William W. Cohen
Center for Automated Learning and Discovery
Carnegie Mellon University
5000 Forbes Ave, Pittsburgh, PA 15213
Email: william@wcohen.com
Web: http://www.wcohen.com

Professional Experience:

- May 2003–present. *Associate Research Professor, Center for Automated Learning and Discovery, Carnegie-Mellon University, Pittsburgh, PA.*

- July 2002–May 2003. *Visiting Associate Professor, Center for Automated Learning and Discovery, Carnegie-Mellon University, Pittsburgh, PA.* Conducted joint research with Steve Fienberg (Statistics), John Lafferty (Computer Science), Tom Mitchell (CALD), and Robert Murphy (Biology).

- April 2000–May, 2002. *Distinguished Research Scientist, Whizbang Labs, Pittsburgh, PA.* Conducted and supervised research and development for an information extraction company.

- November 2000–present. *Adjunct Faculty, Center for Automated Learning and Discovery, Carnegie Mellon School of Computer Science.*

- July 1999—April 2000. *Technology Consultant, AT&T Labs-Research, Shannon Laboratories, Florham Park NJ.* Senior research scientist in the Machine Learning and Information Retrieval Research Department.

- February 1996—July 1999. *Principle Research Staff Member, AT&T Labs-Research, Shannon Laboratories, Florham Park NJ.* Research scientist in the Machine Learning and Information Retrieval Research Department.

- September 1990—February 1996. *Member Technical Staff, AT&T Bell Laboratories, Murray Hill NJ.* Research scientist in the Artificial Intelligence Research Department and (later) in the Information Extraction Research Department.

- September 1994—October 1994. *Visiting Senior Research Associate, Basser Department of Computer Science, University of Sydney, Sydney, Australia.* Conducted research in the research group headed by Dr. J. R. Quinlan.

- Summer 1988. *Summer Intern, Bell Communications Research, Piscataway NJ.* Integration of natural-language front end to an advanced planning system.

- Summer 1987. *Research Assistant, Rutgers University Computer Science Department, New Brunswick, NJ.* Extension of the learning subsystem of a knowledge-based expert system for VLSI circuit design.

- November 1985—August 1986. *Member Technical Staff, Computer Science Corporation, under contract to the Space Telescope Science Institute, Baltimore MD.* Design and implementation of a natural language query system as part of a decision support system for selecting observations to be run on the Hubble Space Telescope.

- June 1984—September 1985. *Computer Aided Design R&D Specialist, General Electric Microelectronics Center, Research Triangle Park, NC.* Project leader for an expert system project on optimization of combinational logic.

Education:

Ph.D. in Computer Science. Rutgers University, New Brunswick, New Jersey. August 1990. 4.0/4.0 average. Doctoral thesis, *Explanation Based Generalization as an Abstraction Mechanism for Concept Learning*, under the direction of Dr. Alex Borgida. AT&T Bell Laboratories Fellowship, September 1989—August 1990; Marion Johnson Fellowship, September 1986—June 1989.

M.S. in Computer Science. Rutgers University, New Brunswick, New Jersey. May 1988. 4.0/4.0 average.

B.S. in Computer Science. Duke University, Durham, North Carolina. May 1984. Second major in mathematics. 3.9/4.0 average. Senior Honor's thesis under the direction of Dr. Allen Biermann. Graduation Summa Cum Laude, May 1984;

Professional Service:

- November 2001—present. Member of the Governing Board of the International Machine Learning Society. (The governing board is a group of fifteen whose principle mandate is to administer the International Machine Learning Conference. The members were chosen by an open election among all attendees of the last three conferences.)

- May 2002—present. Member of a National Research Council Subcommittee for the review of the NASA's Computing, Information, and Communications Technology (CICT) Program.

- September 2001—present. Action Editor for *The Journal of Machine Learning Research*.

- May 2000—September 2001. Member of the editorial board for the *Journal of Machine Learning Research.*

- January 1997—September 2001. Action Editor for the journal *Machine Learning.*

- January 1995—December 1997. Associate Editor for the *Journal of Artificial Intelligence Research.*

- March 1998. With Jaime Carbonell and Yiming Yang (of CMU), editor of special issue of the journal *Machine Learning* on the topic "machine learning and information retrieval".

