

Dennis E. Shasha – Curriculum Vitae

Education

- 1984 Ph.D. Harvard University in applied mathematics
Dissertation Advisor: N. Goodman
- 1980 M.Sc. Syracuse University (overlapped work at IBM Data Systems Division)
- 1977 B.Sc. Yale University

Academic Positions

- 2018– Julius Silver Professor of Computer Science
Courant Institute of Mathematical Sciences
New York University
251 Mercer Street, New York, New York 10012
telephone: 212-998-3086, email: shasha@cs.nyu.edu, fax: 212-995-4123
web: <http://cs.nyu.edu/cs/faculty/shasha/index.html>
- 1995– Professor of Computer Science
Courant Institute of Mathematical Sciences
New York University
- 1990–1995 Associate Professor of Computer Science
Courant Institute of Mathematical Sciences
New York University
- 1984–1990 Assistant Professor of Computer Science
Courant Institute of Mathematical Sciences
New York University
- 1991–1992, 1998–1999, 2006–2007
Invited Professor at INRIA
Roquencourt, France
- 2014 ACM Fellow
- 2015-2019 INRIA International Chair
- 2020 ACM Sigmod Contributions Award for innovative work in the data management community t

Industrial Positions

- 1991– Database tuning and design consulting
Wall Street investment banks, Internet gaming, and biotech.
Primary clients: Morgan-Stanley, JP Morgan, Interactive Imaginations, and Union Bank of Switzerland. Also TRW, NCR, Bull, Bellcore, and the RATP (Paris rapid transit). Lastminute.com. Relational systems mainly.
- 1995–2000 Database Research Collaboration
Lucent Bell Laboratories and Bell Communication Research
- 1987–1995 AT&T Bell Laboratories, Unix System Laboratories, and Novell
Consulting work on transaction processing (concurrency control and recovery) and future UNIX kernel development.
- 1977–1980 IBM Data Systems Division
Hardware and microcode design of arithmetic, interrupt, and processor-to-channel communication for the IBM 3090 central processor.
Also responsible for self-diagnosing circuit design.

Pro Bono

- 1987–1991 Ellis Island Restoration Commission
Technical consultant (pro bono work) for the design of the Immigrant Database Management System.
- 2003– Distinguished Science Advisor, New York Hall of Science
one of 20, including James D. Watson, Benoit Mandelbrot, and Rosalyn Yalow

Doctoral Students Supervised

1. Kaizhong Zhang, (1989; pattern recognition)
The Editing Distance Between Trees: algorithms and applications
Current Position: Full Professor of Computer Science at the University of Western Ontario (with tenure).
2. Theodore Johnson (1990; performance analysis)
The Performance of Concurrent Data Structure Algorithms
Current Position: Research scientist at ATT Laboratories.
3. Jose Perez-Carballo (1990; text databases)
Design and Implementation of HyTeK: a Knowledge-based Hypertext System
Current Position: Assistant Professor at Rutgers.
4. Tsong-Li Wang (1991; database query processing)
Query Optimization in Database and Information Retrieval Systems

Current Position: Full Professor at the New Jersey Institute of Technology, Newark (with tenure).

5. Vladimir Lanin (1991; concurrent data structures)
Semantically-based Concurrent Data Structure Algorithms Current Position: member of technical staff at Google, Israel.
6. Brian Anderson (1991; parallel transaction-based processing)
Persistent LINDA: design and implementation of a system to add transactions to LINDA Current Position: Chief Technical Officer, Consilient.
7. John Turek (1991; robust concurrent computation)
Algorithms for robust parallel computation. Current Position: Department Group Manager, next generation Web. IBM T. J. Watson Research Center.
8. Steve Rozen (1993: data structure selection for database systems),
Automating Physical Database Design: An Extensible Approach Current Position: Professor at Duke-National University of Singapore Graduate Medical School
9. Gilad Koren (1993: real time scheduling),
Competitive On-Line Scheduling for Overloaded Real-Time Systems Current Position: Professor at Natanyu College in Israel.
10. Karpjoo Jeong (1995: robust parallel computation),
(1995, *PLinda 2.0: Fault Tolerant Parallel Computation on Idle Workstations*) Current Position: Assistant Professor
Department of Computer Science and Engineering
Konkuk University
Mojin-Dong 93-1, Kwangjin-Ku
Seoul 133-701, Korea
11. Bin Li (1998: parallel data mining on networks of workstations),
(1998, *Free Parallel Data Mining* Current Position: Vice President
Citibank
New York, New York.
12. Peter Wyckoff (1998: parallel fault tolerance),
(1998, *Fault Tolerant Parallel Computing on Networks of Non-Dedicated Workstations*
Current Position: Data warehousing group at facebook.com
13. Peter Piatko (1998: complex document presentation and management)
(1998, *Thinksheet: a tool for information navigation*
Current Position: Research Scientist at SIAC Research.

