Curriculum Vitae: Daniel P. Miranker

1 Personal

Office:
Department of Computer Sciences
1 University Station C0500
University of Texas at Austin
Austin, TX 78712
(Fax) 512-471-8885

Home:
5225 Fossil Rim Rd.
Austin, TX 78731
phone: 512-328-6342
home page: http://www.cs.utexas.edu/~miranker
email: miranker@cs.utexas.edu

1. 1 Education:

Ph.D. Computer Science	Columbia University, 1987
M.S. Computer Science	Columbia University, 1983
B.S. Mathematics	Massachusetts Institute of Technology, 1979

1.2 Professional Experience

2005 -	Full Professor of Computer Science, The University of Texas at Austin. Courtesy appointments in the Department of Electrical and Computer Engineering and the Institute of Cell and Molecular Biology
1992–2005	Associate Professor of Computer Science, The University of Texas at Austin.
1986-1992	Assistant Professor of Computer Science, The University of Texas.
1999–2001	Founder and Chief Technical Officer, Liaison Technology Inc. Raised $17,000,000 in three rounds of venture funding for the development and marketing of an integrated suite of information extraction and database transformation products targeting the population of integrated product catalogs for B2B e-Commence hubs. The company peaked at 80 employees, generated over $3,000,000 in revenue, survived the bust and then as a result of 9/11 was reorganized under new management and continues to operate.
1985–2004	Selected consulting positions: Howry LLP, Manatt, Phelps and Phillips LLP; Bacterial Barcodes; Equifax; Texas Instruments; Citicorp; AT&T Bell Laboratories; IBM Watson Research Laboratory;
1979-1980	Systems Programmer, IBM Research, Watson Research Laboratory Yorktown Heights, NY.

1.3 Thesis Title

TREAT: A New and Efficient Match Algorithm for AI Production Systems

1.4 Thesis Advisor

Salvatore J. Stolfo, Professor of Computer Science, Columbia University

1.5 Current Research Interests

Bioinformatics, Biological Databases, Computational Biology, Semantic Web, Data Warehousing, Database Query Languages and Query Processing

1.6 Professional Societies

Member American Association for the Advancement of Science

2 Publications

2.1 Journal Publications

1 S. H. Tirmizi, S. Aitken D. Moreira, C. Mungall, J. Sequeda, N. H. Shah, D.P. Miranker, "Mapping between the OBO and OWL ontology languages" to appear, BMC Journal of Biomedical Semantics

2 S. R. Ramakrishnan, C. Vogel, T. Kwon, L. O. Penalva, E. M. Marcotte, D. P. Miranker: Mining gene functional networks to improve mass-spectrometry-based protein identification. Bioinformatics 25(22): 2955-2961 (2009)

3 S. R. Ramakrishnan, C. Vogel, J.T. Prince, R. Wang, Z. Li, L. O. Penalva, M. Myers, E. M. Marcotte, D. P. Miranker: Integrating shotgun proteomics and mRNA expression data to improve protein identification. Bioinformatics 25(11): 1397-1403 (2009)

4 S. Bafna, J. Humphries, D. P. Miranker, "Schema Driven Assignment and Implementation of Life Science Identifiers (LSIDs)" *Journal of Biomedical Informatics* 2008.

5 Shu Wang, Robin R. Gutell, and Daniel P. Miranker, "Biclustering As A Method For RNA Local Multiple Sequence Alignment," Bioinformatics. December 2007

6 Morgan XC, Ni S, Miranker DP, Iyer VR, "Predicting combinatorial binding of transcription factors to regulatory elements in the human genome by association rule mining", BMC Bioinformatics 2007, 8:445, November 2007.

7 Francois Barbançon and Daniel P. Miranker, "SPHINX: Schema Integration by Example," Journal of Intelligent Information Systems. (in press, available on-line SpringerLink, 2007).

8 Ramakrishnan, Smriti R., Rui Mao, Aleksey A. Nakorchevskiy, John T. Prince, Willard S. Willard, Weijia Xu, Edward M. Marcotte, and Daniel P. Miranker. "A fast coarse filtering method for protein identification by mass spectrometry." Bioinformatics 22(12): 1524-1531 (2006)

9 R. Mao, W. Xu, N. Singh, D. P. Miranker, "An Assessment of a Metric Space Database Index to Support Sequence Homology," International Journal on Tools for Artificial Intelligence, selected as one of ten best conference papers to be reprinted from the Proceedings of the 2003 IEEE Conference in Bioinformatics and Bioengineering

10 D. P. Miranker, W. Briggs, R. Mao, S. Ni and W. Xu, "Biosequence Use Cases in MoBIoS SQL, IEEE Data Engineering Bulletin, September 2004

11 W. Xu, W.J. Briggs, J. Padolina, R.E. Timme, W. Liu, CR. Linder, D. P. Miranker "Using MoBIoS' Scalable Genome Joins to Determine Conserved Primer Pairs",*Bioinformatics* Vol. 20 Suppl. 1 2004, pages i355-i362, Reprint of the paper that appeared in the *Proceedings of the Conference on Intelligent Systems for Molecular Biology*, August 2004.

12 W. Xu, D. P. Miranker, "A Metric-Model of Amino Acid Substitution," *Bioinformatics*, May 2004.

13 "Metric-Space Indexes as a Basis for Scalable Biological Databases." *OMICS* 7(1):57-60, 2003

14 J.M. Hellerstein, E. Koutsoupias, D.P. Miranker, C.H. Papadimitriou, V.Samoladas,"On a Model of Indexability and its Bounds For Range Queries," *Journal ACM* 49(1): 35-55, 2002.