- January 1998—present. Member of the advisory board for the *Journal of Artificial Intelligence Research.*

- September 1997—present. Member of the editorial board for *Applied Intelligence.*

- Co-chair of the 1994 International Machine Learning Conference.

- Member of advisory committees for ML-98, ML-97, ML-96, ML-95.

- Area chair for ML-2000, SIGIR-2001, and SIGIR-2002.

- Program committee member for KDD-2003, SIGMOD-2003, WWW-2003, NIPS-2002, ICML-2002, ICML-2001, SIGIR-2001, WWW-2000, ILP-2000, SIGIR-99, WWW-99, ILP-99, COLT-98, ML-97, ILP-97, AAAI-96, ALT-96, ILP-95, ILP-94, AAAI-93, and ML-93, and various specialized workshops.

- Member of organizing committee for AAAI-92 workshop on "Constraining Learning Using Prior Knowledge".

- Reviewer for numerous journals including *Artificial Intelligence*, *The Journal of Logic Programming*, *Information Processing Letters*, and *Theoretical Computer Science.*

Teaching and Supervisory Experience:

- Spring 2002. *Center for Automated Learning and Discovery, Carnegie-Mellon University, Pittsbugh PA*. With T. Mitchell, taught a graduate seminar in knowledge discovery from data.

- Fall 2000. *Computer Science Department, Carnegie-Mellon University, Pittsbugh PA*. With J. Baxter, A. McCallum, T. Mitchell, F. Pereira, taught a graduate seminar in text mining and information extraction.

- September 1998—April 2000. Member of the AT&T Labs Fellowship Selection Committee.

- Fall 1997. *Computer Science Department, Rutgers University, New Brunswick, NJ*. With Y. Freund and R. Schapire, taught a graduate seminar in machine learning.

- Spring 1996. *Computer Science Department, Columbia University, New York, NY*. Taught a course in machine learning.

- Committee member for four Ph.D theses: Chunki Basu (Rutgers), Daniel Kudenko (Rutgers), John Zelle (University of Texas at Austin), and Peter Whigham (Australian National University).

Invited Talks and Seminars:

- October 2002, invited talk, "Exploiting Document Structure in Information Extraction and Document Classification", McKay Distinguished Lecture, University of California, Berkeley.

- October 2001, invited talk, "Issues in Extracting Information from the Web", at the 7th International Workshop on Parsing Technologies, Sponsored by ACL/SIGPARSE, Bejing, China.

- December 2000, invited talk, "Learning Using the Web as Background Knowledge", at the Eleventh International Conference on Algorithmic Learning Theory, Sydney, Australia.

- June 1999, keynote address, "What can we learn from the Web?" at the 16th International Conference on Machine Learning, Bled, Slovenia.

- March 1996, invited talk, "What the Well-Informed IR Researcher Should Know About Machine Learning", at the 1996 AAAI Spring Symposium on Machine Learning and Information Access, Palo Alto, CA.

- September 1995, invited talk, "Learning to Classify English Text with ILP Methods", at the Fifth International Workshop on Inductive Logic Programming, Leuven, Belgium.

Patents:

- *Method and apparatus for extracting data from data sources on a network.* Patent #6,516,308.

- *A system and method for accessing heterogeneous databases.* Patent #6,295,533.

- *A system and method for finding information in a distributed information system using query learning and meta search.* Patent # 5,347,623.

- *Rule induction on large noisy data sets.* Patent # 5,719,692.

- *Software discovery system.* Patent # 5,642,472.

- *Biased learning system.* Patents # 5,481,650 and # 5,627,945.

Journal Publications:

submitted S. Zelikovitz, H. Hirsh, W. Cohen, "Using and Extending WHIRL Queries for Text Classification", submitted for journal publication.

submitted W. Cohen, "Learning and Discovering Structure in Web Pages", submitted for journal publication.

in press M. Bilenko, R. Mooney, W. Cohen, P. Ravikumar, S. Fienberg "Adaptive Name-Matching in Information Integration", *IEEE Intelligent Systems*, in press.

2001 C. Basu, H. Hirsh, W. Cohen, C. Neville-Manning, "Technical Paper Recommendation: A Study in Combining Multiple Information Source", in *The Journal of Artificial Intelligence Research* 14, pp 231-252.

2000 W. Cohen, "Data Integration using Similarity Joins and a Word-based Information Representation Language", in *ACM Transactions on Information Systems*, 18(3), July 2000, pp 288-321.