14. David Tanzer(2000: efficient querying of Thinksheet expert systems)
(2000, *Queryable Expert Systems*
Current Position: Wall Street mathematical programmer.
15. Rosalba Giugno (2003)
*Searching Algorithms and Data Structures for Combinatorial, Temporal
and Probabilistic Databases* Assistant Professor, University of Catania.
16. Alberto Lerner (2003)
Querying Ordered Data with AQuery CEO/Startup
17. Yunyue Zhu (2003)
High Performance Discovery in Time Series: techniques and case studies
Trading system builder in finance.
18. Aristotle Tsirigos (2005)
Pattern Discovery for Hypothesis Generation in Biology Current position:
NYU Medical School
19. Xiaojian Zhao (2006)
High Performance Algorithms for Multiple Streaming Time Series Current
position: finance
20. Zhihua Wang (2006)
Time Series Matching: a Multi-filter Approach Current position: finance
21. Tyler Neylon (2006)
Sparse Solutions for Linear Prediction Problems Current position: founder
of start-up
22. Xin Zhang (2006)
Fast Algorithms for Burst Detection Current position: finance
23. Chris Poultney (2010)
Structure Prediction and Visualization in Molecular Biology Google Re-
search
24. Huang-Wen Chen (2010)
*Machine Learning Approaches to Gene Duplication and Transcription Reg-
ulation* Current position: post-doc in bioinformatics at Franklin Medical
School
25. Eric Hielscher (2013)
Locality Optimization for Data Parallel Programs Current position: sys-
tem programmer at Google, Inc.
26. Alex Rubinsteyn (2013)
Parakeet: Runtime compiler for an array-oriented subset of Python Cur-
rent position: Research Scientist at Mt Sinai Hospital.

27. Noah Youngs (2014) co-advised with Richard Bonneau
Positive-Unlabeled Learning in the Context of Protein Function Prediction Current position: Research scientist at the Simons Foundation and founder of a data science/machine learning startup.
28. Roy Lowrance (2015) co-advised with Yann LeCun
Predicting the Market Value of Single-Family Residences Current position: Managing director of NYU Center for Data Science.
Current position: Research scientist at the Simons Foundation and founder of a data science/machine learning startup.
29. Tian Jiang (2016) *Adaptive Geometric Search for Protein Design*
Current position: Facebook Research
30. Mustafa Anil Kocak (2017) (co-advised with Elza Erkip) *Reliable Online Prediction with Refuse Option*
Current position: Researcher at Broad Institute
31. Siddharth Krishna (2019) (co-advised with official advisor Thomas Wies)
Compositional Abstractions for Verifying Concurrent Data Structures
Current position: Researcher at Microsoft Research
32. Jacopo Cirrone (2021) *Learning Causality in Molecular Biology*

Publications

This list does not include:

1. submissions,
2. technical reports superseded by publications

Journal Publications

1. Galanti, L., Shasha, D., Gunsalus, K.C. Pheniqs 2.0: accurate, high-performance Bayesian decoding and confidence estimation for combinatorial barcode indexing. *BMC Bioinformatics* 22, 359 (2021). <https://doi.org/10.1186/s12859-021-04267-5>
2. "BestNeighbor: Efficient Evaluation of kNN Queries on Large Time Series Data" by Oleksandra Levchenko; Boyan Kolev; Djamel-Edine Yagoubi; Reza Akbarinia; Florent Masseglia; Themis Palpanas; Dennis Shasha; Patrick Valduriez *Knowledge and Information Systems Journal*, November, 2020 KAIS-D-20-00131R1 <https://doi.org/10.1007/s10115-020-01518-4>

3. "Inexpensive, non-invasive biomarkers predict Alzheimer transition using machine learning analysis of the Alzheimers Disease Neuroimaging (ADNI) database" Juan Felipe Beltrn, Brandon Malik Wahba, Nicole Hose, Dennis Shasha, Richard P. Kline, For the Alzheimer's Disease Neuroimaging Initiative PLOS ONE July 27, 2020 <https://doi.org/10.1371/journal.pone.0235663>
4. "OutPredict: multiple datasets can improve prediction of expression and inference of causality." J Cirrone, MD. Brooks, R Bonneau, G M Coruzzi, and D Shasha (2020) Nature Scientific Reports Sci Rep 10, 6804 (2020). 22 April 2020. doi: <https://doi.org/10.1038/s41598-020-63347-3> <https://www.nature.com/articles/s41598-020-63347-3>
5. "TACITuS: transcriptomic data collector, integrator, and selector on big data platform" Salvatore Alaimo, Antonio Di Maria, Dennis Shasha, Alfredo Ferro, Alfredo Pulvirenti BMC Bioinformatics 20, 366 (2019) doi:10.1186/s12859-019-2912-4
6. "VersionClimber: Version Upgrades Without Tears" Christophe Pradal, Sarah Cohen-Boulakia, Patrick Valduriez, Dennis Shasha Computing in Science & Engineering SEPTEMBER/OCTOBER 2019 Volume: 21, Issue:5 pp 87-93 Print ISSN: 1521-9615 Online ISSN: 1558-366X doi: 10.1109/MCSE.2019.2921898
7. "SafePredict: A Meta-Algorithm for Machine Learning That Uses Refusals to Guarantee Correctness", Mustafa Anil Kocak, David Ramirez, Elza Erkip, Dennis Shasha IEEE Transactions on Pattern Analysis and Machine Intelligence On page(s): 1-16 Print ISSN: 0162-8828 Online ISSN: 0162-8828 Digital Object Identifier: 10.1109/TPAMI.2019.2932415
8. "Network Walking charts transcriptional dynamics of nitrogen signaling by integrating validated and predicted genome-wide interactions" by Matthew Brooks, Jacopo Cirrone, Angelo Pasquino, Jose Alvarez, Joseph Swift, Shipra Mittal, Che-Lun Juang, Kranthi Varala, Rodrigo Gutierrez, Gabriel Krouk, Dennis Shasha, and Gloria Coruzzi [Paper NCOMMS-18-23259B] NATURE COMMUNICATIONS(2019) 10:1569 doi: 10.1038/s41467-019-09522-1 April 5, 2019
9. "Fast methods for finding significant motifs on labelled multi-relational networks" Giovanni Micale, Alfredo Pulvirenti, Alfredo Ferro, Rosalba Giugno, Dennis Shasha Journal of Complex Networks, cnz008, <https://doi.org/10.1093/comnet/cnz008> 13 March 2019
10. "Fast Subgraph Matching Strategies based on Pattern-only Heuristics", Antonino Aparo, Vincenzo Bonnici, Giovanni Micale, Alfredo Ferro, Dennis Shasha, Alfredo Pulvirenti, Rosalba Giugno Interdisciplinary Sciences: Computational Life Sciences, 11(1), 21-32 DOI 10.1007/s12539-019-00323-0 Feb 21, 2019