15 S-Y Wu, D.P. Miranker, J.C. Browne, "Decomposition Abstraction in Parallel Rule Languages," *IEEE Transactions on Parallel and Distributed Systems*. 7(11): 1164-1184,1996.

16 J.C. Browne, D.P. Miranker & 13 other authors, "Modularity and Rule-Based Programming," *International Journal on Artificial Intelligence Tools* 4(1) 201-218 1995.

17 R.J. Bayardo Jr., D.P. Miranker, "An Optimal Backtrack Algorithm for Tree-Structured Constraint Satisfaction problems," *Artificial Intelligence* 71(1): 159-181 1994.

18 B. Wah, D.P. Miranker, "Report on Workshop on High Performance Computing Communications for Grand Challenge Applications: Computer Vision, Speech and Natural Language Processing, and Artificial Intelligence," *IEEE Transactions on Knowledge and Data Enginerring* 5(1): 138-154 (1993).

19 F.Burke, D.R. Haug, J.Kolts, J. Steele, D. P. Miranker, "The C++ Embeddable Rule System," *International Journal on Artificial Intelligence Tools*, 1993.

20 R. Shankar, D.P. Miranker, "Credible Execution of Bounded-Time Parallel Systems with Delayed Diagnosis," *Computing*, March 1992.

21 B. J. Lofaso, D.P. Miranker, "The Organization and Performance of a TREAT-Based Production System Compiler," *IEEE Transactions on Knowledge and. Data Engineering* 3(1): 3-10, 1991.
22 D.P. Miranker, "Introduction Special Issue on the Parallel Execution of Rule Systems," *Journal of Parallel and Distributed Computing* 13(4): 345-347, 1991.
23 C.M. Kuo, J.C. Browne, and D.P. Miranker, "On the Performance of the CREL System," *Journal of Parallel and Distributed Computing,* vol 13(4): 424-441, 1991.
24 S.J. Stolfo, D.P. Miranker, The DADO Production System Machine," *Journal of Parallel Distributed Computing* 3(2): 269-296, 1986.

2.2 Publications Edited

25 Journal of Parallel and Distributed Computing, Special Issue on the Parallel Execution of Rule Systems, Volume 13, Number 4, 1991.

2.3 Books

26 "TREAT: A New and Efficient Match Algorithm for AI Production Systems," Publisher, Pittman, Morgan-Kaufman, 1990.

2.4 Surveys, Editorials, and Reviews

27 "Introduction to the Special Issue on the Parallel Execution of Rule Systems," Journal of Parallel and Distributed Computing Volume 13, Number 4, 1991.

28 Wah, et al, "Report on Workshop on High Performance Computing and Communications for Grand Challenge Applications: Computer Vision, Speech and Natural Language Processing, and Artificial Intelligence," IEEE Trans. Knowl. Data Eng. 5(1): 138-154 (1993)

2.5 Articles in Books

29 D. P. Miranker, R. Bayardo, V. Samoladis, "Query Evaluation as Constraint Search; An Overview of Early Results," in, V. Gaede, A. Brodsky, O. Günther, D. Srivastava, V. Vianu, M. Wallace (Eds.): "Constraint Databases and Their Applications," Second International Workshop on Constraint Database Systems, CDB '97, 1997, CP '96 Workshop on Constraints and Databases, Selected Papers. Lecture Notes in Computer Science 1191 Springer 1997.

30 S. J. Stolfo and D. P. Miranker, "DADO: A Parallel Processor for Expert Systems," in Computers for Artificial Intelligence Applications," eds. Wah and Li, IEEE Computer Society Press 1986,

31 S. J. Stolfo and D. P. Miranker, "DADO: A Processor for AI Computation," in Annual Reviews of Computer Science, (ed. Traub), Annual Reviews, Inc., 1986.

32 S. J. Stolfo and D. P. Miranker, "DADO: A Parallel Processor for Expert Systems," in Advanced Computer Architecture, (ed. Agarwal), IEEE Computer Society Press 1985

2.6 Articles in Conference Proceedings

2.6.1 **Refereed Articles Published in the Proceedings of Major Conferences**,

33 Sequeda, J F. Garcia-Castro, A. Corcho, O. Tirmizi, S. Miranker, D. P. Overcoming database heterogeneity to facilitate social networks: the Colombian displaced population as a case study. In Proceedings of the 18th World Wide Web Conference (WWW2009).

34 S. H. Tirmizi, J. Sequeda, D.P. Miranker, "Translating SQL Applications to the Semantic Web " Database and Expert Systems Applications, DEXA 2008, September 1-5, 2008. Proceedings. Lecture Notes in Computer Science 5181 Springer 2008

35 Weijia Xu, Rui Mao, Shu Wang, and Daniel P. Miranker. "On integrating peptide sequence analysis and relational distance-based indexing". IEEE 6th Symposium on Bioinformatics and Bioengineering (BIBE06). 2006. Arlington, VA, USA

36 Rui Mao, Qasim Iqbal, Wenguo Liu, Daniel P. Miranker. "Case Study: Distance-Based Image Retrieval in the MoBIoS DBMS". In the Proceedings of The 5th International Conference on Computer and Information Technology (CIT2005), page 49-55, September 21-23, 2005, Shanghai, China

37 R. Mao, W. Xu, S. Ramakrishnan, G. Nuckolls, D. P. Miranker.On Optimizing Distance-Based Similarity Search for Biological Databases," In Proc. of the Computational Systems Bioinformatics Conference, 2005.

38 W. Xu, W.J. Briggs, J. Padolina, R.E. Timme, W. Liu, CR. Linder, D. P. Miranker "Using MoBIoS' Scalable Genome Joins to Determine Conserved Primer Pairs", in the *Proceedings of the Conference on Intelligent Systems for Molecular Biology*, August 2004.