2000 W. Cohen and W. Fan, "Web-collaborative filtering: recommending music by crawling the Web", in *Computer Networks*, 33, pp 685–698. A version of this paper also appeared in the proceedings of the *Ninth International World Wide Web Conference (WWW-2000)*.

2000 W. Cohen, "WHIRL: A Word-Based Information Representation Language", *Artificial Intelligence*, 118, pp 163–196.

2000 W. Cohen, P. Devanbu, "Automatically Exploring Hypotheses about Fault Prediction: a Comparative Study of Inductive Logic Programming Methods", *International Journal of Software Engineering and Knowledge Engineering*, 9(5), pp 519–546.

1999 W. Cohen, Y. Singer, "Context-sensitive learning methods for text categorization", in *ACM Transactions on Information Systems*, 17(2), Apr 1999, pages 171-173.

1999 W. Cohen, Y. Singer, R. Schapire, "Learning to Order Things", in *Journal of Artificial Intelligence Research*, 10, 1999, pp 243-270.

1999 W. Cohen, W. Fan, "Learning page-independent heuristics for extracting data from Web pages", *International Journal of Computer and Telecommunications Networking*, 31, pp 1641–1652. Versions of this paper also appeared in the proceedings of the *Eighth International World Wide Web Conference (WWW-99)* and *the 1999 AAAI Spring Symposium Workshop on Intelligent Agents in Cyberspace*.

1999 W. Cohen, "Reasoning about Textual Similarity in Information Access", *Autonomous Agents and Multi-Agent Systems*, 2, 1999, pp 65–86.

1998 W. Cohen, "The WHIRL Approach to Information Integration", *IEEE Intelligent Systems*, Sept/Oct 1998, pp 20–23. (In the *Trends and Controversies* feature on information integration.)

1998 W. Cohen, "Hardness Results for Learning First-Order Representations and Programming by Demonstration", *Machine Learning*, 30(1), pp 57–88.

1996 W. Cohen, "Adaptive Mapping and Navigation by Teams of Simple Robots", *Robotics and Autonomous Systems*, 18, pp 411–434.

1996 W. Cohen, "Pac-Learning Non-Recursive Prolog Clauses", *Artificial Intelligence*, 79(1), pp 1–38.

1995 W. Cohen and D. Page, "Polynomial Learnability and Inductive Logic Programming: Methods and Results", *New Generation Computing*, 13(3).

1995 W. Cohen, "Pac-Learning Recursive Logic Programs: Efficient Algorithms", *Journal of Artificial Intelligence Research*, Vol 2, pp 500–539.

1995 W. Cohen, "Pac-Learning Recursive Logic Programs: Negative Results", *Journal of Artificial Intelligence Research.* Vol 2, pp 541–573.

1995 W. Cohen, "Inductive Specification Recovery: Understanding Software by Learning from Example Behaviors", *Automated Software Engineering*, 2(2).

1994 W. Cohen, H. Hirsh, "Learnability of Description Logics with Equality Constraints", *Machine Learning*, 17(2/3).

1994 W. Cohen, "Grammatically Biased Learning: Learning Logic Programs Using an Explicit Antecedent Description Language", *Artificial Intelligence*, Vol 68, pp 303-366.

1994 W. Cohen, "Incremental Abductive EBL", *Machine Learning*, 15(1).

1994 L. T. McCarty, W. Cohen, "The Case for Explicit Exceptions", in *Methods of Logic in Computer Science*, 1(1).

1992 W. Cohen, "Abductive Explanation-Based Learning: A Solution to the Multiple Inconsistent Explanation Problem in Explanation-Based Learning", *Machine Learning*, 8(2).

1992 W. Cohen, "Using Distribution-Free Learning Theory to Analyze Solution Path Caching Mechanisms", *Computational Intelligence*, 8(2).

1986 K. Bartlett, W. Cohen, A. De Geus, G. Hachtel, "Synthesis and Optimization of Multi-level Logic Under Timing Constraints", *IEEE Transactions on Computer-Aided Design*, October 1985.

1985 A. De Geus, W. Cohen, "Optimization of Combinational Logic Using a Rule-Based Expert System", *IEEE Design and Test of Computers*, August 1985.