11. An adaptive geometric search algorithm for macromolecular scaffold selection Tian Jiang P Douglas Renfrew Kevin Drew Noah Youngs Glenn L Butterfoss Richard Bonneau Den Nis Shasha *Protein Engineering, Design and Selection*, Volume 31, Issue 9, 1 September 2018, Pages 345354, <https://doi.org/10.1093/protein/gzy028>
12. SuperNoder: a tool to discover over-represented modular structures in networks Danilo Dessì, Jacopo Cirrone, Diego Reforgiato Recupero, and Dennis Shasha *BMC Bioinformatics* 2018 19:318 Published on: 10 September 2018 <https://doi.org/10.1186/s12859-018-2350-8>
13. ParCorr: Efficient Parallel Methods to Identify Similar Time Series Pairs across Sliding Windows Djamel Edine Yagoubi, Reza Akbarinia, Boyan Kolev, Oleksandra Levchenko, Florent Masegla, Patrick Valduriez, Dennis Shasha *Data Mining and Knowledge Discovery* September 2018, Volume 32, Issue 5, pp 1481-1507 <https://doi.org/10.1007/s10618-018-0580-z>
14. Temporal transcriptional logic of dynamic regulatory networks underlying nitrogen signaling and use in plants Kranthi Varala, Amy Marshall-Coln, Jacopo Cirrone, Matthew D. Brooks, Angelo V. Pasquino, Sophie Lran, Shipra Mittal, Tara M. Rock, Molly B. Edwards, Grace J. Kim, Sandrine Ruffel, W. Richard McCombie, Dennis Shasha, and Gloria M. Coruzzi *PNAS* June 19, 2018 115 (25) 6494-6499 <https://doi.org/10.1073/pnas.1721487115>
15. "Fast Analytical Methods for Finding Significant Labeled Graph Motifs" Giovanni Michale, Rosalba Giugno, Alfredo Ferro, Misael Mongiovi, Dennis Shasha, Alfredo Pulvirenti. *Data Mining Knowledge Discovery* 32(2): 504-531 (2018) <https://doi.org/10.1007/s10618-017-0544-8>
16. "Crowdsourcing Thousands of Specialized Labels: a Bayesian active training approach," M. Servajean; A. JOLY; D. Shasha; J. Champ; E. Pacitti, in *IEEE Transactions on Multimedia* , Volume: 19, Issue: 6, June 2017, pp. 1376-1391
17. "An expanded evaluation of protein function prediction methods shows an improvement in accuracy" *Genome Biology* 2016 17:184 DOI: 10.1186/s13059-016-1037-6 7 September 2016 one of over 100 authors (for algorithmic contributions)
18. "Synthetic RNAs for gene regulation: design principles and computational tools." A. Lagana', D. Shasha, C. M. Croce. *Front Bioeng Biotechnol* 2014. doi: 10.3389/fbioe.2014.00065. December, 2014.
19. "Negative Example Selection for Protein Function Prediction: The NoGO Database" Noah Youngs, Duncan Penfold-Brown, Richard Bonneau, Dennis Shasha *PLOS Computational Biology*, June 12, 2014 DOI: 10.1371/journal.pcbi.1003644 <http://www.ploscompbiol.org/article/info:doi/10.1371/journal.pcbi.1003644>