39 D.P. Miranker, W. Xu, R. Mao, "MoBIoS: A Metric-Space DBMS to Support Biological Discovery,"in *Proceedings of the 15th IEEE Int. Conference on Scientific and Statistical Database Management* (SSDBM-03) 241-244, 2003.

40 L. Warshaw, D.P. Miranker, "Rule-Based Query Optimization, Revisited," in *Proceedings of the ACM International Conference on Information and Knowledge Management.* (CIKM-99) 267-275. 1999.

41 V. Samoladas, D.P. Miranker, "A Lower Bound Theorem for Indexing Schemes and Its Application to Multidimensional Range Queries," in *Proceedings of the Seventeenth ACM SIGACT-SIGMOD-SIGART Symposium on Principles of Database Systems* (PODS-98): 44-51, 1998.

42 L. Obermeyer, D.P. Miranker, "Evaluating Triggers Using Decision Trees," in *Proceedings of the Sixth ACM International Conference on Information and Knowledge Management* (CIKM'97): 144-150, 1997.

43 R.J. Bayardo Jr., D.P. Miranker, "A Complexity Analysis of Space-Bounded Learning Algorithms for the Constraint Satisfaction Problem," in *Proceedings of the National Conference on Artificial Intelligence* (AAAI-96) 298-304, 1996.

44 L.Warshaw, D.P. Miranker, "A Case Study of Venus as a Declarative Basis for Rule Modules," *Proceedings of the Fifth ACM International Conference on Information and Knowledge Management* (CIKM-96) 317-325, 1996.

45 R. J. Bayardo Jr., D.P. Miranker, "Processing Queries for First Few Answers," in *Proceedings of the Fifth ACM International Conference on Information and Knowledge Management*, (CIKM-96), 45-52, 1996.

46 R. J. Bayardo Jr., D.P. Miranker, "On the Space-Time Trade-off in Solving Constraint Satisfaction Problems," in *Proceedings of the International Joint Conference on Artificial Intelligence*, (IJCAI-95) 558-562, 1995.

47 S. Correl, D.P. Miranker, "On Isolation, Concurrency, and the Venus Rule Language," in *Proceedings of the 4th ACM International Conference on Information and Knowledge Management* (CIKM-95) 1995.

48 D. Gadbois, D.P. Miranker, "Discovering Procedural Executions of Rule-Based Programs," *Proceedings of the National Conference on Artificial Intelligence* (AAAI-94) 459-464, 1994.

49 D.A.Brant, D.P. Miranker, "Index Support for Rule Activation," *Proceedings of the 1993 ACM SIGMOD International Conf. on Management of Data, ACM Press,* (SIGMOD-93) 42-48. 1993.

50 D.A. Brant, D.P. Miranker, "Effects of Database Size on Rule System Performance: Five Case Studies," in *Proceedings International Conference on Very Large Data Bases*, (VLDB-91): 287-296. 1991

51 D. A. Brant, D.P. Miranker, "An Algorithmic Basis for Integrating Production Systems and Large Databases," *Proceedings of the IEEE Sixth International Conference on Data Engineering* (ICDE-90) 353-360, 1990.

52 D.P. Miranker, D. A. Brant, B. Lofaso, D.Gadbois, "On the Performance of Lazy Matching in Production Systems," in *Proceedings of the National Conference on Artificial Intelligence* (AAAI-90) 685-692, 1990.

53 A.D. Andrews, D.P. Miranker, "On Balanced Synchronous Architectures for AI," in *Proceedings of the International Conference on Parallel Processing,* (ICPP-90), 489-493, 1990.

54 D.P. Mirnaker, C-M Kuo, J. C. Browne, "Parallelizing Compilation of Rule-Based Programs,'" in *Proceedings of the International Conference on Parallel Processing*, (ICPP-90) 1990.

55 D.P. Miranker, "TREAT: A Better Match Algorithm for AI Production System Matching," in *Proceedings of the Sixth National Conference on Artificial Intelligence*,(AAAI-87) 42-47, 1987

56 S.J. Stolfo, D.P. Miranker, "DADO: A Parallel Processor for Expert Systems," *Proceedings of the 1984 International Conference on Parallel Processing,* (ICPP-84), 1984.

57 S.J. Stolfo, D.P. Miranker, "Performance Estimates for the DADO Machine:Comparison of Treat and Rete," in *Proceedings of the Conference on Fifth Generation Computer Systems* 449-457, 1984.

58 S.J. Stolfo, D.E. Shaw, D.P. Miranker, "Architecture and Applications of DADO:Large-Scale Parallel Computer for Artificial Intelligence," *Proceedings of the International Joint Conference on Artificial Intelligence* (IJCAI-83) 1983: 850-854.

2.6.2 Refereed Articles Published in the Proceedings of other Conferences and Meetings

59 R. Mao, W. L. Miranker, and D. P. Miranker. “Dimension Reduction for Distance-Based Indexing” 3rd International Conference on SImilarity Search and APplications (SISAP 2010)

60 R. Mao, S. Ramakrishnan, G. Nuckolls, and D. P. Miranker. Case Study: An Inverted Index for Mass Spectra Similarity Query and Comparison with a Metric-space Method, 3rd International Conference on SImilarity Search and APplications (SISAP 2010)

61 Syed Hamid Tirmizi, Stuart Aitken, Dilvan Moreira, Chris Mungall, Juan Sequeda, Nigam H. Shah and Daniel P. Miranker. OBO & OWL: Roundtrip Ontology Transformations, Workshop on Semantic Web Applications and Tools for Life Sciences (SWAT4LS) 2009

62 W. Xu, D.P. Miranker “Anytime K-Nearest Neighbor Search for Database Applications” First International Workshop on Similarity Search and Applications, April 2008

63 F. Barbancon, D.P. Miranker, “Interactive Schema Integration with Sphinx,” in *Proceeds of the 6th International Conference On Flexible Query Answering Systems*, June 2004.

