

Curriculum Vitae

Terence John Parr

Business Address:
Department of Computer Science
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Degrees

Ph.D., School of Electrical Engineering, Purdue University; 1993 Thesis: "Obtaining Practical Variants of $LL(k)$ and $LR(k)$ for $k > 1$ By Splitting the Atomic k -Tuple". Invented useful approximation to interesting, but intractable parsing-related computation; reduced space complexity from $O(n^k)$ to $O(nk)$.

MS, School of Electrical Engineering, Purdue University; 1990

BSCS, School of Science, Purdue University; West Lafayette, Indiana, 1987

Research

Designer and project lead for ANTLR/PCCTS: very popular, well-respected parser generator that almost single-handedly diverted attention from $LR(k)$ to $LL(k)$ and introduced numerous (now standard) parsing/translation techniques and ideas. These tools are included in all RedHat Linux distributions and there are over 5000 ANTLR downloads a month. Currently studying application of template engines as output grammars for use in language translation. <http://www.antlr.org>

Grants

Awarded \$70k 1994 Army SBIR (Small Business Innovation Research) contract to develop languages for process simulation and 3D visualization based upon VRML.

Employment

University of San Francisco; assistant professor of computer science; 2003-present. Graduate program director Summer 2004-present. Overall student evaluations: 4.37/5.00 across all courses. 4.67/5.00 across software engineering.

jGuru.com. Cofounder and Chief Scientist San Francisco, CA; 1995-2004 jGuru.com was the largest independent site for Java developers. Solicited and received \$5M private investment, managed 20+ people (10 Ph.D.s) when doing business as MageLang Institute, and implemented 110k-line jGuru server using Java/XML/RDBMS.

Parr Research Corporation; President and Founder Minneapolis, Minnesota; August 1994 - 1995 Software development and consulting firm. Clients include NeXT Computer, Army Research Lab (Aberdeen Proving Grounds), Tandem, Computing Devices International, Berkeley Systems, Pencom.

Army High-Performance Computing Research Center; Postdoctoral Research Fellow Minneapolis, Minnesota; August 1993 - 1994 Current research interest: language translation tools and their role in parallel supercomputing.

Army High-Performance Computing Research Center; Predoctoral Fellow Minneapolis, Minnesota; September 1991 - August 1993 Involved in the formulation of portable, application-specific programming language (Fortran-P) and compiler for supercomputers (e.g. MasPar MP-1 and Thinking Machines CM-200, CM-5).

IBM; Software Engineer Lexington, Kentucky; June 1990 - December 1990 Developed translator that generated a proprietary IBM language from C++

Renault Automation; Engineer Paris, France; Direction des Techniques Avancees; January - June 1988. Ported KAREL (robot-control language) to industrial robot controller, developed debugger and modified compiler to generate symbolic information.

Cybotech Corporation; Software Engineer West Lafayette, Indiana; May 1986 - December 1987 Principle developer of compiler, debugger and environment for KAREL, a robot control language; supervised work of two other employees.

Lockheed Missiles and Space Company; Summer Technical Hire Sunnyvale, California; May - August 1984, 1985 Assistant system administrator for network of 45 Apollo workstations. Developed program to schedule calibration of fleet ballistic missile test consoles.

Purdue University Psychology Department; Software developer West Lafayette, Indiana; January - April 1984; September 1984 - May 1985 Created library of routines to control and monitor hardware functions required for psychological experimentation.

Kaman Sciences Corporation; Junior Programmer Colorado Springs, Colorado; May - August 1983 Developed graphics package for representation of data from nuclear tests.

Bio-Analytical Systems; Software Engineer West Lafayette, Indiana; September 1982 - May 1983 Developed software to collect and display data from chemical analysis hardware.

Consulting

NeXT, Inc.; Redwood City, California; October 1993 Extended ANTLR parser-generator for NeXT-specific tasks.

Army Research Lab (ARL); Aberdeen Proving Grounds, Maryland; July 1993 - September 1993 Developed process simulation layout language and built translators for graphics languages and interchange formats.