20. “miR-Synth: a computational resource for the design of multi-site multi-target synthetic miRNAs” Alessandro Lagana, Mario Acunzo, Giulia Romano, Alfredo Pulvirenti, Dario Veneziano, Luciano Cascione, Rosalba Giugno, Pierluigi Gasparini, Dennis Shasha, Alfredo Ferro and Carlo Maria Croce *Nucleic Acids Research*, March 13 2014 doi: 10.1093/nar/gku202
21. “GRAPES: A Software for Parallel Searching on Biological Graphs Targeting Multi-Core Architectures” Rosalba Giugno, Vincenzo Bonnici, Nicola Bombieri, Alfredo Pulvirenti, Alfredo Ferro, Dennis Shasha *PLOS One*, doi: <http://www.plosone.org/article/info>
22. “Gene regulatory networks in plants: learning causality from time and perturbation” Gabriel Krouk, Jesse Lingeman, Amy Marshall Colon, Gloria Coruzzi and Dennis Shasha *Genome Biology*, June 2013
23. “Parametric Bayesian Priors and Better Choice of Negative Examples Improve Protein Function Prediction” Noah Youngs, Duncan Penfold-Brown, Kevin Drew, Dennis Shasha, Richard Bonneau *Bioinformatics* 2013; doi: 10.1093/bioinformatics/btt110 <http://bit.ly/11niyxr>
24. “miR-EdiTAr: A database of predicted A-to-I edited miRNA target sites” Alessandro Lagan, Alessio Paone, Dario Veneziano, Luciano Cascione, Pierluigi Gasparini, Stefania Carasi, Francesco Russo, Giovanni Nigita, Valentina Macca, Rosalba Giugno, Alfredo Pulvirenti, Dennis Shasha, Alfredo Ferro and Carlo M. Croce *Bioinformatics* 2012
25. “Nitrogen economics of root foraging: Transitive closure of the nitrate-cytokinin relay and distinct systemic signaling for N supply vs. demand.” Sandrine Ruffel, Gabriel Krouk, Daniel Ristova, Dennis Shasha, Kenneth Birnbaum, and Gloria Coruzzi, *Proc U.S. National Academy of Science* November 8, 2011
26. “Rational design of temperature-sensitive alleles using computational structure prediction.” Christopher S. Poultney, Glenn L. Butterfoss, Michelle R. Gutwein, Kevin Drew, David Gresham, Kristin C. Gunsalus, Dennis E. Shasha, Richard Bonneau. *PLoS ONE* 6(9): e23947. doi:10.1371/journal.pone.0023947
27. “The proteome folding project: proteome-scale prediction of structure and function” Kevin Drew, Patrick Winters, Glenn L. Butterfoss, ViktorsBerstis, Keith Uplinger, Jonathan Armstrong, Michael Riffle, Eric Schweighofer, Bill Braverman, David R. Goodlett, Trisha N. Davis, Dennis Shasha, Lars Malmstrom, and Richard Bonneau August 8, 2011, doi: 10.1101/gr.121475.111 *Genome Res.* 2011.
28. “Predictive network modeling of the high-resolution dynamic plant transcriptome in response to nitrate,” Gabriel Krouk, Piotr Mirowski, Yann

- LeCun, Dennis E Shasha and Gloria M Coruzzi *Genome Biology* 2010, 11:R123 doi:10.1186/gb-2010-11-12-r123 Published: 23 December 2010
29. "Estimation of genome-wide redundancy in *Arabidopsis thaliana*," Huang-Wen Chen, Sunayan Bandyopadhyay, Dennis E. Shasha, and Kenneth D. Birnbaum accepted, *BMC Evolutionary Biology* 2010, 10:357; doi:10.1186/1471-2148-10-357
 30. "Fast Elastic Peak Detection for Mass Spectrometry Data Mining," X. Zhang, D. Shasha, Y. Song and J. T. L. Wang, *IEEE Transactions on Knowledge and Data Engineering*, Issue 99. November 29, 2010, doi: 10.1109/TKDE.2010.238
 31. "SING: Subgraph search In Non-homogeneous Graphs" Raffaele Di Natale , Alfredo Ferro , Rosalba Giugno , Misael Mongiovi , Alfredo Pulvirenti and Dennis Shasha *BMC Bioinformatics* 2010, 11:96doi:10.1186/1471-2105-11-96 <http://www.biomedcentral.com/1471-2105/11/96>
 32. "VirtualPlant: a software platform to support system biology research" Manpreet S. Katari, Steve D. Nowicki, Felipe F. Aceituno, Damion Nero, Jonathan Kelfer, Lee Parnell Thompson, Juan M. Cabello, Rebecca S. Davidson, Arthur P. Goldberg, Dennis E. Shasha, Gloria M. Coruzzi, and Rodrigo A. Gutierrez, *Plant Physiology* 152:500-515 (2010)
 33. "miRo: a miRNA knowledge base" A. Lagana, S. Forte, A. Giudice, M. R. Arena, P. L. Puglisi, R. Giugno, A. Pulvirenti, D. Shasha, A. Ferro *Database: The Journal of Biological Databases and Curation*, Oxford University Press, 2009 doi: 10.1093/database/bap008
 34. "A Systems Approach Uncovers Restrictions for Signal Interactions Regulating Genome-wide Responses to Nutritional Cues in *Arabidopsis*" Gabriel Krouk, Daniel Tranchina, Laurence Lejay, Alexis A. Cruikshank, Dennis Shasha, Gloria M. Coruzzi, Rodrigo A. Gutierrez *PLOS Computational Biology* March 2009, volume 5, issue 3
 35. "GraphClust: A Method for Clustering Databases of Graphs" Diego Riformaggio, Rodrigo Gutierrez, Dennis Shasha *Journal of Information and Knowledge Management (JIKM)* Volume: 7, Issue: 4 (December 2008) Page 231 - 241 <http://www.worldscinet.com/cgi-bin/details.cgi?id=jsname:jikm&type=current>
 36. "Revelation on Demand", Nicolas Ancaux, Mehdi Benzine, Luc Bouganim, Philippe Pucheral and Dennis Shasha, *Distributed and Parallel Databases Journal*, vol 25, issue 1-2 (april 2009) pp. 5-28.
 37. "DNA Hash Pooling and its Application" Dennis Shasha and Martyn Amos *International Journal of Nanotechnology and Molecular Computation* 1(1), 18-32, January-March 2009 (Previous version: arXiv:0705.3597)

