bruce W. Weide, "Research, Teaching, and Service: The Miniconference as a Model for CS Graduate Seminar Courses", *Proceedings of the 35th SIGCSE Technical Symposium on Computer Science Education (SIGCSE 2004)*, p. 487–491, ACM, Norfolk, VA, March 3–7, 2004.

<u>Christopher A. Bohn, Paolo A. G. Sivilotti,</u> and Bruce W. Weide, "Using Model Checking to Find a Hidden Evader", *Proceedings of the Workshop on Agent/Swarm Programming (WASP '03)*, p. 1–7, Cleveland, OH, October 3–4, 2003.

Nuh Aydin and Paolo A. G. Sivilotti, "Remote Belief: Preserving Volition for Loosely Coupled Processes", *Proceedings of the 23rd International Conference on Distributed Computing Systems (ICDCS 2003)*, p. 434–440, Providence, RI, May 19–22, 2003.

<u>Paolo A. G. Sivilotti</u> and Murat Demirbas, "Introducing Middle School Girls to Fault Tolerant Computing", *Proceedings of the Technical Symposium on Computer Science Education (SIGCSE 2003)*, p. 327–331, Reno, NV, Feb 19–23, 2003.

Nigamanth Sridhar and Paolo A. G. Sivilotti, "Lazy Snapshots", *Proceedings of the 14th International Conference on Parallel and Distributed Computing and Systems (PDCS 2002)*, p. 96–101, Cambridge, MA, Nov 4–6, 2002.

(Finalist for Best Paper Award)

Ayesha Mascarenhas and Paolo A. G. Sivilotti. "A Paradigm for Component-Based Software Development in a Distributed Environment", *Proceedings of the International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA '02)*, p. 1378–1384, Las Vegas, NV, June 24–27, 2002.

Ramesh Jagannathan and Paolo A. G. Sivilotti, "Increasing Client-Side Confidence in Remote Component Implementations", *Proceedings of the Joint 8th European Software Engineering Conference (ESEC) and the 9th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE-9)*, p. 52–61, Vienna, Austria, Sept 12–14, 2001.

<u>Prakash Krishnamurthy</u> and <u>Paolo A. G. Sivilotti</u>. "The Specification and Testing of Quantified Progress Properties in Distributed Systems", *Proceedings of the 23rd International Conference on Software Engineering (ICSE 2001)*, p. 201–210, Toronto, Canada, May 16–19, 2001.

<u>Prakash Krishnamurthy</u> and <u>Paolo A. G. Sivilotti</u>. "Object Protocols for Distributed Systems", Presented at the 2nd Joint Workshop on Formal Specification of Computer-Based Systems, held in conjunction with the 8th IEEE International Conference on the Engineering of Computer Based Systems (ECBS '01), Washington, DC, April 20, 2001.

<u>Paolo A. G. Sivilotti, Scott Pike,</u> and <u>Nigamanth Sridhar</u>. "A New Distributed Resource-Allocation Algorithm with Optimal Failure Locality", *Proceedings of the 12th International Conference on Parallel and Distributed Computing and Systems (PDCS 2000)*, vol. 2, p. 524–529, Las Vegas, NV, Nov 6–9, 2000.

<u>Charles P. Giles</u> and <u>Paolo A. G. Sivilotti</u>. "A Tool for Testing Liveness in Distributed Object Systems", *Proceedings of the 34th International Conference on Technology of Object-Oriented Languages and Systems (TOOLS USA 2000)*, p. 319–328, Santa Barbara, CA, July 31–Aug 3, 2000.

<u>Paolo A. G. Sivilotti</u> and <u>Charles P. Giles</u>. "The Specification of Distributed Objects: Liveness and Locality", *Proceedings of CASCON '99*, p. 150–160, Toronto, Canada, Nov 8–11, 1999.

<u>Paolo A. G. Sivilotti</u>. "Specifying and Testing the Progress Properties of Distributed Components", Proceedings of the Workshop on Testing Distributed Component-Based Systems, held at the 21st International Conference on Software Engineering (ICSE '99), Los Angeles, CA, May 19, 1999.

