Peter Lee   May 2009

Carnegie Mellon University   Voice: (412) 268-3049
5000 Forbes Avenue   Fax: (412) 268-5577
Pittsburgh, Pennsylvania 15213-3891   Email: peter.lee@cmu.edu
                                            Web: http://www.cs.cmu.edu/~petel

Academic Background

Carnegie Mellon University, Pittsburgh
Department Head, Computer Science, September 2007 to present
Vice Provost for Research, July 2006 to August 2007
Associate Dean, Jan. 2000 to Sept. 2004
Professor, July 2000 to present
Associate Professor, July 1994 to June 2000.
Assistant Professor, July 1988 to June 1994.
Research Computer Scientist, July 1987 to June 1988.

The University of Michigan, Ann Arbor
Ph.D., Computer and Communication Sciences, completed May, 1987.

Brief Biographical Sketch

Peter Lee is the Head of the Computer Science Department at Carnegie Mellon University. He joined the faculty after completing his doctoral studies at the University of Michigan in 1987. Today he is a leading figure in computer science research, particularly in areas related to software security and reliability. An elected Fellow of the Association for Computing Machinery, several of his papers have received "test of time" awards for contributions that have demonstrated long-term impact. His work on "proof-carrying code" received the ACM SIGOPS Hall of Fame Award, for seminal contributions to computer systems research.

As the Head of the Computer Science Department, Peter Lee oversees one of the world's top research organizations, with over 80 faculty members (including two active Turing Award winners) and top-rated degree programs at both the doctoral and undergraduate levels. Prior to assuming his current position, Dr. Lee was briefly the Vice Provost for Research, where he provided administrative oversight and strategic guidance for the university's research activities, an enterprise that exceeds $450M in annual expenditures.

Peter Lee is called upon as an expert in diverse venues, including distinguished lectures at major universities, memberships on senior government advisory panels, and corporate advisory boards. Recently, he testified before the Science and Technology Committee off the U.S. House of Representatives. He is the incoming Chair of the Board of Directors of the Computing Research Association, member of the NRC Computer Science and Telecommunications Board and the Computing Community Consortium Council, and Vice-Chair of the Defense Advanced Research Projects Agency's Information Science and Technology Board.

Personal Information

Birthdate: November 30, 1960
Citizenship: U.S.A.
Marital status: Married, one child
Home address: 7541 Graymore Road
                    Pittsburgh, Pennsylvania 15221

Research and Technical Expertise

Computer security.
Code certification and proof-carrying code.
Advanced programming languages and techniques.
Systems applications of programming language technology and concepts.
Functional programming, formal semantics, and type theory.

Peter Lee is an ACM Fellow and has published extensively in major international symposia, particularly in areas related to the foundations of programming language design and implementation, and applications to computer security.

Recent Significant Professional Activities

Principal Investigator, Computing Innovation Fellows Project, May 2009 to present. Creating more than 100 research and higher education postdoctoral fellowships for new computing PhDs.

The National Academies, Computer Science and Telecommunications Board of the National Research Council (CSTB), September 2008 to present.

DARPA Information Science and Technology (ISAT) Board, September 2003 to present. Vice chair since August 2008.

Computing Research Association, March 2005 to present.
Incoming Chair of the Board of Directors.

ACM SIGPLAN Executive Committee, 1997-1999, and again in 2005-present. Elected member.

DARPA Information Exploitation Office (IXO), Nov. 2003 to Aug. 2008.
Member of the Senior Advisory Group.

Cedilla Systems Incorporated, Pittsburgh, November 1998 to December 2000. President and Co-founder (with George Necula). A security technology start-up.

Defense Science Board, March 2001 to September 2002. Co-chair, Technology Panel of the 2001 Summer Study on Defense Science and Technology.

Microsoft Corporation, December 1998 to March 2000. Expert Witness in the *Sun v. Microsoft* "Java lawsuit."

Visiting Academic Appointments

École Normale Supérieure, Paris, France   April-May, 1995
École Normale Supérieure   July-August, 1997

Major Funded Research Projects

Center for Computational Thinking.
Interim Director. September 2007 to present, sponsored by Microsoft.

Language-based Computer Security.
PI. March 2007 to present, sponsored by ICast (Taiwan).

Accountability for Information Flow via Explicit Formal Proof.
PI, jointly with Frank Pfenning, Lujo Bauer, and Mike Reiter. February 2007 to April 2009, sponsored by IARPA.

High Dependability Computing Consortium.
Jim Morris, PI. February 2002 to November 2005, sponsored by NASA. Member of the testbed evaluation group.

Advanced Languages for Trustless Software Dissemination.
PI, jointly with Karl Crary, Robert Harper, and Frank Pfenning. September 2001 to present, sponsored by NSF ITR grant number CCR-0121633.