38. "An integrated genetic, genomic and systems approach defines gene networks regulated by the interaction of light and carbon signaling pathways in Arabidopsis" Karen E Thum, Michael J Shin, Rodrigo Gutierrez, Indrani Mukherjee, Manpreet S Katari, Damion Nero, Dennis Shasha and Gloria M Coruzzi *BMC Systems Biology* 2008, 2:31 (04 Apr 2008)
39. Gutierrez, R.A., Lejay, L., Chiaromonte, F., Shasha, D.E., Coruzzi, G.M. (2007) "Qualitative network models and genome-wide expression data define carbon/nitrogen-responsive molecular machines in Arabidopsis". *Genome Biol.*: 8, pp. R7. "Must read" Factor 6 in the Faculty of 1000.
40. "GraphFind: Enhancing Graph Searching by Low Support Data Mining Techniques" A. Ferro, R. Giugno, M. Mongiovi, A. Pulvirenti, D. Skripin, D. Shasha, *BMC Bioinformatics*, vol. 8 ISSN: 1471-2105, 2007.
41. "Homology search for genes" Xuefeng Cui; Tomas Vinar; Brona Brejova; Dennis Shasha; Ming Li *Bioinformatics*. 2007 Jul 1;23 (13):i97-i103 17646351 (P,S,E,B,D)
42. "Insights into the genomic nitrate response using genetics and the Sungear software system" Rodrigo A. Gutierrez, Miriam L. Gifford, Chris Poultney, Rongchen Wang, Dennis E. Shasha, Gloria M. Coruzzi and Nigel M. Crawford *JXB Advance Access published online on April 29, 2007 Journal of Experimental Botany*, doi:10.1093/jxb/erm079
43. A. Ferro, R. Giugno, G. Pigola, A. Pulvirenti, D. Skripin, G. D. Bader, D. Shasha "NetMatch: a Cytoscape Plugin for Searching Biological Networks" *Bioinformatics*, 2007 23(7):910-912; doi:10.1093/bioinformatics/btm032
44. Christopher S. Poultney, Rodrigo A. Gutierrez, Manpreet S. Katari, Miriam L. Gifford, W. Bradford Paley, Gloria M. Coruzzi and Dennis E. Shasha "Sungear: Interactive visualization and functional analysis of genomic datasets" *Bioinformatics*, 2007; Jan 15;23(2):259-61 doi: 10.1093/bioinformatics/bt1496
45. Charles J. Colbourn, Sosina S. Martirosyan, Gary L. Mullen, Dennis Shasha, George B. Sherwood, Joseph L. Yucas "Products of Mixed Covering Arrays of Strength Two" *Journal of Combinatorial Designs* Volume 14, Issue 2, Date: March 2006, Pages: 124-138
46. Jason T. L. Wang, Huiyuan Shan, Dennis Shasha and William H. Piel, "Fast Structural Search in Phylogenetic Databases," *Evolutionary Bioinformatics Online*, Vol. 1, October 2005, pp. 37-46.
47. Michael Rabin and Dennis Shasha "Preventing Piracy while Preserving Privacy" *Dr. Dobb's Journal*, October 2005.

48. Rodrigo Gutierrez, Dennis Shasha, and Gloria Coruzzi, "Systems Biology for the Virtual Plant" *Plant Physiology*, June 2005, vol. 38, pp. 550-554.
49. J. T. L. Wang, X. Wang, D. Shasha and K. Zhang, "MetricMap: An Embedding Technique for Processing Distance-Based Queries in Metric Spaces," *IEEE Transactions on Systems, Man and Cybernetics, Part B, Cybernetics*, Vol. 35, No. 5, October 2005, pp. 973-987.
50. "Making Snapshot Isolation Serializable" Alan Fekete, Dimitrios Liarokapis, Elizabeth O'Neil, Patrick O'Neil, Dennis Shasha *ACM TODS*, June 2005 vol. 30, number 2. pp. 492-528
51. "In Vitro and In Silico Cloning of *Xenopus laevis* SOD2 cDNA and its Phylogenetic Analysis" Michele Purrello, Cinzia di Pietro, Marco Ragusa, Alfredo Pulvirenti, Rosalba Giugno, Valetina di Pietro, Giovanni Emanuele, Salvo Travali, Marina Scia, Dennis Shasha, and Alfredo Ferro. *DNA and Cell Biology*, volume 24, number 2, 2005, pp. 111-116.
52. "Antipole Tree Indexing to Support Range Search and K-Nearest Neighbor Search in Metric Spaces" Domenico Cantone, Alfredo Ferro, Alfredo Pulvirenti, Diego Reforgiata, Dennis Shasha *IEEE Transactions on Knowledge and Data Engineering*, vol. 17, no. 5 (April 2005), pp. 535-550.
53. "Database Systems" Dennis E. Shasha and Philippe Bonnet in special issue of *Dr. Dobb's Journal on Database Development* December 2004.
54. "Adaptive Combinatorial Design to explore Large Experimental Spaces: approach and validation" Laurence V. Lejay, Dennis E. Shasha, Peter M. Palenchar, Andrei Y. Kouranov, Alexis A. Cruikshank, Michael F. Chou, Gloria M. Coruzzi *Systems Biology*, volume 1, issue 2, December 2004, pp. 206-212.
55. "Fast structural search in phylogenetic databases" Jason Wang, Shan, Dennis Shasha, William Piel *Applied Bioinformatics*, to appear.
56. "A gene expression map of the *Arabidopsis* root" Kenneth Birnbaum, Dennis E. Shasha, Jean Y. Wang, Jee W. Jung, Georgina M. Lambert, David W. Galbraith, and Philip N. Benfey *Science*, Dec 12 2003: 1956-1960 (A review article in the Research Focus section of *Trends in Biotechnology* called the article "At the end of 2003, the root biology community was blessed with what has become today already a historical paper that described for the first time a genome wide expression analysis of *Arabidopsis* root development [2].")
57. Dennis Shasha "Plant Systems Biology: Lessons from a Fruitful Collaboration" *Plant Physiology*, June 2003, Vol 132, pp. 1-2.