<u>Paolo A. G. Sivilotti</u>. "A Class of Synchronization Systems that Permit the Use of Large Atomic Blocks", *Proceedings of CASCON '98*, p. 26–39, Toronto, Canada, Nov 30–Dec 3, 1998. **(Best Paper Award)**

K. Mani Chandy, <u>Paolo A. G. Sivilotti</u>, and Joseph R. Kiniry. "A Cottage Industry of Software Publishing: Implications for Theories of Composition", *Proceedings of the 3rd International Workshop on Formal Methods for Parallel Programming: Theory and Applications (FMPPTA '98)*, Orlando, FL, April 3, 1998. (Also available as LNCS #1388, p. 890–899.)

K. Mani Chandy, Adam Rifkin, <u>Paolo A. G. Sivilotti</u>, et al. "A World-Wide Distributed System Using Java and the Internet", *Proceedings of the 5th IEEE International Symposium on High Performance Distributed Computing (HPDC '96)*, p. 11–18, Syracuse, NY, Aug 9–11, 1996. **(Best Paper Award)**

Paolo A. G. Sivilotti and K. Mani Chandy. "Toward High Confidence Distributed Systems with Java: Reliable Thread Libraries", *Proceedings of the 11th International Conference on Systems Engineering (ICSE '96)*, p. 194–199, Las Vegas, NV, July 9–11, 1996.

<u>Paolo A. G. Sivilotti</u>. "A Verified Integration of Parallel Programming Paradigms in CC++", *Proceedings of the* 8th *IEEE International Parallel Processing Symposium (IPPS '94)*, p. 44–50, Cancun, Mexico, April 26–29, 1994.

Books

Rajiv Ramnath, Roger Crawfis, <u>Paolo Sivilotti</u>. *Android 3 SDK Programming for Dummies*, John Wiley & Sons, Inc. 2011.

Grants Funded

NSF Cyber-Physical Systems: "CPS: Autonomous Driving in Mixed-Traffic Urban Environments". Co-PI (\$1,499,883), September 1, 2009 – August 31, 2012

Ohio Department of Transportation: "Development and Integration of ODOT Geological Hazard Management System (GHMS): Subcontract for Remediation Cost Estimation", PI (\$33,522), July 1, 2008 – June 30, 2009.

Ohio Department of Transportation: "Addendum to Remediation Cost Database and Application", Co-PI (\$103,434, plus \$6,482 supplement), Nov 1, 2005 – June 30, 2007.

Ohio Department of Transportation: "Remediation Cost Database and Application", Co-PI (\$84,879), March 1, 2004 – June 30, 2005.

SBC Ameritech, Faculty Research Grant: "Distributed Software Components: Next-Generation Telecommunication Services." PI (\$22,489), July 1, 2002 – June 30, 2003.

Lucent Technologies, Inc.: "Applied Software Engineering for Engineers and Scientists". Co-PI (\$115.963), October 1, 2000 – September 30, 2001.

Lucent Technologies, Inc.: "Lucent Technologies Applied Software Engineering Fellowships." Co-PI (\$27,000), October 1, 2000 – September 30, 2001.

NSF Information Technology Research: "ITR/SW: Principles of Distributed Component-Based Software". Co-PI (\$499,809), October 1, 2000 – September 30, 2002

Ohio Board of Regents Doctoral Enhancement Initiative: "Dependent Types for High-Confidence Distributed Systems". PI (\$88,234), September 1, 2000 – October 30, 2002.

Ohio Supercomputer Center Start-up Grant: "Shared Memory Data-flow Driven Parallelization of Dynamic Programming Algorithms". PI (10 Research Units), June 18 1999 – June 18, 2000.

OSU Seed Grant: "Using Formal Specifications to Test Components For Distributed Systems". PI (\$20,000), January 1, 1999 – June 30, 2000.

Invited Talks

Distinguished Seminar Speaker, "The Maximality of Distributed Programs: Possibilities and Impossibilities", Queen's University, Kingston, Canada, January 17, 2013.