64 N. Nakhleh, F. Barbancon, D. P. Miranker M. Donoghue, W. Piel, “Requirements of Phylogenetic Databases,” *Proceedings of the IEEE Conference in Bioinformatics and Bioengineering* (BIBE-03) 2003.

65 R. Mao, W. Xu, N. Singh, D. P. Miranker, “An Assessment of a Metric Space Database Index to Support Sequence Homology,” in *Proceedings of the IEEE Conference in Bioinformatics and Bioengineering* (BIBE-03) 2003.

66 D.P. Miranker M. Taylor, A. Padmanaban, “A Tractable Query Cache by Approximation,” in *Proceedings AAAI Symposium on Abstraction, Reformulation and Approximation*. 2002.

67 F. Barbancon, D. P. Miranker, “Implementing Federated Databases Systems by Compiling SchemaSQL,” in *Proceedings IEEE International Database Engineering & Applications Symposium*, 192-201, 2002:.

68 D.P. Miranker, L. Obermeyer, "An Overview of the VenusDB Active Multi-database System," in *Proceedings of the International Symposium on Cooperative Database Systems for Advanced Applications*. (CODAS 96), World Scientific, 108-117, 1996.

69 R. Schrag and D.P. Miranker, "Abstraction and the CSP Phase Transition Boundary," in *Proceedings of the 4th International Symposium on Artificial Intelligence and Mathematics*, 126-133 1995.

70 L. Obermeyer, D. A. Brant, D.P. Miranker, "Selective Indexing Speeds Production Systems," in *Proceedings of the International Conference on Tools with Artificial Intelligence*, (ICTAI-95), 1995.

71 S-Y. Wu, J.C.Browne, D.P. Miranker, "Toward Semantic-Based Parallelism in Production Systems," in *Proceedings of the International Conference on Parallel and Distributed Systems*, (ICPADS-94): 52-758, 1994.

72 J. C. Browne, D.P. Miranker, & 13 other authors "A New Approach to Modularity in Rule-Based Programming," in *Proceedings of the International Conference on Tools with Artificial Intelligence* (ICTAI-94): 18-25, 1994.

73 L. Acker, R. Browning, D.P. Miranker, "On Parallel Divide-and-Conquer," in *Proceedingd of the 7th International Conference on Parallel and Distributed Computing Systems*, 1994.

74 D. Gadbois, D.P. Miranker, "On Parallel Off-line Consistency Constraint Checking," in *Proceedings of the 7th International Conference on Parallel and Distributed Computing Systems*, 1994.

75 L. Obermeyer, D.P. Miranker, "Embedding CLIPS into C++,"in *Proceedings of the Third Conference on CLIPS*, 1994.

76 R. Schrag, D.P. Miranker, "An Evaluation of Domain Reduction: Abstraction for Unstructured CSPs," in *Proceedings of the AAAI Symposium on Abstraction, Reformulation, and Approximation*,126-133 1992.

77 T. Santhanam, J.C. Browne, J. Kallinderis, D.P. Miranker, "A Knowledge-Based Approach to Mesh Optimization in CFD Domain: ID Euler Code Example," in *Proceedings of the AAAI Fall Symposium on Intelligent Scientific Computation*, 1992.

78 D.P. Miranker, F. Burke, J. Kolts, J. J. Steele, "The C++ Embeddable Rule System," In *Proceedings of the 3rd International Conference on Tools for Artificial Intelligence* (ICTAI-91) 1991.

79 D.P. Miranker, B.J. Lofaso, G.Farmer, A.Chandra, D.Brant, "On a TREAT Based Production System Compiler," in *Proceedings of the 10th International Conference on Expert Systems*, June 1990.

80 J.C. Browne, A. Emerson, M. Gouda, D.P. Miranker, A. Mok, L. Rosier,"Bounded-time,Fault-tolerance, Rule-based Systems," in *Proceedings of the Goddard Conference on Space Applications of Artificial Intelligence*, 1990.

81 M. van Biema, D.P. Miranker, S.J. Stolfo, "The Do-loop Considered Harmful in Production System Programming," in *Proceedings of the Expert Database Conference* 177-190, 1986.

2.7 Papers Appearing in Workshops, and Posters

82 Proteomics with a gene network in your pocket, (Poster) RECOMB Satellite Conference on Computational Proteomics 2010

83 Integrative Data Analysis Provides Realistic Priors for Protein Detection via Mass Spectrometry, (Poster) 13th Annual International Conference on Research in Computational Molecular Biology (RECOMB), 200

84 Sequeda, J F. Depena, R. Miranker, D.P. Ultrawrap: Using SQL Views for RDB2RDF. Poster in the 8th International Semantic Web Conference (ISWC2009). Washington DC, US

85 Smriti R Ramakrishnan, Christine Vogel, John T Prince, Zhihua LI, Edward M Marcotte, Daniel P Miranker *, MS-Boost: An integrative scoring scheme for tandem mass spectrometry experiments,* International Workshop on Probabilistic Modelling inComputational Biology, Affiliated with ISMB/ECCB 2007

86 Syed Hamid Tirmizi and Daniel P Miranker. Two Layer Cakes., *In Proceedings of the AAAI Fall Symposium on Semantic Web for Collaborative Knowledge Acquisition*, pages 112--113. AAAI Press. AAAI TR FS-06-06

87 "Position Paper Metric-Space Indexes as a Basis for Scalable Biological Databases." NSF/NLM Workshop no Biological and Cell Databases, 2004

88 D.P. Miranker and Alvin Richardson, "The Dexter Migration Path to WML," *First International Workshop on Intelligent Multimedia Computing and Networking*.2000

89 D.P. Miranker, R.J. Bayardo Jr., V. Samoladas, "Query Evaluation as Constraint Search; Overview of Early Results," *Constraint Databases and Their Applications, Second International Workshop on Constraint Database Systems* (CDB) 1997: 53-63.