Computing Devices International; Minneapolis, Minnesota; September 1992 - October 1992 Developed recognizer for in-house programming language and presented three-day seminar on PCCTS.

Ballistic Research Lab (BRL); Adelphi, Maryland; June 1992 - September 1992 Modified Fortran-P translator to support interprocessor communication scheme used in applications at BRL and provided instruction in the use of PCCTS.

Micro Data Base Systems (MDBS); Lafayette, Indiana; July, 1991 Developed performance-evaluation tools for OBJECT/1, an object-oriented programming language.

Renault Automation; Paris, France; Spring, Summer 1989 Modified KAREL compiler and interpreter to double speed of application execution and to support additional data types (e.g. aggregate data types).

Memberships

Association for Computing Machinery (ACM); member since 1990

Publications

Books

Section in "Lucene in Action", Erik Hatcher and Otis Gospodnetic. Manning to appear 2005.

Section in "Design for Community: The Art of Connecting Real People in Virtual Places", Derek Powazek, New Riders, 2001. ISBN 0735710759

"Language Translation Using PCCTS AND C++", Terence John Parr, Automata Publishing; San Jose, CA 1997 ISBN 0-9627488-5-4.

Papers in Refereed Journals

- “LL and LR Translators Need $k > 1$ Lookahead,” Terence J. Parr and Russell W. Quong; SIGNPLAN Notices, Vol. 31, No. 2, February 1996. (Submissions to this publication are reviewed by the editorial board only, rather than by a peer review process.)
- “The Fortran-P Translator: Automatic Translation of Fortran 77 Programs for Massively Parallel Processors,” Matthew O’Keefe, Terence Parr, B. Kevin Edgar, Steve Anderson, Paul Woodward, and Hank Dietz; Journal of Scientific Programming, Vol. 4, pp 1-21, 1995.
- “ANTLR: A Predicated-LL(k) Parser Generator,” T.J. Parr and R.W. Quong; Journal of Software Practice & Experience, Vol. 25, No. 7; July, 1995.
- “PCCTS 1.00: The Purdue Compiler Construction Tool Set,” T.J. Parr, H.G. Dietz, W.E. Cohen; SIGPLAN Notices, February 1992. (Submissions to this publication are reviewed by the editorial board only, rather than by a peer review process.)

Papers at Refereed Conferences

- “Enforcing Strict Model-View Separation in Template Engines”, WWW2004 conference, NYC May 2004. *Nominated for best paper.*
- “A Language for Creating and Manipulating VRML”, Terence Parr and Tim Rohaly, First Annual Symposium on the Virtual Reality Modeling Language, San Diego, 1995.
- “Adding Semantic and Syntactic Predicates to LL(k): pred-LL(k),” Terence J Parr and Russell W. Quong; International Conference on Compiler Construction 1994; Edinburgh, Scotland; April 1994.
- “An Overview of SORCERER-A Simple Tree-Parser Generator,” Terence John Parr; Poster paper; International Conference on Compiler Construction 1994; Edinburgh, Scotland; April 1994.

Workshops

- “The Role of Template Engines in Translation”, Source-to-source 2004 workshop co-located with OOPSLA 2004; Vancouver, Canada; October 25, 2004.
- ANTLR2004 (in cooperation with ACM); co-organizer and presenter; University of San Francisco, October 7-8, 2004.
- PCCTS workshops; organizer and presenter at NeXT Computer July 1994, SGI July 1995, and Sun Microsystems August 1997.
- “An Overview of SORCERER,” SGI Compiler Summit; San Jose CA; June 26-28, 1994.
- “Object-Oriented ANTLR Parsers,” (Presented by R.W. Quong) “OO Compilation—What are the Objects?” workshop at OOPSLA 94; Portland OR.