"Failure Locality in Partially Synchronous Systems", Medtronic, Minneapolis, Minnesota, June 12, 2006.

"Plausible Clocks with Guaranteed Precision", University of Minnesota Software Engineering Center (UMSEC) Colloquium, Minneapolis, Minnesota, April 27, 2005.

"Distributed Computing: Emerging Technologies and Continuing Challenges", Central Ohio Chapter of the ACM, Columbus, OH, March 22, 2002.

"Optimum Failure Locality in Distributed Systems", Queen's University, Kingston, Canada, May 22, 2001.

"Distributing Software Components: An Easy Way to Make Things Hard", Lucent Colloquium Series: Academic and Industry Perspectives on Component-Based Software Engineering, Columbus, OH, Oct 10, 2000.

"Components for Distributed Systems", University of Cincinnati, Cincinnati, OH, Nov 23, 1999.

"Software Engineering and Distributed Systems", OSU IEEE Computer Society, Ohio State University, Columbus, OH, Nov 23, 1999.

Advisees (Postdoc, Graduate, Undergraduate)

Completed: 1 Postdoc, 4 PhD, 7 Masters, 6 UG Honors thesis

Theodore Pavlic (Postdoc, 2012) Matthew Lang (PhD, 2009) Scott Pike (PhD, 2004) Chris Bohn (PhD, 2004) Nigamanth Sridhar (PhD, 2004) Brad Moore (Master's, 2005) Hilary Pike (Master's, 2004) Nuh Avdin (Master's, 2002) Ayesha Mascarenhas (Master's, 2002) Ramesh Jagannathan (Master's, 2001) Prakash Krishnamurthy (Master's, 2001) (Master's, 2000) Charles Giles Matthew Seffernick (UG Honors, 2013) Vahid Schwart (UG Honors, 2012) Prabhjyot Chawla (UG Honors, 2009) Chad Sowald (UG Honors, 2009) Daniel Galron (UG Honors, 2006) (UG Honors, 2002) Elizabeth Rosselot

Courses Taught

U CSE 2221: Software I: Software Components Helped to pilot new course (2012)

- U CSE 3901: *Project: Design, Development, and Documentation of Web Applications*Proposed and developed new course (2012), course coordinator (2012 on)
- U CSE 3903: Project: Design, Development, and Documentation of System Software Redesigned course for calendar conversion (2017), course coordinator (2012 on)
- U CSE 459.23: *Programming in Java*Course coordinator (2006 current), completely redesigned course (2006)
- U CSE 421: Software Development in Java
 Proposed and developed new course (2007), course coordinator (2007 on).
- U CSE 560: System Software: Design, Development, and Documentation Course coordinator (1998 on), "keystone" course in curriculum
- U/G CSE 763: Introduction to Distributed Systems Redesigned course (1999)
- U/G CSE/ECE 794R: Applied Enterprise Distributed Computing for Engineers and Scientists
 Proposed and developed new course
- U/G CSE 788.Y11: Distributed Systems: Specification, Implementation and Testing Developed new course (1999)
- U/G CSE 788.P11: Model Checking Developed new course (2004)
- U/G CSE 788.P11: Logic and Model Checking for Software Systems
 Developed new course (2008)
- G CSE 888.P11: Components for Distributed Systems
 Graduate seminar course

Outreach Activities

Buck-I-Code

A one-day activity to introduce middle school girls to computing. Developed and led half-day module on software engineering (2014-on).

Inside the Academic Experience

Part of the university's "Parent and Family Weekend".

Presented a lecture on distributed algorithms to about 250 visitors (2012).

Future Engineers' Summer Camp

A week-long summer workshop on campus for girls entering 8th grade.

Developed and ran the computer science module (see SIGCSE 2003 paper).

Camp Engineer (College of Engineering Minority Programs)

A week-long summer workshop on campus for minority middle school students Developed and ran the computer science module (see SIGCSE 2008 paper).

