

Curriculum Vitae

IGOR PESHANSKY

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Former last name: Pechtchanski

Research Interests

- Programming Language Design
- Property Specification and Verification
- Static and Dynamic Code Optimization
- Static Program Analysis
- Software Engineering Tools

Education

- Ph.D. in Computer Science, New York University, June 2003.
Thesis advisors: Prof. Benjamin Goldberg (NYU), Dr. Vivek Sarkar (IBM)
Dissertation: “A Framework for Optimistic Program Optimization”
- M.S. in Computer Science, New York University, September 2000.
- B.S. in Computer Science, Brooklyn College, City University of New York, *magna cum laude*, June 1995.

Employment

- Software Engineer, Technical Infrastructure, Google, August 2011 – present
Working on various pieces of the Google technical infrastructure and the Google cloud platform.
- Senior Software Engineer, Programming Technologies Department, IBM T. J. Watson Research Center, April 2007 – July 2011
Designing and implementing static program analyses and tooling support for code with integrated database accesses
Leading an international team in developing a high-performance compiler and runtime for a novel high-productivity distributed and parallel programming language.
- Advisory Software Engineer, Programming Technologies Department, IBM T. J. Watson Research Center, December 2005 – April 2007
Designed and implemented Java language extensions for first-class XML processing, Database, and Web Services integration
Developed and integrated features in a high-performance, high-productivity parallel language.
- Post-Doctoral Researcher, Programming Technologies Department, IBM T. J. Watson Research Center, November 2003 – December 2005
Designed and implemented Java language extensions for first-class XML processing
Explored componentization specification for large-scale systems (Websphere Application Server)

- Volunteer Contributor, Cygwin Open-source Project, October 2002 – Present
Contributed C++/C/Perl/shell code to various parts of Cygwin (a POSIX emulation environment for Windows), including runtime libraries, utilities, installation program, and packages
Maintaining multiple packages and some documentation web pages
- Co-op, Programming Technologies Department, IBM T. J. Watson Research Center, February 1999 – November 2003
Participated in the development of the Jikes Research Virtual Machine
Conducted research in optimistic analysis and immutability specification and verification
- Research Assistant, Cartesian Grid Methods for Complex Geometry project, New York University, September 2001 – June 2002
Ported C/FORTRAN mesh generation software to Linux/GCC
Optimized the mesh refinement module (written in C) by parallelizing algorithms and loops using OpenMP directives and MPI calls
- Summer Researcher, Panasonic AVC Research Lab, Matsushita Electric Corp. of America, June 1997 – August 1997
Instructed researchers in the use of a new research compiler infrastructure (Trimaran)
- Research Assistant, ReaCT-ILP group, New York University, January 1997 – January 1999
Participated in design and implementation of the Trimaran research compilation and optimization environment for EPIC architectures
Designed and maintained web pages for the group and the Trimaran consortium
- Software Engineer, Bloomberg, L.P., NY, February 1996 – August 1996
Designed and maintained Xwindows-based graphics applications
Participated in the design of internal protocols for data display and exchange
- Research Assistant, CUNY Research Foundation, March 1995 – February 1996
Designed and implemented various algorithms using the combination of linear programming and logic programming
Participated in design and implementation of a compiler and run time environment for a new programming language 2LP

Professional Activities

- Member, Association for Computing Machinery
- Demonstrations Chair, SPLASH conference (2011-2013, 2015)

Publications

- “Analysis of Imperative XML Programs”, with Michael G. Burke, Mukund Raghavachari, and Christoph Reichenbach. *11th International Symposium on Database Programming Languages (DBPL 2007)*, September 2007.
- “Experiences with an SMP Implementation for X10 based on the Java Concurrency Utilities”, with Rajkishore Barik, Vincent Cave, Christopher Donawa, Allan Kielstra, and Vivek Sarkar. *Workshop on Programming Models for Ubiquitous Parallelism (PMUP 2006)*, held in conjunction with PACT 2006, Sep 2006.
- “XJ: Facilitating XML processing in Java”, with Matthew Harren, Mukund Raghavachari, Oded Shmueli, Michael G. Burke, Rajesh Bordawekar, and Vivek Sarkar. *International World Wide Web Conference (WWW2005)*, May 2005.

- “Immutability Specification and its Applications”, with Vivek Sarkar. *Journal Concurrency and Computation: Practice and Experience*, Volume 17, Number 5-6, April/May 2005; Special Issue: Java Grande/ISCOPE 2002.
- “A Framework for Optimistic Program Optimization”, **Ph.D. Dissertation**, New York University, June 2003.
- “Immutability Specification and its Applications”, with Vivek Sarkar. *Joint ACM Java Grande – ISCOPE Conference, (JGI’02)*, November 2002.
- “Dynamic Optimistic Interprocedural Analysis: A Framework and an Application”, with Vivek Sarkar. *ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA’01)*, October 2001.
- “Object Views: Language Support for Intelligent Object Caching in Parallel and Distributed Computations”, with Ilya Lipkind and Vijay Karamcheti. *ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA’99)*, November 1999.
- “Dependence Analysis for Java”, with Craig Chambers, Vivek Sarkar, Mauricio Serrano, and Harini Srinivasan. *Workshop on Languages and Compilers for Parallel Computing (LCPC’99)*, August 1999.
- “A Core Library for Robust Numeric and Geometric Computation”, with Vijay Karamcheti, Chen Li, and Chee Yap. *ACM Symposium on Computational Geometry (SCG’99), Applied Track*, June 1999.

Past Research

- Componentization of Large-scale Systems
- Programming Models for Enterprise Applications
- Virtual Machine Design
- Combined Instruction Scheduling and Register Allocation
- Programmable Memory Hierarchies
- Architecture Simulation
- Distributed Programming
- Computer Graphics
- Computational Geometry
- Combined Linear and Logic Programming

Programming Languages

C/C++, Python, Java, X10, Perl, Unix shell scripting, Standard ML, Scheme, PASCAL, ADA, Prolog, SQL, PostScript, PL/I, FORTRAN, various assembly languages (x86, PowerPC, MIPS, SPARC, 68000)

Programming Paradigms and Environments

Object-Oriented Design, Automatic code generation, Unix system and network programming, Xwindows/Motif programming, MS Windows API, Cygwin

References Available upon request.