Course Capsules: Persistent Personalized Courseware.
PI, jointly with Klaus Sutner, Dana Scott, Joel Smith, and Michael Kohlhase. September 2001 to August 2004, Sponsored by NSF ITR grant number EIA-0113919.

The Fox Project: Advanced Language Technology for Systems Software.
PI, jointly with Robert Harper. June 1995 to September 2001, sponsored by DARPA/ITO order number C533, issued by ESC/ENS under contract number F19628-95-C-0050, and F19628-91-C-0168.

Staged Computation.
PI, jointly with Frank Pfenning. May 1997 to October 2000, sponsored by NSF grant number CCR-9619832.

The PsciCo Project: Advanced Languages for Scientific Computing.
PI, jointly with Guy Blelloch, Robert Harper, and Gary Miller. September 1997 to August 2003, sponsored by the NSF Experimental Systems Program grant number EIA-9706572.

Awards and Patents

- 2006 SIGOPS Hall of Fame Award, for the most influential paper from OSDI ten or more years ago. *Safe kernel extensions without run-time checking.* George Necula and Peter Lee. November 2006.

- ACM SIGPLAN Most Influential 1996 PLDI Paper. *TIL: a type-directed optimizing compiler for ML.* David Tarditi ,Greg Morrisett, Perry Cheng, Chris Stone, Robert Harper, and Peter Lee. June 2006.

- *Method and Apparatus for Enforcing Safety Properties of Computer Programs by Generating and Solving Constraints.* Patent pending. Ajay Chander, Nayeem Islam, David Espinosa, Peter Lee, and George Necula.

- Fellow of the Association for Computing Machinery. November 2004.

- *Safe to Execute Verification of Software.* US Patent 6,128,774, issued October 3, 2000, George Necula and Peter Lee.

- 1997 Allen Newell Award for Research Excellence in Computer Science, for *Proof-Carrying Code,* awarded by the CMU School of Computer Science.

- 1994 Herbert A. Simon Award for Teaching Excellence in Computer Science, awarded by the CMU School of Computer Science.

- 1990 NSF Presidential Young Investigator, NSF CCR-9057567, $200,000. Matching funds from Bell Northern Research, $75,000.

Distinguished Lectures, Keynote Addresses, and Tutorials

- SIGPLAN'92 Conference on Programming Language Design and Implementation, San Francisco: *Generating Compilers using Formal Semantics*, Tutorial Track II, June 15-16, 1992.

- University of Wisconsin (Distinguished Lecture): *Advanced Programming Languages: Will They Ever Work in the Real World?*, November 9, 1994.

- National Research Council panel on Computer Security Infrastructure, Irvine, California, February 1997. *Types and Proofs for Mobile Code Security*.

- University of Illinois (Distinguished Lecture): *Types, Proofs, and Mobile Code*, March 10, 1997.

- 1998 ACM SIGACT/SIGPLAN Symposium on Principles of Programming Languages (POPL'98) (Invited Address): Types, Proofs, and Safe Mobile Code, January 21, 1998.

- Fourth ACM Conference on Computer and Communications Security (CCS-4) (Panel session member): Proof-Carrying Code, April 1998.

- 1998 Static Analysis Symposium (SAS'98) (Invited Address): Types, Proofs, and Safe Mobile Code, September, 1998.

Distinguished lectures, keynote addresses, and tutorials, cont'd

- 1999 USENIX Symposium on Domain-Specific Languages (DSL'99) (Invited Address): Language Technology for Performance and Security, or, Making Life Better, Not Just Easier, September, 1999.

- Harvard University (Distinguished Lecture), February 2001. *Types, Proofs, and Safe Mobile Code.*

- 2002 University of Edinburgh Research Jubilee (Invited Address), Edinburgh, Scotland, *Certified Code*, May 2002.

- 2003 Summer School on Logic and Computation, Pisa, Italy, *Certified Code*, September 2003.

- 2004 Summer School on Functional Programming, Portland, Oregon, *Certified Code*, June 2004.

- 2005 Usenix Security Symposium (Invited Address), Baltimore, Maryland, *On the Relevance of Certified Code to Computer Security,* August 2005.

- CEDI 2005 (Congreso Espana de Informatico, Keynote Address), Granada, Spain, *Next Steps in Certified Code,* September 2005.

- University of California, Los Angeles (Distinguished Lecture): *What Are We Trying To Prove? Prospects For Certified Code*, February 7, 2006.

- University of California, San Diego (Distinguished Lecture): *What Are We Trying To Prove? Prospects for Certified Code*, March 2007.

- Korea Advanced Institute for Science and Technology (KAIST) (Distinguished Lecture): *Programming a Million Robots,* February 2009.