58. Alfredo Ferro, G. Pigola, Alfredo Pulvirenti, Dennis Shasha: "Fast Clustering and Minimum Weight Matching Algorithms for Very Large Mobile Backbone Wireless Networks." *Int. J. Found. Comput. Sci.* 14(2): 223-236 (2003)
59. Mitchell Levesque, Dennis Shasha, Wook Kim, Michael G. Surette, and Philip N. Benfey "Trait-To-Gene: A Computational Method for Predicting the Function of Uncharacterized Genes" *Current Biology*, vol. 13, 129-133, January 21, 2003. Discussed in: http://www.the-scientist.com/yr2003/jun/hot_030603.html
60. Qicheng Ma, Jason T. L. Wang, Dennis Shasha and Cathy H. Wu, "DNA Sequence Classification via an Expectation Maximization Algorithm and Neural Networks: A Case Study," *IEEE Transactions on Systems, Man, and Cybernetics*, Special Issue on Knowledge Management, invited, to appear.
61. "Using Combinatorial Design to Study Regulation by Multiple Input Signals. A Tool for Parsimony in the Post-Genomics Era" Dennis Shasha, Andrei Kouranov, Laurence Lejay, Michael Chou, and Gloria Coruzzi, *Plant Physiology*, Dec. 2001 127(4):1590-1594.
62. "cis Element/Transcription Factor Analysis (cis/TF): A Method for Discovering Transcription Factor/cis Element Relationships" Kenneth Birnbaum, Philip N. Benfey, and Dennis E. Shasha *Genome Res.* 2001 11: 1567-1573.
63. Munir Cochinwala, Verghese Kurien, Gail Lalk, and Dennis Shasha "Efficient data reconciliation" *Information Sciences* 137, (2001), pp. 1-15
64. J. T. L. Wang, Q. Ma, D. Shasha and C. H. Wu, "New Techniques for Extracting Features from Protein Sequences," *IBM Systems Journal*, Special Issue on Deep Computing for the Life Sciences, invited, Vol. 40, No. 2, 2001, pp. 426-441 (accessible at <http://www.research.ibm.com/journal/sj40-2.html>)
65. "Finding Patterns in Three Dimensional Graphs: Algorithms and Applications to Scientific Data Mining" Xiong Wang, Jason T-L Wang, Dennis Shasha, Bruce Shapiro, Isidore Rigoutsos, and Kaizhong Zhang *IEEE Transactions on Knowledge and Data Engineering*, pp. 731-749, 2002.
66. "An Index Structure for Data Mining and Clustering" by Xiong Wang, Jason T.L. Wang, King-Ip Lin, Dennis Shasha, Bruce A. Shapiro, and Kaizhong Zhang *Knowledge and Information Systems: An International Journal* ISSN 0219-1377 by Springer-Verlag Volume 2, Number 2 (May 2000) pp. 161-184

67. "New Techniques for DNA Sequence Classification," Jason T. L. Wang, Steve Rozen, Bruce A. Shapiro, Dennis Shasha, Zhiyuan Wang and Maisheng Yin, *Journal of Computational Biology*, Vol. 6, No. 2, 1999, pp. 209-218.
68. Dennis Shasha "Tuning Time Series Queries in Finance: case studies and recommendations" *IEEE Data Engineering Bulletin* July, 1999. Special issue on Performance Tuning for Database Systems, edited by Surajit Chaudhuri. (invited by the editor)
69. K. Jacob and Dennis Shasha "FinTime — a financial time series benchmark" *Sigmod Record*, December, 1999
70. J. T. L. Wang, B. A. Shapiro, Dennis Shasha, K. Zhang and K. M. Currey, "An Algorithm for Finding the Largest Approximately Common Substructures of Two Trees," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 20, No. 8, August 1998, pp. 889-895.
71. "Tuning Databases for High Performance" *ACM Computing Surveys*, Vol. 28, no. 1, March 1996, pp. 113-115 Dennis Shasha
72. J. T. L. Wang, T. G. Marr, Dennis Shasha, B. A. Shapiro, G.-W. Chirn and T. Y. Lee, "Complementary Classification Approaches for Protein Sequences," *Protein Engineering*, Vol. 9, No. 5, May 1996, pp. 381-386.
73. "On the Editing Distance between Undirected Acyclic Graphs," *International Journal of Foundations of Computer Science*, K. Zhang, J. T. L. Wang and Dennis Shasha, Special Issue on Computational Biology, Vol. 7, No. 1, March 1996, pp. 43-57.
74. "Transaction Chopping: Algorithms and Performance Studies" Dennis Shasha, F. Llirbat, E. Simon, P. Valduriez *ACM Transactions on Database Systems*, October 1995, pp. 325-363.
75. "Discovering Active Motifs in Sets of Related Protein Sequences and Using Them for Classification" Jason T. L. Wang, Thomas G. Marr, Bruce Shapiro, Dennis Shasha and Gung-Wei Chirn *Nucleic Acids Research*, 1994, Vol. 22, No. 14, pp. 2769-2775.
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3. Scientific American: *Parent’s Corner* May 2004 and till end of 2004 at www.sciam.com.