90 D.P. Miranker, V. Samoladas, "Alamo: An Architecture for Integrating Heterogeneous Data Sources," *Proceedings of the 4th Workshop on Knowledge Representation and Databases*,: (KRDB-97)14.1-14.8, 1997.

91 L. Obermeyer, L. Warshaw, and D.P. Miranker, "Porting an Expert Database Application to an Active Database," Workshop on Databases: Active and Real-Time," 1996.

92 D.P. Miranker, "Encapsulating Rules," *OOPSLA-94 Workshop on Embedded Object-Oriented Production Systems*, 1994.

93 J.C. Browne, A. Emerson, M. Gouda, D.P. Miranker, A. Mok, L. Rosier, "Correct and Robust Decision Systems for High Complexity Critical Control Systems," *Third International Workshop on Responsive Computer Systems*, 1993.

94 D.P. Miranker, C.M. Kuo, J.C. Browne, "Compiling Parallelism Among Rules," IJCAI-89 *Workshop on Parallel Algorithms for Machine Intelligence*, August 1989.

95 S.J. Stolfo, D.P. Miranker, R. Mills, "More Rules May Mean Faster Parallel Execution," *National Academy of Science/ONR Workshop on AI and Distributed Problem Solving*,Washington, D.C., May 1985.

2.8 Technical Reports

96 Syed Hamid Tirmizi and Daniel P Miranker. OBO2OWL: Roundtrip between OBO and OWL., The University of Texas at Austin, Department of Computer Sciences. Technical Report TR-06-47. October 2, 2006.

97 L. Wenguo and D.P. Miranker. "An Extension to SQL92 for Biological Databases." The University of Texas at Austin, Department of Computer Sciences. Technical Report TR-04-02. 2004

98 W.J. Briggs, W. Liu, R. Mao, W. Xu, R. Mao, and D.P. Miranker. "SQL Extensions and Database Mechanisms for Managing Biosequences." The University of Texas at Austin, Department of Computer Sciences. Technical Report TR-04-05

99 W. Xu, D. P. Miranker, R.Mao, and S.Wang. "Indexing Protein Sequences in Metric Space." The University of Texas at Austin, Department of Computer Sciences. Technical Report TR-04-06. 2003

100 F. Barbançon, D. P. Miranker. "SPHINX: Schema Integration by Example." The University of Texas at Austin, Department of Computer Sciences. Technical Report TR-02-20. July 2002, revised December 2, 2002

101 L. Nakhleh, D.P. Miranker, F. Barbancon, W.H. Piel, and M. Donoghue. "Requirements of Phylogenetic Databases." The University of Texas at Austin, Department of Computer Sciences. Technical Report TR-02-64. 2002

102 L. Warshaw and D. P. Miranker, "Application Semantics for Active Monotonic Database Applications," Technical Report, Department of Computer Sciences, University of Texas at Austin, CS-TR-00-17, 2000

103 L. Warshaw, S. Matzner, D. P. Miranker, L. Obermeyer and D. Spindler, "Monitoring Network Logs for Anomalous Activity," Applied Research Laboratories at the University of Texas at Austin, TP-99-1, 1998.

104 L. Warshaw, D. P. Miranker, and T. Wang, "A General Purpose Rule Language as the Basis of a Query Optimizer," Technical Report, Department of Computer Sciences, University of Texas at Austin, CS-TR-97-19, 1997.

105 V. Samoladas and D. P. Miranker, "Optimizations for Acyclic Object-Oriented Queries," Technical Report, Department of Computer Sciences, University of Texas at Austin, CS-TR-96-10, 1996.

106 S. Correl, D. P. Miranker, "Integrating Database Concurrency Control into the Venus Rule Language," Technical Report, Department of Computer Sciences, University of Texas at Austin, CS-TR-95-16. 1995.

107 R. Bayardo, Jr. and D. P. Miranker, "Backtrack-Bounded Search in Polynomial Space," Technical Report, Department of Computer Sciences, University of Texas at Austin CS-TR-94-12, 1994

108 S-Y. Wu, D. P. Miranker, J.C. Browne, "Semantic-Based Exploration of Parallelism in Production Systems," Technical Report, Department of Computer Sciences, University of Texas at Austin, CS-TR-94-23, 1994.

109 C-M Kuo, D. P. Miranker, J.C. Browne, "On the Performance of the CREL System," Technical Report, Department of Computer Sciences, University of Texas at Austin CS-TR-92-41, 1992.

110 Jorge Cobb, S-Y Wu, D. P. Miranker, "Insensitive Parallel Join with Sampling," Technical Report, Department of Computer Sciences, University of Texas at Austin CS-TR-91-35, 1991.

111 R. Shankar, Raghu and Miranker, D.P. "Credible Execution of Bounded-Time Parallel Systems with Delayed Diagnosis," Technical Report, Department of Computer Sciences,University of Texas at Austin, CS-TR-91-30, 1991.

112 L. Acker, D. P. Miranker, "On Parallel Divide-and-Conquer," Technical Report, Department of Computer Sciences, University of Texas at Austin, CS-TR-91-27, 1991.

113 D. P. Miranker, C-M. Kuo, J.C. Browne, "Parallelizing Transformations for a Concurrent Rule Execution Language," Technical Report, Department of Computer Sciences, University of Texas at Austin, CS-TR-89-30, 1989.