Book Chapters:

2003 W. Cohen, M. Hurst, L. S. Jensen, "A Flexible Learning System for Wrapping Tables and Lists in HTML Documents", in "Web Document Analysis: Challenges and Opportunities", ed. Antonacopoulos & Hu, Word Scientific Publishing.

1996 W. Cohen, "Learning to Classify English Text with ILP Methods", in "Advances in ILP", ed. L. de Readt, IOS Press.

1994 W. Cohen, R. Greiner, D. Schuurmans, "Probabilistic Hill-Climbing", in "Computational learning theory and natural learning systems (Volume II)", MIT Press.

1994 H. Hirsh, W. Cohen, "Learning from Data with Bounded Inconsistency: Theoretical and Experimental Results", in "Computational learning theory and natural learning systems (Volume I)", MIT Press.

Rigorously Refereed Conference Publications:

2003 C. Zhai, W. Cohen, J. Lafferty, "Beyond Independent Topical Relevance: Methods and Evaluation Metrics for Subtopic Retrieval", in *Proceedings of the 26th Annual International ACM SIGIR Conference (SIGIR-2003)*.

2003 W. Cohen, R. Wang, R. F. Murphey, "Understanding Captions in Biomedical Publications" in *Proceedings of the Ninth International Conference on Knowledge Discovery and Data Mining (KDD-2003).*

2003 W. Cohen, "Infrastructure Components for Large-Scale Information Extraction Systems", in *Proceedings of the Fifteenth Innovative Applications of Artificial Intelligence Conference (IAAI-03).*

2002 W. Cohen, "Improving A Page Classifier with Anchor Extraction and Link Analysis", in *Neural Information Processing (NIPS-2002).*

2002 W. Cohen, J. Richman, "Learning to Match and Cluster Large High-Dimensional Data Sets For Data Integration", in *Proceedings of the Eighth International Conference on Knowledge Discovery and Data Mining (KDD-2002).*

2002 W. Cohen, M. Hurst and L. Jensen, "A Flexible Learning System for Wrapping Tables and Lists in HTML Documents", in *Proceedings of the Eleventh International World Wide Conference (WWW-2002).*

2000 W. Cohen, "Automatically extracting features for concept learning from the Web", in *Proceedings of the Seventeenth International Machine Learning Conference* (ICML-2000).

2000 W. Cohen, H. Kautz, D. McAllester "Hardening Soft Information Sources" in *Proceedings of the Sixth International Conference on Knowledge Discovery and Data Mining* (KDD-2000).

1999 W. Cohen and Y. Singer, "A Simple, Fast, and Effective Rule Learner", in *Proceedings, Seventeenth National Conference on Artificial Intelligence* (AAAI-99).

1999 W. Cohen, "Recognizing Structure in Web Pages using Similarity Queries", in *Proceedings, Seventeenth National Conference on Artificial Intelligence* (AAAI-99).

1998 W. Cohen, "Joins that Generalize: Text Classification Using a Similarity-Based Database", in *Proceedings of the Fourth International Conference on Knowledge Discovery and Data Mining* (KDD-98).

1998 C. Basu and H. Hirsh and W. Cohen, "Recommendation as Classification: Combining Social and Content-Based Information in Recommendation", in *Proceedings, Sixteenth National Conference on Artificial Intelligence* (AAAI-98).

1998 W. Cohen, "Integration of Heterogeneous Databases Without Common Domains Using Queries Based on Textual Similarity", in *Proceedings of ACM SIGMOD International Conference on Management of Data* (SIGMOD-98).

1998 W. Cohen, "A Web-based Information System that Reasons with Structured Collections of Text", in *Autonomous Agents 1998.*

1997 W. Cohen and R. Schapire and Y. Singer, "Learning to Order Things" in *Proceedings of the 1997 Conference on Neural Information Processing Systems* (NIPS-97).

1997 W. Cohen and D. Kudenko, "Transferring and Retraining Learned Information Filters", in *Proceedings, Fifteenth National Conference on Artificial Intelligence* (AAAI-97).

1997 W. Cohen and P. Devanbu, "A Comparative Study of Inductive Logic Programming Methods for Software Fault Prediction", *Machine Learning, Proceedings of the Fourteenth International Conference* (ML-96).

6

1996 W. Cohen and Y. Singer, "Context-sensitive Learning Methods for Text Categorization", in *Nineteenth Annual International ACM SIGIR Conference on Research and Development in Information Retrieval* (SIGIR-96).