Refereed Conference Publications

1. "Verifying Concurrent Multicopy Structures" N. Patel, S. Krishna, D. Shasha, and T. Wies PACMPL, 5(Object-oriented Programming, Systems, Languages, and Applications (OOPSLA)), 2021
2. "Planning Epidemic Interventions with EpiPolicy" Zain Tariq, Miro Mannino, Anh Mai, Whitney Bagge, Azza Abouzied, and Dennis Shasha UIST 2021
3. "Acronym Expander at SDU@AAAI-21: an Acronym Disambiguation Module" Joo L. M. Pereira, Helena Galhardas and Dennis Shasha AAAI-21 Workshop on Scientific Document Understanding
4. "Verifying Concurrent Search Structure Templates" Siddharth Krishna, Nisarg Patel, Dennis Shasha, Thomas Wies ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI 2020)
5. "BugDoc: Algorithms to Debug Computational Processes." Raoni Loureno, Juliana Freire, and Dennis Shasha. In ACM SIGMOD 2020.
6. "BugDoc: A System for Debugging Computational Pipelines." Raoni Loureno, Juliana Freire, and Dennis Shasha. In ACM SIGMOD (demo) 2020.
7. "Deferred Runtime Pipelining for Contentious Multicore Software Transactions" Shuai Mu, Sebastian Angel, and Dennis Shasha EuroSys 2019, Dresden, Germany, March 2019.
8. "Spark-parSketch: A Massively Distributed Indexing of Time Series Datasets" Oleksandra Levchenko, Djamel-Edine Yagoubi, Reza Akbarinia, Florent Masseglia, Dennis Shasha and Boyan Kolev CIKM 2018 demonstration
9. "Point Pattern Search in Big Data" Fabio Porto, John Rittmeyer, Eduardo Ogasawara, Alberto Krone-Martins, Patric Valduriez, Dennis Shasha Scientific and Statistic Database Management, June 2018, Bolzano-Bozen, Italy
10. "Simple Pattern-only Heuristics Lead To Fast Subgraph Matching Strategies on Very Large Networks." Antonino Aparo, Vincenzo Bonnici, Giovanni Micale, Alfredo Ferro, Dennis Shasha, Alfredo Pulvirenti, Rosalba Giugno Advances in Intelligent Systems and Computing, Springer Verlag, ISSN:2194-5357, Oral presentation at the 12th International Conference on Practical Applications of Computational Biology and Bioinformatics (PACBB'18), Toledo (Spain) 20th-22nd June, 2018 DOI:10.1007/978-3-319-98702-6-16
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15. “A Course on Programming and Problem Solving” Swapneel Sheth, Christian Murphy, Kenneth Ross, Dennis Shasha SIGCSE 2016 March 02-05, 2016, Memphis, TN, USA
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19. Wei Cao and Dennis Shasha “AppSleuth: a Tool for Database Tuning at the Application Level” EDBT 2013 (regular paper)
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21. Alex Rubinsteyn, Eric Hielscher, Nathaniel Weinman, Dennis Shasha “Parakeet: a just-in-time parallel accelerator for Python” In Proceedings of the 4th USENIX Conference on Hot Topics in Parallelism (Berkeley, CA, USA, 2012), HotPar’12, USENIX Association.
22. Arthur Meacham and Dennis Shasha “JustMyFriends: Full SQL, Full Transactional Amenities, and Access Privacy” Sigmod 2012
23. Juliana Freire, Philippe Bonnet, and Dennis Shasha “Computational Reproducibility: State-of-the-Art, Challenges, and Database Research Opportunities” Sigmod 2012

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Invited Papers

1. “Dearly Beloved: The Five Rules to Help Your Parents Die a Peaceful Death” (not my choice of title) Quartz online magazine, March 27, 2014. <http://qz.com/192597/the-five-rules-to-help-your-parents-die-a-peaceful-death/>

2. “Incremental Methods for Simple Problems in Time Series: algorithms and experiments” Xiaojian Zhao, Xin Zhang, Tyler Neylon, Dennis Shasha International Database Engineering and Applications Symposium, July 2005, pp. 3-16 (invited, keynote).
3. “Activist Data Mining for Computational Science: Tools and Applications” Dennis Shasha, pp. 6-10 Database Tuning: Principles, Experiments, and Guidance p. 1 18th Brazilian Symposium on Databases October 2003 (Manaus)
4. “High Volume Transaction Processing Without Concurrency Control, Two Phase Commit, SQL or C++”, Arthur Whitney, Dennis Shasha, Steve Apter. pp. 211-217 Seventh International Workshop on High Performance Transaction Systems, September, 1997, Asimolar, California.
5. “Some Approaches to Index Design for Cube Forests” Theodore Johnson and Dennis Shasha Issue: Supporting On-line Analytical Processing (editor: Daniel Barbara) March 1997 issue of the IEEE Data Engineering Bulletin <http://www.research.microsoft.com/research/db/debull/>