- University of Pennsylvania (Saul Gorn Memorial Lecture): *Programming a Million Robots,* April 2009.

Publications (in chronological order)

Refereed publications:

- Peter Lee and Uwe F. Pleban. On the use of LISP in implementing denotational semantics. *Proceedings of the 1986 ACM Conference on LISP and Functional Programming*, Cambridge, August 1986, 233-248.

- Peter Lee and Uwe F. Pleban. A realistic compiler generator based on high-level semantics. *Proceedings of the Fourteenth Annual ACM SIGACT-SIGPLAN Symposium on Principles of Programming Languages (POPL'87)*, Munich, West Germany, January 1987, 284-295.

- Uwe F. Pleban and Peter Lee. High-level semantics: an integrated approach to programming language semantics and the specification of implementations. *The Third Workshop on the Mathematical Foundations of Programming Semantics (MFPS'87)*, New Orleans, April 1987, Proceedings appears in *Lecture Notes in Computer Science*, Vol. 298, M. Main (ed.), Springer-Verlag, June 1988.

- Uwe F. Pleban and Peter Lee. An automatically generated, realistic compiler for an imperative language. *Proceedings of the SIGPLAN '88 Conference on Programming Language Design and Implementation (PLDI'88)*, Atlanta, June 1988, 222-232.

- Peter Lee, Frank Pfenning, Gene J. Rollins, and William S. Scherlis. The Ergo Support System: an integrated set of tools for prototyping integrated environments. *Proceedings of the ACM SIGSOFT/SIGPLAN Software Engineering Symposium on Practical Software Development Environments*, Peter Henderson (ed.), Boston, November 1988, 25-34.

- Frank Pfenning and Peter Lee. LEAP: A Language with Eval and Polymorphism. *TAPSOFT '89 Colloquium on Current Issues in Programming Languages*, Barcelona, Spain, March 1989, Proceedings in Lecture Notes in Computer Science, Vols. 351 and 352, Springer-Verlag, 1989.

- Philip J. Koopman, Jr. and Peter Lee. A fresh look at combinator graph reduction. *Proceedings of the ACM SIGPLAN '89 Conference on Programming Language Design and Implementation (PLDI'89)*, Portland, Oregon, June 1989, 110-119.

- Philip J. Koopman, Jr., Peter Lee, and Daniel P. Siewiorek. Cache performance of combinator graph reduction. *Proceedings of the IEEE Computer Society 1990 International Conference on Computer Languages*, New Orleans, March 1990, 39-48. A significantly revised and extended version appears as: Cache behavior of combinator graph reduction. *ACM Transactions on Programming Languages and Systems*, Vol. 14, No. 2, April 1992, 265-297.

- Robert Nord and Peter Lee. Formal Manipulation of Modular Software Systems. *ACM SIGSOFT International Workshop on Formal Methods in Software Development*, Napa, California, May 1990.

Refereed publications, continued:

- Frank Pfenning and Peter Lee. Metacircularity in the polymorphic lambda calculus. *Theoretical Computer Science*, Vol. 89, 1991, 137-159.

- Christopher Colby and Peter Lee. An implementation of parameterized partial evaluation. *Actes JTASPEFL '91, Proceedings of the Conference on Static Analysis of Equational, Functional, and Logic Programs*, Bordeaux, France, October 10-11, 1991, University of Bordeaux I, BIGRE 74, 82-89. An extended version appears as Technical Report CMU-CS-92-123, School of Computer Science, Carnegie Mellon University, Pittsburgh, March 1992.

- David Tarditi, Peter Lee, and Anurag Acharya. No assembly required: Compiling Standard ML to C. *ACM Letters on Programming Languages and Systems*, Vol. 1, No. 2, June 1992, 161-177. (An earlier version is available as Carnegie Mellon School of Computer Science Technical Report CMU-CS-90-187, November 1990.)

- David S. Touretzky and Peter Lee. Visualizing evaluation in applicative languages. *Communications of the ACM*, Vol. 35, No. 10, October 1992, 49-59. Also available as Technical Report CMU-CS-89-198-R, School of Computer Science, Carnegie Mellon University, Pittsburgh, November 1989.

- Chris Okasaki, Peter Lee, and David Tarditi. Continuation-passing and graph reduction. *Proceedings of the ACM SIGPLAN Workshop on Continuations (CW'92)*, June 21, 1992, San Francisco, 91-101. A significantly revised and extended version appears as: Call-by-need and continuation-passing style. *Lisp and Symbolic Computation*, Vol. 6, Nos. 3/4, November 1993, 57-82.