114 D. P. Miranker and D.A. Brant, "Toward an Integrated Expert Database System," Technical Report, Artificial Intelligence Laboratory, University of Texas at Austin, AI89-100, 1989-03-01.

115 D. P. Miranker, and A.D. Andrews, “Performance Models for Fine-Grained AI Machines” Technical Report, Artificial Intelligence Laboratory, University of Texas at Austin AI89-99, 1989.
116 D. P. Miranker, “A High Level Language Approach to the Fault Tolerant Execution of AI Expert Systems,” Technical Report, Artificial Intelligence Laboratory, University of Texas at Austin, AI88-71, 1988.
117 D. P. Miranker, “TREAT: A Better Match Algorithm for AI Production Systems; Long Version,” AI87-58, 1987.
118 D. P. Miranker, “A Survey of Specialized Parallel Architectures Designed to Support Knowledge Representation,” Technical Report, Artificial Intelligence Laboratory, University of Texas at Austin, AI87-43, 1987.
119 A. Pasik, D. P. Miranker, S. Stolfo, and T. Kresnicka, “User-defined Predicates in OPS5 A Needed Language Extension for Financial Expert Systems,” TR-496-89, Department of Computer Science, Columbia University, August 1989.
120 M. van Biema, R. Reed, D. P. Miranker, “PPSL Users Manual,” Technical Report Columbia University, 1985.
121 D. P. Miranker, “The Performance Analysis of TREAT: A DADO Production System Algorithm,” Technical Report, Department of Computer Science, Columbia University, 1984.
122 S.J. Stolfo and D. P. Miranker, “The DADO Production System Machine: System-Level Details,” Technical Report, Department of Computer Science, Columbia University, CUCS-122-84 1984.
123 .S.J. Stolfo, M. Lerner, “PPL/M: The Systems Level Language for Programming the DADO Machine,” Technical Report, Department of Computer Science, Columbia University, 1984

.

2.9 Patents

124 A. Richardson, C.M. Davis, D. P. Miranker, No. 20,020,021,838 "Adaptively weighted, partitioned context edit distance string matching" (pending).
125 L. Oberymeyer, P. Navratil, and D. P. Miranker, No. 6,782,505 "Method and System for Structured Data from Semi-Structured Sources, issued August 24, 1989
126 S.J. Stolfo and D. P. Miranker, Patent No. 4,860,201, “Binary Tree Parallel Processor,” issued August 1989.

3 Awards and Honors

3.1 Paper Awards

1. 1998 ACM Symposium on Principles of Database Systems Best Paper Award.
2. 1998 ACM Symposium on Principles of Database Systems Best Newcomer Paper Award. Both for V. Samoladas and D. P. Miranker "A Lower Bound Theorem for Indexing Schemes and Its Application to Multidimensional Range Queries".

3.2 Invited Paper

3. Evolving models of biological sequence similarity. First International Workshop on Similarity Search and Applications, April 2008

3.3 Conference and Workshop Papers Selected Competitively for Reprint in Journals

1 "An Assessment of a Metric Space Database Index to Support Sequence Homology," *International Journal on Artificial Intelligence Tools* selected as one of ten best conference papers from *Proceedings of the 2003 IEEE Conference in Bioinformatics and Bioengineering* (BIBE-03).

2 "Metric-Space Indexes as a Basis for Scalable Biological Databases." OMICS 7(1): 57-60, 2003. Reprinted position paper contributed to National Science Foundation and *National Library of Medicine Workshop on Data Management for Molecular and Cell Biology*.

3 "The C++ Embeddable Rule System," *International Journal on Artificial Intelligence Tools* 1993 selected as a premier paper from the *3rd International Conference on Tools for Artificial Intelligence* (ICTAI-91) 1991.

4 "Modularity and Rule-Based Programming," *International Journal on Artificial Intelligence Tools* 4(1) 201-218 1995, selected as a premier paper from the *6thd International Conference on Tools for Artificial Intelligence* (ICTAI-94) 1994.

3.4 Conference and Workshop Papers Selected for Publication in Edited Collections

1. D. P. Miranker, R. Bayardo, V. Samoladis, "Query Evaluation as Constraint Search; An Overview of Early Results," in, V. Gaede, A. Brodsky, O. Günther, D.Srivastava, V. Vianu, M. Wallace (Eds.): "Constraint Databases and Their Applications," *Second International Workshop on Constraint Database Systems*, CDB '97, 1997, *CP '96 Workshop on Constraints and Databases*, Selected Papers. Lecture Notes in Computer Science 1191 Springer 1997.

2. S.J. Stolfo and D. P. Miranker, "DADO: A Parallel Processor for Expert Systems," [Chapter] *in Computers for Artificial Intelligence Applications*, (eds. Wah and Li*), IEEE Computer Society Press* 1986, first appeared in *Proceedings of the 1984 International Conference on Parallel Processing*, (ICPP-84), 1984.

3. S.J. Stolfo and D. P. Miranker, "DADO: A Parallel Processor for Expert Systems," [Chapter], in Advanced *1984 International Conference on Parallel Processing*, (ICPP84), 1984.