Invited Presentations

- “The Evolution of The StringTemplate Engine”, Harmonia Research group, UC Berkeley; December 2004.
- “The ANTLR Parser Generator, Present and Future”, University of Quebec at Montreal; November 12, 2004.
- “The Role Of Template Engines in Code Generation”, Microsoft Research; Seattle, Washington; July 2004.
- “Language Translation, Domain Specific Languages, and ANTLR” with Loring Craymer, NASA JPL IT Symposium, October 2002.
- “The ANTLR Parser Generator,” Apple Computer; Cupertino, CA; February 1995.
- “Language Translation with ANTLR and SORCERER,” Sun Laboratories; Mountain View, CA; November 1994.

- “PCCTS and It’s Application to C++ Parsing,” Lawrence Livermore National Lab; Livermore, CA; April 1994.
- “An Overview of SORCERER,” Argonne National Laboratories, Chicago Illinois; November 1994.
- “An Introduction to PCCTS,” IBM; Rochester, MN; April 1994.
- “Parsing and Translation with ANTLR and SORCERER,” Xerox Design Research Institute; Cornell University, Ithaca, NY; November 1993.
- “Linear Approximation to Exponential $LL(k)$ and $LR(k)$ Lookahead,” SUNY Albany; Albany, NY; November 1993.
- “Translation with SORCERER,” NeXT, Inc.; Redwood City, California; October 1993.
- “Language Tools and Their Role in Scientific Computing,” Konrad Zuse Institute of Berlin (ZIB); Berlin, Germany; September 1993.
- “PCCTS,” Technical University of Dresden; Dresden, Germany; September 1993.
- “Advanced Parsing Strategies Using PCCTS,” Argonne National Lab; Chicago, Illinois; July 1993.
- “Advanced Parsing Strategies Using PCCTS: The ANTLR Parser Generator,” Cray Research Inc.; Eagan, Minnesota; March 1993.
- “The Role of Language Tools in Supercomputing,” Army High-Performance Computing Research Center; Minneapolis, Minnesota; March, 1993.

Technical Reports

- “The Fortran-P Intermediate Representation,” Terence Parr, Aaron Sawdey, Will Cohen, and M. O’Keefe; Army High Performance Computing Research Center Preprint No. 94-009, January 1994.
- “Implementing a Fortran 77 to CM Fortran Translator Using the SORCERER Source-to-Source Translator Generator,” A. Sawdey, M. O’Keefe, and T. Parr; Army High Performance Computing Research Center Preprint No. 93-102, October 1993.
- “Adding Semantic and Syntactic Predicates to $LL(k)$: pred- $LL(k)$,” Terence J Parr and Russell W. Quong; Army High Performance Computing Research Center Preprint No. 93-096, October 1993.
- “SORCERER—A Source-to-Source Translator Generator,” Terence John Parr; Army High Performance Computing Research Center Preprint No. 93-094, September 1993.
- “The Purdue Compiler Construction Tool Set: Version 1.10 Release Notes,” Terence Parr, Will Cohen, and Hank Dietz; Army High Performance Computing Research Center Preprint No. 93-088, September 1993.
- “The Use of Predicates in $LL(k)$ and $LR(k)$ Parser Generators,” T. J. Parr, R. W. Quong, and H. G. Dietz; TREE93-25, Purdue University, July 1993.
- “The Fortran-P Translator: Automatic Translation of Fortran 77 Programs for Massively Parallel Processors,” Matthew O’Keefe, Terence Parr, B. Kevin Edgar, Steve Anderson, Paul Woodward, and Hank Dietz; Army High Performance Computing Research Center Preprint No. 93-021, February 1993.
- “Fortran-P,” Henry Dietz, Matthew T. O’Keefe, Terence J. Parr, Tom Varghese, and Paul R. Woodward; UMSI 91/330, University of Minnesota Supercomputer Institute, December 1991.
- “A Practical Approach to $LL(k)$: $LL_m(n)$,” Terence J. Parr and Henry G. Dietz; TR92-30, Purdue University, 1992.
- “The Analysis of Extended BNF Grammars and the Construction of $LL(1)$ Parsers,” Terence Parr; TR90-30, reprint of MS Thesis (Advisor H. G. Dietz), Purdue University, 1990.
- “The Purdue Compiler Construction Tool Set,” Terence Parr, Hank Dietz, and Will Cohen; TR90-14, Purdue University, 1990.