- Edoardo Biagioni, Robert Harper, and Peter Lee. Signatures for a protocol stack: a systems application of Standard ML. *Proceedings of the 1994 ACM Conference on Lisp and Functional Programming*, Orlando, June 27-29. (An earlier version appears as Carnegie Mellon Computer Science Department Technical Report CMU-CS-93-170, September 1993.)

- Robert Harper, Peter Lee, Frank Pfenning, and Eugene Rollins. Incremental recompilation for Standard ML of New Jersey. *Proceedings of the Workshop on ML and Its Applications*, Orlando, June 25-26, 1994. (An earlier version appears as Carnegie Mellon School of Computer Science Technical Report CMU-CS-FOX-94-02, February 1994.)

- Mark Leone and Peter Lee. Deferred compilation: the automation of run-time code generation. *Proceedings of the Workshop on Partial Evaluation and Semantics-based Program Manipulation (PEPM'94)*, Orlando, June 25, 1994. (An earlier version appears as Carnegie Mellon School of Computer Science Technical Report CMU-CS-93-225, November 1993.)

- Edoardo Biagioni, Robert Harper, and Peter Lee. Implementing Software Architectures in Standard ML. *ICSE-17 Workshop on Research Issues in the Intersection of Software Engineering and Programming Languages*, Seattle, April 24-25, 1995.

Refereed publications, continued:

- Christopher Colby and Peter Lee. Trace-based Program Analysis. *Proceedings of the 1996 ACM SIGPLAN/SIGACT Symposium on Principles of Programming Languages (POPL'95)*, January 1996. Also available as Technical Report CMU-CS-95-179 (Fox Memorandum CMU-CS-FOX-95-04), Department of Computer Science, Carnegie Mellon University, Pittsburgh, July 1995.

- Peter Lee and Mark Leone. Optimizing ML with Run-Time Code Generation. *ACM SIGPLAN'96 Conference on Programming Language Design and Implementation (PLDI'96)*, Philadelphia, May 1996. Selected for the special issue: *20 Years of the ACM SIGPLAN Conference on Programming Language Design and Implementation (1979-1999): A Selection.* ACM SIGPLAN Notices, Vol.39, No.4, April 2004. (An earlier version appears as Carnegie Mellon School of Computer Science Technical Report CMU-CS-95-205.)

- David Tarditi, Greg Morrisett, Perry Cheng, Christopher Stone, Robert Harper, and Peter Lee. The TIL Compiler for Standard ML. *ACM SIGPLAN'96 Conference on Programming Language Design and Implementation (PLDI'96)*, Philadelphia, May 1996. Selected for the special issue: *20 Years of the ACM/SIGPLAN Conference on Programming Language Design and Implementation (1979-1999): A Selection.* ACM SIGPLAN Notices, Vol.39, No.4, April 2004. Selected in 2006 as the Most Influential 1996 PLDI Paper.

- George Necula and Peter Lee. Safe kernel extensions without run-time checking. *Proceedings of the Second Symposium on Operating System Design and Implementation (OSDI'96)*, Seattle, October, 1996, 229-243. Best Paper Award winner. Winner of the 2006 SIGOPS Hall of Fame Award.

- P. Hartel, M. Feeley, M. Alt, L. Augustsson, P. Baumann, M. Beemster, E. Chailloux, C. H. Flood, W. Grieskamp, J. H. G. van Groningen, K. Hammond, B. Hausman, M. Y. Ivory, R. E. Jones, J. Kamperman, P. Lee, X. Leroy, R. D. Lins, S. Loosemore, N. Röjemo, M. Serrano, J.-P. Talpin, J. Thackray, S. Thomas, P. Walters, P. Weis, and P. Wentworth. Benchmarking Implementations of Functional languages with "Pseudoknot", a Float-Intensive Benchmark. *Journal of Functional Programming*, Vol.6, No.4, July 1996, 621-655.

- Edoardo Biagioni, Kenneth Cline, Peter Lee, Chris Okasaki, and Chris Stone. Safe-for-Space Threads in Standard ML. *Second ACM SIGPLAN Workshop on Continuations (CW'97)*, Paris, January, 1997.

- George C. Necula and Peter Lee. Research on Proof-Carrying Code for Untrusted-Code Security. *Proceedings of the 1997 IEEE Symposium on Security and Privacy,* Oakland, California, 1997.

- George C. Necula and Peter Lee. Efficient Representation and Validation of Proofs. *Proceedings of the 13th Annual Symposium on Logic in Computer Science (LICS'98),* Indianapolis, June, 1998. (This is an abbreviated version of a 70-page technical report, CMU-CS-97-172, School of Computer Science, Carnegie Mellon University.)