5 Dissertation and Theses Supervised

5.1 Ph.D. Dissertations Supervised and last known employment

1. Hamid Tirmizi, in progress
2. Smriti Ramakrishnan,2010, A Systems Approach to Computational Protein Identification, Oracle.
3. Rui Mao. 2007, Distance-Based Indexing and its Applications in Bioinformatics, Shenzen University, China
4. Shu Wang, 2007 On Multiple Sequence Alignment, Samsung
5. Weijia Xu, 2006, On Integrating Biological Sequence Analysis with Metric Distance Based Database Management Systems", Texas Advanced Computing Center, University of Texas
6. Francois Barbancon,, 2005, "Active Learning and Compilation of Higher Order Schema Integration Queries", Microsoft
7. .Lane Warshaw, 2001, " Facilitating hard active database applications." Director of Engineering, Liaison Technology, Atlanta Georgia.
8. Vasilis Samoladis, 2000, " On indexing large databases for advanced data models." Assistant Professor Department of Electronic and Computer Engineering Technical University of Crete, Greece.
9. L. Lance Obermeyer, 1999, " Abstractions and algorithms for active multidatabases." CTO 24 Second Softare, Austin Texas.
10. Robert Schrag, 1996, " Search in SAT/CSP: Phase transitions, abstraction, and compilation." Principle Scientist, IET Corp.
11. Roberto Baryardo, Jr., 1997, "Processing multi-join queries." Research Staff Member, IBM Almaden Research Center.
12. Shiow-Yang Wu, 1995, "Decomposition abstraction in parallel rule languages." Associate Professor, Department of Computer Science and Information Engineering National Dong Hwa University, Taiwan.
13. David Brant, 1993, " Inferencing on large data sets." Director of the Center for Agile Technology, University of Texas at Austin.
14. Chin-Ming Kuo, 1991, " Parallel execution of production systems.", Novell Inc.

5.2 Master's Thesis Supervised and last known employment

1. Dr. Lane Warshaw, 2001, " Facilitating hard active database applications." Currently Director of Engineering, Liaison Technology, Atlanta Georgia.
2. Dr. L. Lance Obermeyer, 1999, " Abstractions and algorithms for active multi-databases." CTO 24 Second Software, Austin Texas.
3. David Baron, 1994, " The scriptable object system."
4. Thomas Hetherington, 1993, " On intelligent backtracking, shallow learning and production systems." Applied Research Laboratory, University of Texas at Austin.
5. Satoshi Nishiyama, 1991, "Optimizing compilization of select phase of production systems." KDD Research Laboratory.
6. Timothy Grose, 1991, " The programming and functionality of OPS5 compared to LISP and FORTRAN in an aeronautical route planning system." IBM, Santa Theresa.
7. Raghu Shankar, 1990, " Credibility of fault-tolerant parallel systems with delayed detection of faults," Dell Computer Corporation.
8. Gary Farmer, 1989, "Join indexing and disk performance predictions in a compiled OPS5 environment." Applied Research Laboratory, University of Texas at Austin..
9. Bernie Lofaso, 1989, " Join optimization in a compiled OPS5 environment." Applied Research Laboratory, University of Texas at Austin.
10. Dr. Arun Chandra, 1988, " OPS5C: a TREAT based OPS5 compiler." IBM, Austin.

5.3 Undergraduate Honors Theses Supervised

1. Kautsoubh Wagle, "Sequence Homology Search in Biological Databases., 2004, Now at National Instruments
2. Neha Singh, “Analysis of Search Algorithms and Tree Structures for Proximity Search in Metric Spaces”, 2003, Now a Ph.D student at MIT
3. Dr. Lane Warshaw, “A Case Study: Two Implementations of the Mortgage Pool Allocation Problem Using Rule-Based Languages”, 1995, Now Director of Enginerring Liaison Technology Inc.

6 Lectures

6.1 Conference Speaker Presentations

“Is Production System Match Interesting?" Panel, IEEE International Conference on Tools for Artifical Intelligence,1992

Presentations for paper numbers, 34, 42, 43, 47, 50, 51, 52, 53, 55, 57, 59, 63, 65, 68, 69, 70, 74, 77, 78 above

6.2 Invited Talks

“Evolving Models of Biological Similarity”, Keynote, ICDE Workshop on Similarity Search and Applications, 5/08

“Image Driven Ontology Editing”, Univserity of California, Berkeley, 5/08

"Application and Architecture of the MoBIoS Biological Information System,"

1. Yale University, 5/05
2. Texas/United Kingdom Collaborative Research Initiative 8/04.
3. University of California, Berkeley, 5/04.
4. University of Maryland, College Park, 11/03.
5. Los Alamos National Lab, 4/03.
6. University of New Mexico, 4/03.

7. "The Alamo Project: The Net as a Data Warehouse," Tandem Computers May 1997.
8. "Query Evaluation as Constraint Search," IBM T.J. Watson Research Center, July 1996.
9. "On DATEX: A Parallel Active-Database System," HP Laboratories, Aug. 1993.
10. "Delivering Intelligent Real-Time and Database Systems," Texas A&M Oct. 1993.
11. "The Control Rod Actuator Diagnosis Subsystem Prototype," General Electric Advanced Nuclear Power Research Division, Feb. 1993.

"The DATEX Active Database System Prototype"

11. IBM Research, Yorktown Heights New York, May 1993.
12. Texas Instruments, Computer Science Center, June 1993.
13. Is Production System Match Interesting? "Panel, International Conference on Tools for AI,1992.
14.

"Toward Integrating Expert Systems and Database Systems,"

15. Columbia University, Jan. 1993.
16. DEC, Marlborough, May 1992.
17. Bell Atlantic Software Systems, Sept. 1991.
18. IBM Almaden Research Laboratory, Nov. 1991.
19. The ANSI, X3/SPARC/DBSSG committee on Database Standards, sponsored by the U.S. Commerce Department, National Institute of Standards and Technology, April 1991.
20. Equifax Advanced Technology Seminar, Nov. 1990.

"High-performance and Parallel Execution of Rule-Based Programs,"

21. Seminaire Industriel d’Intelligence Artificielle, EDF, IBM and Renault Feb. 1991.
22. U.S. Army Computer Science School, Distinguished Lecture Series, Nov. 1990.
23. “The Future of Parallel Processing and AI”, Georgia AI Society Nov. 1990.