Saturday Seminars & Honors Days

Invited by Honors program to present computer science mini-classes to high school students and parents as part of program's effort to recruit top undergraduates.

Engineers in Motion Summer Camp

A week-long summer workshop on campus for students in 10th and 11th grades. Developed and ran the computer science module.

Women in Engineering Summer Week

A week-long summer workshop on campus for incoming freshmen women Adopted materials and ran the computer science module.

Professional Activities and Service

Conference Program and Organization Committees:

Member of the Program Committee (Algorithms Track) for the 45th International Conference on Parallel Processing (ICPP-2016), Philadelphia, PA, 2016.

Member of Technical Program Committee (Algorithms and Theory Track) for the 30th IEEE International Conference on Distributed Computing Systems (ICDCS 2010), Genoa, Italy, 2010

Workshop co-Chair for the 29th IEEE International Conference on Distributed Computing Systems (ICDCS 2009), Montreal, Quebec, 2009

Vice-Chair (Algorithms & Theory) for the 27th IEEE International Conference on Distributed Computing Systems (ICDCS 2007), Toronto, Ontario, 2007.

Local Arrangements Chair for the 25th IEEE International Conference on Distributed Computing Systems (ICDCS 2005), Columbus, OH, 2005.

Publication co-Chair for the 22nd IEEE International Conference on Distributed Computing Systems (ICDCS-2002), Vienna, July 2–5, 2002.

Program Committee Member for CASCON '99. Toronto, Canada, November 8-11, 1999.

Reviewer for the following journals:

ACM Transactions on Autonomous and Adaptive Systems

ACM Transactions on Sensor Networks

ACM Transactions on Software Engineering and Methodology

IEEE Computer.

IEEE Transactions on Dependable and Secure Computing

IEEE Transactions on Software Engineering.

IEEE Transactions on Systems, Man, and Cybernetics (Part A).

Information and Software Technology (Elsevier)

Reviewer for the following funding agencies:

NSF Panelist (CISE Directorate)

Qatar National Research Fund

Consulting:

Nationwide Insurance: "Enterprise Java Boot Camp"

Developed and delivered (together with 3 other faculty) a 3-day tutorial for 30 professional Java developers employed at Nationwide Insurance.

Professional Development:

Participant at National Academy of Engineering (NAE) "Frontiers of Engineering Education Symposium". December 13-16, 2010.

Participant at "1999 New Century Scholars", a NSF-sponsored program at Stanford University for new faculty in engineering. August 1-6, 1999.

Engineering Management Certificate, California Institute of Technology Industrial Relations Center, June, 1998.

Department, College, and University Service

Chair of CSE Department Curriculum committee August 2014 – current

College of Engineering Committee on Academic Affairs Sept 2010 – August 2013

Chair, Course Proposal Subcommittee Sept 2011 – August 2013

College of Engineering International Task Force Sept 2008 – June 2009

Propose strategies for developing international educational activities to dean.

College of Engineering Faculty and Professional Leave Committee Sept 2006 – June 2009

Sept 2014 – current

Evaluate faculty applications for sabbatical and make recommendations to dean.

Chair of CSE Department Graduate Admissions committee Sept 2006 – Sept 2007

CSE Department Chair Search committee Mar 2003 – June 2005

Nominated by dept faculty and appointed by dean to identify and recruit the next chair.

College of Engineering "Master of Engineering" Task Force

Jan 2002 – Jan 2004

Developing a new cross-disciplinary Professional Master's program of Engineering

Practice.

CSE Department Chair Advisory committee

Sept 2010 – Sept 2011

Sept 2006 - Sept 2007

Sept 2001 – Sept 2005

Elected by dept faculty and appointed by chair to advise chair and liaise with faculty.

Other department committees (current and past):

Graduate Admissions, Faculty Search, Undergraduate Studies.

- Initiated and coordinated departmental lunchtime graduate student seminar series.
- Initiated and coordinated prospective graduate student visit and recruitment day.

Other student services (current and past):

Faculty advisor for ACM-W student group CSE Department recruitment coordinator

July 2008 – August 2013 Sept 2010 - current