Refereed publications, continued:

- George C. Necula and Peter Lee. Safe, Untrusted Agents Using Proof-Carrying Code. *Mobile Agents and Security*, Giovanni Vigna (Ed.), *Lecture Notes in Computer Science*, Vol. 1419, Springer-Verlag, Berlin, ISBN 3-540-64792-9, 1998.

- Philip Wickline, Peter Lee, Frank Pfenning, and Rowan Davies. Modal types as staging specifications for run-time code generation. *ACM Computing Surveys 1998 Symposium on Partial Evaluation* (O. Danvy, R. Gluck, and P. Thiemann, Eds.), December, 1997.

- Mark Leone and Peter Lee. Dynamic specialization in the Fabius system. *ACM Computing Surveys 1998 Symposium on Partial Evaluation* (O. Danvy, R. Gluck, and P. Thiemann, Eds.), December, 1997.

- Andrew Bernard, Robert Harper, and Peter Lee. How generic is a generic back end? Using MLRISC as a back end for the TIL compiler. *Types in Compilation '98, Lecture Notes in Computer Science*, No.1473, March 1998, 53-77.

- Philip Wickline, Peter Lee, and Frank Pfenning. Run-time code generation and Modal-ML. *ACM SIGPLAN'98 Conference on Programming Language Design and Implementation (PLDI'98),* Montreal, June, 1998.

- George Necula and Peter Lee. The design and implementation of a certifying compiler. *ACM SIGPLAN'98 Conference on Programming Language Design and Implementation (PLDI'98),* Montreal, June, 1998. Selected for the special issue: *20 Years of the ACM/SIGPLAN Conference on Programming Language Design and Implementation (1979-1999): A Selection.* ACM SIGPLAN Notices, Vol.39, No.4, April 2004.

- Perry Cheng, Robert Harper, and Peter Lee. Generational stack collection and profile-driven pretenuring. *ACM SIGPLAN'98 Conference on Programming Language Design and Implementation (PLDI'98),* Montreal, June, 1998.

- Karl Crary, Robert Harper, Peter Lee, and Frank Pfenning. Automated techniques for provably safe mobile code. *Proceedings of the DARPA Information Survivability Conference and Exposition*, volume 1, pages 406-419, Hilton Head Island, South Carolina, January 2000. IEEE Computer Society Press.

- George C. Necula, Peter Lee. Proof Generation in the Touchstone Theorem Prover. *Proceedings of the 17th International Conference on Automated Deduction (CADE'00)*, Pittsburgh, 13 June 2000.

- Christopher Colby, Peter Lee, George C. Necula, Fred Blau, Ken Cline, and Mark Plesko. A Certifying Compiler for Java. *ACM SIGPLAN 2000 Conference on Programming Language Design and Implementation (PLDI'00)*, Vancouver, British Columbia, Canada, June 18-21, 2000.

- Christopher Colby, Peter Lee, George C. Necula. A Proof-Carrying Code Architecture for Java. *The 12th International Conference on Computer Aided Verification (CAV'00)*, Chicago, 15 July 2000.

Refereed publications, continued:

- Edoardo Biagioni, Robert Harper, and Peter Lee. A network protocol stack in Standard ML. *Higher Order and Symbolic Computation*, Vol.14, No.4, 2001.

- Andrew Bernard and Peter Lee. Temporal Logic for Proof-Carrying Code. *CADE-18 Conference on Automated Deduction*, volume 2392 of *Lecture Notes in Computer Science*, Copenhagen, Denmark, July 2002, 31-46.

- Christopher Colby, Karl Crary, Robert Harper, Peter Lee, and Frank Pfenning. Automated techniques for provably safe mobile code. *Theoretical Computer Science* (Special Issue on Dependable Computing), Vol.290, No.2, January 2003, 1175-1199.

- Ajay Chander, David Espinosa, Peter Lee, and George C. Necula. Enforcing resource bounds via static verification of dynamic checks. *14th European Symposium on Programming (ESOP'05)*, held as part of ETAPS'05 (Edinburgh), Lecture Notes in Computer Science, April 2005, 311. Also available at http://www.springerlink.com/index/XT0WFRY9MK6BUPV5. Extended version invited for and submitted to a special issue of ACM Transactions on Programming Languages and Systems, To appear in 2006.

- Ajay Chander, David Espinosa, Nayeem Islam, Peter Lee, and George Necula. JVer: a Java Verifier. *17th International Conference on Computer Aided Verification (CAV'05)*, July 2005.

- Seth Copen Goldstein, Todd C. Mowry, Jason D. Campbell, Peter Lee, Padmanabhan Pillai, James F. Hoburg, Phillip B. Gibbons, Carlos Guestrin, James Kuffner, Brian Kirby, Benjamin D. Rister, Michael De Rosa, Stanislav Funiak, Burak Aksak, and Rahul Sukthankar. The Ensemble Principle. *13th Foresight Conference of Advanced Nanotechnogy,* October 2005.