1996 W. Cohen, "Learning Trees and Rules with Set-Valued Attributes", in *Proceedings, Fourteenth National Conference on Artificial Intelligence* (AAAI-96).

1996 W. Cohen, "The Dual DFA Learning Problem: Hardness Results for Programming by Demonstration and Learning First-Order Representations", in *Proceedings of the Ninth Annual ACM Conference on Computational Learning Theory* (COLT-96).

1995 W. Cohen, "Fast Effective Rule Induction", in *Machine Learning, Proceedings of the Twelfth International Conference* (ML-95).

1995 W. Cohen, "Text Categorization and Relational Learning", in *Machine Learning, Proceedings of the Twelfth International Conference* (ML-95).

1994 W. Cohen, "Pac-learning Nondeterminate Clauses", in *Proceedings, Twelth National Conference on Artificial Intelligence* (AAAI-94).

1994 W. Cohen, "Recovering Software Specifications with Inductive Logic Programming", in *Proceedings, Twelth National Conference on Artificial Intelligence* (AAAI-94).

1994 W. Cohen and H. Hirsh, "Learning the CLASSIC Description Logic: Theoretical and Experimental Results", in *Principles of Knowledge Representation and Reasoning: Proceedings of the Fourth International Conference* (KR-94).

1993 W. Cohen, "Cryptographic Limitations on Learning One-Clause Logic Programs", in *Proceedings of the Eleventh National Conference on Artificial Intelligence* (AAAI-93).

This paper was also one of ten papers nominated for the Best Written Paper Award.

1993 W. Cohen, "Pac-Learning a Restricted Class of Recursive Logic Programs", in *Proceedings of the Eleventh National Conference on Artificial Intelligence* (AAAI-93).

1993 W. Cohen, "Efficient Pruning Methods for Separate-and-Conquer Rule Learning Systems", in *Proceedings of the 13th International Joint Conference on Artificial Intelligence* (IJCAI-93).

1992 W. Cohen, A. Borgida, H. Hirsh "Computing Least Common Subsumers in Description Logics", in *Proceedings of the Tenth National Conference on Artificial Intelligence* (AAAI-92).

1992 W. Cohen, "Compiling Prior Knowledge Into An Explicit Bias", in *Proceedings of the Eighth Annual Conference on Machine Learning* (ML-92).

1992 W. Cohen, H. Hirsh, "Learnability of Description Logics", in *Proceedings of the Fourth Annual Workshop on Computational Learning Theory* (COLT-92).

1990 W. Cohen, "Using Distribution-Free Learning Theory to Analyze Chunking", in *Proceedings of the Canadian Conference on Artificial Intelligence*.

1990 W. Cohen, "Learning Approximate Control Rules of High Utility", in *Proceedings of the Seventh International Machine Learning Conference* (ML-90).

1990 W. Cohen, "An Analysis of Representation Shift in Concept Learning", in *Proceedings of the Seventh International Machine Learning Conference* (ML-90).

1990 W. Cohen, "Learning from Textbook Knowledge: A Case Study", in *Proceedings of the Eighth National Conference on Artificial Intelligence* (AAAI-90).

1988 W. Cohen, "Generalization of Number and Learning from Multiple Examples in Explanation Based Learning", in *Proceedings of the Fifth International Machine Learning Conference* (ML-88).

Other Conference and Workshop Publications:

2003 W. Cohen, Z. Kou R. Murphy, "Extracting Information from Text and Images for Location Proteomics", in *Proceedings of the 3rd Workshop on Data Mining in Bioinformatics, held in conjunction with 9th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD'2003)*

2003 W .Cohen, P. Ravikumar, S. Fienberg, "A Comparison of String Metrics for Matching Names and Records", in *Proceedings of the Workshop on Data Cleaning and Object Consolidation, held in conjunction with 9th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD'2003).*

2003 W .Cohen, P. Ravikumar, S. Fienberg, "A Comparison of String Distance Metrics for Name-Matching Tasks", in *Proceedings of the 2003 Workshop on Information Integration on the Web (IIWeb-03), held in conjunction with the Eighteenth International Joint Conference On Artificial Intelligence (IJCAI-03).*

2001 W. Cohen and J. Richman, "Learning to Match and Cluster Entity Names", in *Proceedings of the ACM SIGIR-2001 Workshop on Mathematical/Formal Methods in Information Retrieval.*

2001 W. Cohen and L. Jensen, "A Structured Wrapper Induction System for Extracting Information from Semi-Structured Documents", in *Proceedings of the IJCAI-2001 Workshop on Adaptive Text Extraction and Mining.*

2001 L. Jensen and W. Cohen, "Grouping Extracted Fields", in *Proceedings of the IJCAI-2001 Workshop on Adaptive Text Extraction and Mining.*

2000 W. Cohen, "Learning Using the Web as Background Knowledge", abstract of invited talk at the *Eleventh International Conference on Algorithmic Learning Theory*, Sydney, Australia.