7 Professional Service

7.1 Journal Editing and Editorial Boards

- Member Review Board, Proceedings of the VLDB Endowment 2008 -
- Associate Editor, IEEE Transactions on Knowledge and Data Engineering, 1998-2001
- Guest Editor, Special Issue of the Journal of Parallel and Distributed Computing, 1991

7.2 Conference Chair Positions

- Vice-program Chair, IEEE International Conference on Tools with Artificial Intelligence, 1996

7.3 Major Conference Program Committees

- IEEE International Conference in Data Engineering, 2005, 2006
- ACM International Conference on Information and Knowledge Management (CIKM), 1995, 1997
- International Conference on Artificial Intelligence (AAAI) 1990, 1993

7.4 Specialized Workshops and Conference Program Committees

- ICDE Workshop on Similarity Search and Applications 2008.
- ACM International Symposium on Cooperative Database Systems for Advanced Applications, 1996
- International Conference on Industrial Applications of Artificial Intelligence and Expert Systems 1993
- Organizing committee, OOPSLA Workshop on Embedded Object-Oriented Production Systems 1994
- IEEE International Workshop on Research Issues in Data Engineering 1993

8 Grants

All dollar figures are totals for the grant period.

8.1 Previous Funding

8.1.1 PI

1 National Science Foundation, “Quantitative Proteomics Using All-Against-All Biological Data Analysis”. ~$500,000, (E. Marcotte Co-PI) 1/1/07-12/31/09
2 National Science Foundation, "A Next Generation Biological Database ManagementSystem for Discovery in Genomics and Proteomics," $930,000, (E. Marcotte Co-PI) 1/1/03 - 12/31/06.
3 Texas Higher Education Coordinating Board, "Tree-Based Data Structures to Accelerate Lookup in Biological Sequence Databases," $160,000, 01/03/02 - 8/31/04
4 Telcordia Technologies, Inc., "Distributed Database Telcordia Technologies, Inc., "Distributed Database Caching Techniques," $50,000, 1/1/99 - 21/31/02.
5 Air Force Intelligence Agency, "Rule-Based Expert System for Intrusion Detection,"$450,000, 7/31/98 - 10/1/99.
6 Microelectronics & Computer Corporation, "Distributed Database Caching Techniques," $60,027, 1/1/98 - 12/31/98.
7 Air Force Intelligence Agency, "Data Warehouse Initiative," $1,000,000, 7/31/97 - 10/1/98.
8 Defense Modeling and Simulation Office, "Common Data Standards," $147,000,FY' 1995.
9 Texas Instruments, "Unrestricted Gift," $25,000, 1/1/93.
10 Texas Instruments, "Compilation of Production Systems," $25,000, 1/1/92 - 12/31/92.
11 Office of Naval Research, (ONR) "Toward an Integrated Expert Database System," $85,000, 10/1/91 - 9/30/92.
12 Office of Naval Research, (ONR), "Toward an Integrated Expert Database System," $90,000, 10/1/90 - 12/31/90.
13 Texas Instruments, "Parallelizing Compilation of Production Systems," $35,000, 1/1/91 - 12/31/91.
14 Texas Instruments, "Parallelizing Compilation of Production Systems," $25,000, 1/1/88 - 12/31/90.
15 Texas Instruments, "Research Related to Expert Systems," $20,000 12/15/88 - 12/31/89.
16 University Research Initiative, $9,000, 6/1/87 - 7/31/87.

8.1.2 Co-PI

1 National Science Foundation, Digital Libraries and Archives, Vertebrae Morphology, Phylogeny and 3D Phyloinformatics, , $1,000,000, 1/1/06 – 12/31/08
2 National Science Foundation: Division of Information and Intelligent Systems ITR: Feedback from Multi-Source Data Mining to Experimentation for Gene Network Discovery,", $1,700,000, 6 co-PIs, establishment of the U.T. Biological Data Mining Group, 10/01/03 - 5/31/08.
3 National Science Foundation: Emerging Frontiers, "ITR Collaborative Research: Building the Tree of Life - A National Resource for Phyloinformatics and Computational Phylogenetics," $12,300,000 to six institutions - $840,000 to U.T., 10/1/03 - 8/31/08.
4 DARPA, "Programming Environments for Software System Generators," 3 co-PIs, $888,333, 7/1/96 - 6/30/99.
5 National Science Foundation, “supplemental grant”, 2 co-PIs, $34,000, 12/15/94 - 11/30/98.
6 Naval Security Group, "Radio-Frequency Mission Planner Project," co-PI with ARL: TSD, $1,325,000, 1993 - 1994. Campus Subcontract, "Radio-Frequency Mission Planner Project," 3 co-PIs, $175,403, 1993 – 1994
7 Texas Advanced Technology Program, “Intelligent Fault-Tolerant Real-Time Decision Systems", 5-co-PIs, $225,704, 1/1/92 – 12/31/93
8 Army Field Artillery Board, "FSATS," with ARL: TSD, $6,607,428, 1993 - 1994.
9 Office of Naval Research, (ONR), "Faulty Tolerant, Bounded time, Parallel Structured Decision Processes," 6 co-PIs, $403,000, 4/1/89 - 9/30/91.

8.2 Current Funding

8.2.1 PI

1. National Institutes of Health, "Computational Foundations for Comparative RNA Sequence and Structure (with R. Gutell and W. Xu) , ~$1,200,000, 7/17/08 – 9/1/12
2. National Science Foundation, III: Small: Linking Relational Databases with OWL and SPARQL, $500,000. 9/1/10 – 8/31/2012,

8.2.2 Co-PI

3. National Science Foundation, Advances in Biological Informatics, Collaborative Research: Data Integration Services for Biodiversity Informatics, 08/01/09 -07/31/11