- Stephen Magill, Aleksander Nanevsky, Edmund Clarke, and Peter Lee. Inferring Invariants in Separation Logic for Imperative List-processing Programs. *The 3rd Workshop on Semantics, Program Analysis, and Computing Environments for Memory Management (SPACE'06),* (Charleston, SC), January 2006.

- Michael De Rosa, Seth Goldstein, Peter Lee, Jason Campbell, and Padmanabhan Pillai. Scalable Shape Sculpting via Hole Motion: Motion Planning in Lattice-Constrained Modular Robots. *Proceedings of the 2006 IEEE Internatonal Conference on Robotics and Automation (ICRA'06),* (Orlando, FL), May 2006.

- Seth Goldstein, Todd Mowry, Phillip Gibbons, Padmanabhan Pillai, Benjamin Rister, and Peter Lee. Ensembles of Millions of Microbots. *Proceedings of the 2006 IEEE Internatonal Conference on Robotics and Automation,* (Orlando, FL), May 2006.

- Michael De Rosa, Seth Goldstein, Peter Lee, Jason Campbell, Padmanabhan Pillai, and Todd Mowry. Distributed watchpoints: debugging large multi-robot systems. *Proceedings of the 20067 IEEE Internatonal Conference on Robotics and Automation (ICRA'07).*

Refereed publications, continued:

- Michael P. Ashley-Rollman, Seth Copen Goldstein, Peter Lee, Todd C. Mowry, and Padmanabhan Pillai. Meld: A declarative approach to programming ensembles. *Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS '07),* October 2007.

- Michael De Rosa, Seth Copen Goldstein, Peter Lee, Jason D. Campbell, and Padmanabhan Pillai. Programming modular robots with locally distributed predicates. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA'08)*, 2008.

- Michael P. Ashley-Rollman, Peter Lee, Seth Copen Goldstein, Padmanabhan Pillai, and Jason Campbell. A language for large ensembles of independently executing nodes. *Proceedings of the International Conference on Logic Programming (ICLP'09),* 2009.

Books:

- Peter Lee. *Realistic Compiler Generation*. The MIT Press Series in the Foundations of Computing, M. Garey and A. Meyer (Eds.), 1989.

- Peter Lee (Editor). *Topics in Advanced Language Implementation*. The MIT Press, 1991.

Unrefereed publications and technical reports:

- Peter Lee and Uwe F. Pleban. The automatic generation of realistic compilers from high-level semantic descriptions: a progress report. Technical Report CRL-TR-13-86, The University of Michigan Computing Research Laboratory, Ann Arbor, June 1986.

- Peter Lee. *The automatic generation of realistic compilers from high-level semantic descriptions*. Ph.D. Thesis, Department of Electrical Engineering and Computer Science, The University of Michigan, Ann Arbor, May 1987.

- Peter Lee, Frank Pfenning, John C. Reynolds, Gene J. Rollins, and Dana S. Scott. Research on Semantically Based Program-Design Environments: The Ergo Project in 1988. Technical Report CMU-CS-88-118, Department of Computer Science, Carnegie Mellon University, Pittsburgh, March 1988.

- Robert Harper, Peter Lee, and Frank Pfenning. Foundations of programming: Aspects of research in Ergo. Carnegie Mellon 1988/1989 Computer Science Research Review, 1989, 29-38.

- Philip J. Koopman, Jr., Peter Lee, and Daniel P. Siewiorek. Architectural Considerations for Combinator Graph Reduction. In *Topics in Advanced Language Implementation*, Peter Lee (Ed.), The MIT Press, 1991, 369-396.

Unrefereed publications and technical reports, cont'd:

- Eric Cooper, Robert Harper, and Peter Lee. The Fox Project: Advanced Development of Systems Software, Technical Report CMU-CS-91-178, Department of Computer Science, Carnegie Mellon University, Pittsburgh, August 1991.

- Mark Leone and Peter Lee. Deferred compilation: The automation of run-time code generation. In *Proceedings of the Atlantique Workshop on Semantics Based Program Manipulation*, Neil Jones and Carolyn Talcott (Eds.), DIKU Technical Report 94/12, January 1994, 116-130.

- Robert Harper and Peter Lee. Advanced Languages for Systems Software: The Fox Project in 1994, Technical Report CMU-CS-94-104, Department of Computer Science, Carnegie Mellon University, Pittsburgh, January 1994.

- Greg Morrisett, David Tarditi, Perry Cheng, Chris Stone, Robert Harper, and Peter Lee. The TIL/ML compiler: Performance and safety through types. *Workshop on Compiler Support for Systems Software*, Tuscon, Arizona, February 1996.