1999 W. Cohen, "What Can We Learn from the Web?", abstract of the keynote address at the *Sixteenth International Machine Learning Conference*, Bled, Slovenia.

1999 W. Cohen, "Some practical observations on integration of Web information", in *the ACM Sigmod Workshop on the Web and Databases (WebDB'99).*

1998 W. Cohen, "The WHIRL Approach to Integration: An Overview", in the *AAAI-98 Workshop on AI and Information Integration.*

This paper was the only submission to be selected for full plenary presenation.

1997 W. Cohen, "Knowledge Integration for Structured Information Sources Containing Text (Extended Abstract)", in the *SIGIR-97 Workshop on Networked Information Retrieval.*

1996 W. Cohen and Y. Singer, "Learning to Query the Web", in *Proceedings of the 1996 AAAI Workshop on Internet-based Information Systems.*

1996 W. Cohen, "Learning Rules that Classify E-mail", in *Proceedings of the AAAI Spring Symposium on Machine Learning and Information Access.*

1993 W. Cohen, "A Review of 'Creating a Memory of Causal Relationships' by Michael Pazzani", *Machine Learning.*

1993 P. Rosenbloom, H. Hirsh, W. Cohen, B. Smith, "Two frameworks for integrating knowledge in induction", in *Proceedings of the Seventh Annual Workshop on Space Operations, Applications, and Research (SOAR '93)*

1993 W. Cohen, "Rapid Prototyping of ILP Systems Using Explicit Bias" in *Proceedings of the 1993 IJCAI Workshop on Inductive Logic Programming.*

1993 W. Cohen, "Learnability of Restricted Logic Programs", in *Proceedings of the Third International Workshop on Inductive Logic Programming* (ILP-93).

1992 W. Cohen, "Desiderata for Generalization-to-N Algorithms", in *Analogical and Inductive Inference: Proceedings of International Workshop* (AII-92).

1991 W. Cohen "The Generality of Overgenerality", in *Proceedings of the Eighth International Machine Learning Workshop* (ML-91).

1991 R. Greiner, W. Cohen "Probabilistic Hill-Climbing", in *Proceedings of the 1991 Workshop on Computational Learning Theory and Natural Learning Systems* (CLNL-91).

1990 W. Cohen, "Learning from Examples and an 'Abductive Theory'", in *Proceedings of the 1990 AAAI Spring Symposium on Abduction.*

1988 W. Cohen, J. Mostow, A. Borgida, "Generalizing Number in Explanation Based Learning", *Proceedings of the 1988 AAAI Spring Symposium on Explanation-Based Learning.*

1987 T. Hornick, W. Cohen, G. Miller, "A Natural Language Query System for Hubble Space Telescope Proposal Selection", in *Proceedings of the Goddard Conference on Space Applications of Artificial Intelligence and Robotics.*

1987 G. Miller, D. Rosenthal, W. Cohen, M. Johnston, "Expert Systems Tools for Hubble Space Telescope Scheduling", in *Proceedings of the Goddard Conference on Space Applications of Artificial Intelligence and Robotics.*

1985 K. Bartlett, W. Cohen, A. De Geus, G. Hachtel, "Synthesis and Optimization of Multi-level Logic Under Timing Constraints", in *Proceedings of the IEEE International Conference on Computer-Aided Design.*

1985 W. Cohen, K. Bartlett, A. De Geus, "Impact of Metarules in a Rule-Based Expert System for Gate Level Optimization", in *Proceedings of the IEEE International Symposium on Circuits and Systems.*

1984 K. Garrison, D. Gregory, W. Cohen, A. De Geus, "Automatic Area and Performance Optimization of Combinatorial Logic", in *Proceedings of the IEEE International Conference on Computer-Aided Design.*