- Robert Harper and Peter Lee. Research in programming languages for composability, safety, and performance. *ACM Computing Surveys* 28A(4), December, 1996.

- Peter Lee and George C. Necula. Research on Proof-Carrying Code and Mobile-Code Security. *Proceedings of the Workshop on Foundations of Mobile Code Security,* Monterey, 1997.

- Karl Crary, Robert Harper, Peter Lee, and Frank Pfenning. *Modules matter most.* Position paper presented at the NSF Workshop on new Visions for Software Design and Productivity, Nashville, Tennessee, December 2001.

Policy papers, popular articles and white papers:

- James H. Morris and Peter Lee. The incredibly shrinking pipeline is not just for women any more. *Computing Research News*, Vol.16, No.4, May 2004.

- Peter Lee. The shrinking computer science pipeline. Available at http://www.cs.cmu.edu/~petel. August 2004.

- Insup Lee, George J. Pappas, Rance Cleaveland, John Hatcliff, Bruce Krogh, Peter Lee, and Lui Sha. *High-confidence medical device software and systems.* Cover article, IEEE Computer Magazine, April 2006.

- Ed Lazowska and Peter Lee. Fundamental research in engineering. *Computing Research Initiatives for the 21st Century,* Computing Community Consortium of the CRA, http://www.cra.org/ccc/initiatives.php.

- Peter Harsha, Ed Lazowska and Peter Lee. Information technology R&D and US innovation. *Computing Research Initiatives for the 21st Century,* Computing Community Consortium of the CRA, http://www.cra.org/ccc/initiatives.php.

Policy papers, popular articles and white papers, cont'd:

- Peter Lee and Randy Katz. Re-envisioning DARPA. *Computing Research Initiatives for the 21ˢᵗ Century,* Computing Community Consortium of the CRA, http://www.cra.org/ccc/initiatives.php.

- Ed Lazowska, Peter Lee, Chip Elliott, and Larry Smarr. Infrastructure for eScience and eLearning in higher education. *Computing Research Initiatives for the 21ˢᵗ Century,* Computing Community Consortium of the CRA, http://www.cra.org/ccc/initiatives.php.

Teaching Experience

Completed doctoral dissertations:

- Philip J. Koopman, Jr. (ECE, co-advised with Daniel Siewiorek.) *An Architecture for Combinator Graph Reduction*, June 1989. Dr. Koopman is now a Professor of Electrical and Computer Engineering, Carnegie Mellon University.

- Olin G. Shivers. (Co-advised with Allen Newell.) *Control-Flow Analysis of Higher-Order Languages*, May 1991. Dr. Shivers is now an Associate Professor of Computer Science at the Georgia Institute of Technology.

- Robert L. Nord. (Co-advised with William Scherlis.) *Deriving and Manipulating Module Interfaces*, December 1991. Dr. Nord is now a senior member of the technical staff at the Software Engineering Institute.

- Spiro Michaylov. *Design and Implementation of Practical Constraint Logic Programming Systems*, August 1992. Dr. Michaylov is employed at Curl, Inc.

- Nevin Heintze. (Co-advised with Frank Pfenning.) *Set-Based Program Analysis*, October 1992. Dr. Heintze is a senior researcher at Lucent Technologies Bell Laboratories.

- Anurag Acharya. (Co-advised with Allen Newell.) *Scalable Parallelism in Production System Programs*, November 1994. Dr. Acharya is a Principal Engineer at Google.

- David Tarditi. *TIL: An Optimizing Type-Directed Compiler for Standard ML*, 1996. Dr. Tarditi is a Senior Researcher at Microsoft Research.

- Chris Okasaki. *Functional Data Structures*, 1996. Dr. Okasaki is a Professor of Computer Science at the West Point Academy.

- Christopher Colby. *Trace-Based Program Analysis*, 1996. Dr. Colby is employed at Inktomi.

- Scott Draves. *Automatic Program Specialization for Interactive Media*, 1997. Dr. Draves is a visualist and computer artist in San Francisco, California.

- George Necula. *Compiling with Proofs,* 1998. Dr. Necula is an Associate Professor of Computer Science at the University of California, Berkeley.

Completed doctoral dissertations, cont'd:

- Andrew Bernard. *Engineering Formal Security Policies for Proof-Carrying Code*, 2004. Dr. Bernard is the Chief Technology Officer for Hobnob, Inc.

- Noam Zeilberger. *The Logical Basis of Evaluation Order*, 2009. Dr. Zeilberger is a postdoctoral fellow at Ecole Polytechnique.

Currently advising or co-advising three doctoral students:

- Michael Ashley-Rollman, Michael De Rosa, and Stephen Magill,.

Undergraduate teaching:

- *Fundamental Structures of Computer Science II* (15-212), 1988, 1990. Scheme, trees, graphs, formal languages and automata, introduction to computability theory.

- *Principles of Programming Languages* (15-312), 1990-1995. Syntax, semantics, and implementation of modern programming languages.

- *Compiler Design* (15-411), 1997, 1998, 2002, 2003, 2004. Design and implementation of modern optimizing compilers.

- *Fundamental Data Structures and Algorithms* (15-211), 2000-2004.

Graduate teaching:

- *Programming Systems Core Course,* 1988, 1989, 1990. (One of 6 lecturers for the course.) Lectures on functional programming and denotational semantics, for the Ph.D. core program.

- *Advanced Language Implementation Techniques,* Graduate seminar, 1988, 1990, 1992, 1993, 1996, 1997, 2000, 2002. Implementation techniques for modern programming languages. Foundations and techniques for semantics-based analysis and optimization.

- *Optimizing Compilers for Modern Architectures*, Graduate core course, 2006. Analysis and optimization techniques for modern computer architectures.

Conference and Workshop Organization

Program committees:

- 1990 SIGSOFT Symposium on Software Development Environments, Irvine, December 1990.

- SIGPLAN'91 Conference on Programming Language Design and Implementation, Toronto, June 1991.

- HOPL-II: The Second Conference on the History of Programming Languages, Boston, 1993.

- PEPM'93 SIGPLAN Conference on Partial Evaluation and Semantics-based Program Manipulation, Copenhagen, June 1993.

- POPL'94 ACM Symposium on Principles of Programming Languages, Portland, Oregon, January 1994.

- 1994 SIGPLAN Workshop on ML and its Applications, Orlando, June 1994.

- SAS'95 Static Analysis Symposium, Glasgow, Scotland, September 1995.

- ICFP'96 International Conference on Functional Programming, Philadelphia, May 1996.

- TINA'96 Conference on Telecommunications Information Networking Architecture, Heidelberg, September 1996.

- SAS'96 Static Analysis Symposium, Aachen, September 1996.

- ICFP'97 International Conference on Functional Programming, Amsterdam, June 1997.

- ESOP'98 European Symposium on Programming, Lisbon, March 1998.

- SOSP'99 Symposium on Operating Systems Principles, Charleston, South Carolina, December 1999.

- 20 Years of PLDI, ACM SIGPLAN, 2002.

- COCV 2002 Compiler Optimization Meets Compiler Verification, Warsaw, Poland, April 2003.

- HCMDSS Workshop on High-Confidence Medical Devices and Systems Software, Philadelphia, June 2005.

- APLAS'05 The Third Asian Symposium on Programming Languages and Systems, Tsukuba, Japan, November 2005.

- PLDI'06 SIGPLAN Conference on Programming Language Design and Implementation, June 2006.

- HOPL-III The Third ACM SIGPLAN History of Programming Languages Conference, San Diego, June 2007.

Conference chairmanships:

- Program Chair for the ACM SIGPLAN Workshop on the ML Programming Language, San Francisco, June 1992.

- Program Chair for the POPL'95 ACM Symposium on Principles of Programming Languages, San Francisco, California, January 1995.

- Conference Co-chair for the POPL'97 ACM Symposium on Principles of Programming Languages, Paris, France, January 1997.

- Program Chair for the ICFP'99 International Conference on Functional Programming, Paris, France, September 1999.

- Program Chair for the ACM TLDI'03 Workshop on Types in Language Design and Implementation, New Orleans, January 2003.

- Conference Chair for the SAS'03 Static Analysis Symposium, San Diego, California, June 2003.

Departmental and University Committee Assignments

- Graduate Admissions Committee, 1992, 1993 (Chairman), 1994.

- Computer Science Liason to the Library, 1992, 1993.

- Undergraduate Research Committee, 1993.

- Departmental Review Committee, 1993-1996.

- University Non-tenure Promotions and Reappointments Committee, 1996-1997.

- SCS Governance Committee, 1998.

- SCS Dean Search Committee, 1998-1999.

- Academic Review Board, 1998-present.

- University Disciplinary Committee, 1998-present.

- School of Computer Science Council, 1999-present.

- University Research Committee, 2000-2002.

- Associate Deans Council, 2000-present.

- Development Committee of the Board of Trustees, 2002-present.

- Classroom Technology Task Force, 2004 (Co-chair).

- M.S. E-Commerce Program Task Force (2004-2005).

- Provost Review Committee (2004-2005)

- Gates Center Architect Selection Committee (2005)

- Gates Center Building Committee (2005-present).

- Campus Design and Visioning Committee (2006-present)