Web Sites

1. Web sites:
 - <http://cs.nyu.edu/cs/faculty/shasha/papers/tree.html> [ordered tree matching]
 - <http://cs.nyu.edu/cs/faculty/shasha/papers/treearch.html> [unordered tree matching]
 - <http://cs.nyu.edu/cs/faculty/shasha/papers/graphgrep/index.html> [graph matching]
 - <http://cs.nyu.edu/cs/faculty/shasha/papers/statstream.html> [time series matching]
 - <http://cs.nyu.edu/cs/faculty/shasha/fintime.html> [benchmark for financial databases]
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2. “Detecting Missing and Spurious Edges in Large, Dense Networks Using Parallel Computing” Sam Coolidge, Dan Simon, and Dennis Shasha NYU Computer Science TR2016-986, December 19, 2016
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4. “Alphacodes: Usable, Secure Transactions with Untrusted Providers using Human Computable Puzzles,” Ashlesh Sharma, Varun Chandrasekaran, Fareeha Amjad, Dennis Shasha, Lakshminarayanan Subramanian <http://cs.nyu.edu/media/publications/982.pdf> NYU Computer Science TR2016-982
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6. “Acronym Disambiguation” Benjamin D. Turtel, Dennis Shasha June 2015 TR2015-973
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9. “Repeatability & Workability Evaluation of SIGMOD 2009” S. Manegold, I. Manolescu, L. Afanasiev, J. Feng, G. Gou, M. Hadjieleftheriou, S. Harizopoulos, P. Kalnis, K. Karanasos, D. Laurent, M. Lupu, N. Onose, C. Re, V. Sans, P. Senellart, T. Wu, and D. Shasha Sigmod Record, September 2009 <http://www.sigmod.org/publications/sigmod-record/0909/index.html>
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11. “ Verifying a Design Pattern for the Fault-Tolerant Execution of Parallel Programs” Ekkart Kindler and Dennis Shasha NYU TR TR2000-803
12. “An Extensible Framework for Data Cleaning” Helena Galhardas, Daniela Florescu, Dennis Shasha and Eric Simon, INRIA, July, 1999
13. “Hierarchically Split Cube Forests for Decision Support: description and tuned design” Ted Johnson and Dennis Shasha NYU Computer Science Technical Report 727, November, 1996.
14. “Reference Manual for ATBE — a tool for approximate tree pattern matching” T-L. Wang, K. Jeong, K. Zhang, and Dennis Shasha NYU Computer Science Technical Report 551, March, 1991.

15. “Beyond Fail-Stop: Wait-Free Serializability and Resiliency in the Presence of Slow-Down Failures” J. Turek and Dennis Shasha, NYU Computer Science Technical Report 514, September, 1990.
16. “An Analytical Model for the Performance of Concurrent B Tree Algorithms” V. Lanin, J. Schmidt and Dennis Shasha, Ultracomputer Note 124, Computer Science Technical Report 311, 1987.

Authored Books

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2. *Statistics is Easy: Case Studies on Real Scientific Datasets* Morgan Claypool Synthesis Lectures on Mathematics and Statistics April 2021, (<https://doi.org/10.2200/S01078ED1V01Y>) Manpreet Singh Katari, Sudarshini Tyagi, Dennis Shasha
3. *Network Inference in Molecular Biology – a hands-on framework* Jesse Lingeman and Dennis Shasha, Springer Verlag, 2012, 109 pages, ISBN 978-1461431121.
4. *Stored Clocked Programs Inside DNA: a simplifying framework for Nanocomputing* Jessie Chang and Dennis Shasha Morgan and Claypool, 2011, 66 pages
ISBN: 9781608456956 paperback
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5. *Natural Computing: DNA, Quantum Bits, and the Future of Smart Machines* Dennis Shasha and Cathy Lazere, W. W. Norton, 2010, 288 pages
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6. *Statistics is Easy!* Dennis Shasha and Manda Wilson, Morgan Claypool publishing 2008, 74 pages, (doi:10.2200/S00142ED1V01Y200807MAS001) <http://www.morganclaypool.com/doi/abs/10.2200/S00142ED1V01Y200807MAS001>
A resampling (distribution-free) approach to statistics written for computer scientists, engineers, and natural scientists.
7. *Iraq’s Last Jews: Stories of Daily Life, Upheaval, and Escape from Modern Babylon* Tamar Morad, Dennis Shasha, and Robert Shasha 2008, 256 pages, Palgrave Macmillan. ISBN: 978-0230608108 A book of oral histories. Sales 1068 (hard cover) and 2657 (paper). Finalist for the National Jewish Book Award in the Sephardic Culture category.

8. *Puzzles for Programmers and Pros* John Wiley/Wrox, May 2007. Puzzles and methods to solve puzzles. Translations to Korean and Japanese (Ohmsha). Reprinted in India (JWS-India).
9. *The Puzzler's Elusion: A Tale of Fraud, Pursuit, and the Art of Logic* Thunder's Mouth Press, March 2006. A further collection of puzzles from Scientific American and Dr. Dobb's Journal. Translation to traditional Chinese 2007.
10. *Puzzling Adventures* W. W. Norton, January 2005. A collection of puzzles from Scientific American and Dr. Dobb's Journal. Puzzle contest was won by Jeremiah Farrell and written about on May 19, 2006 in the NY Sun under the title "A Washington Square Park Puzzle is Solved" by Gary Shapiro in the Arts and Letters section.) Translation to Portugese in progress.
11. *High Performance Discovery in Time Series: techniques and case studies* Dennis Shasha and Yunyue Zhu, Springer Verlag Publishers, Monographs in Computer Science, June 2004, ISBN 0387008578, 270 Pages.
12. *Database Tuning : Principles Experiments and Troubleshooting Techniques* Dennis Shasha and Philippe Bonnet, Morgan Kaufmann Publishers, June 2002, ISBN 1-55860-753-6, Paper, 464 Pages. (Translations to Russian (Kudits obraz), simplified Chinese (Publishing House of Electronics Industry, phei), and Korean (Brain Korea) are complete.)
13. *Dr. Ecco's Cyberpuzzles : 36 Puzzles for Hackers and Other Mathematical Detectives* Dennis E. Shasha W. W. Norton, 2002. ISBN 0-393-05120-X, 231 pages. (Translations to Simplified Chinese, Korean, Polish, Turkish, Czech, Hungarian, French, German, Portugese, and traditional Chinese.)
14. *Red Blues : Voices from the Last Wave of Russian Immigrants* by Dennis Shasha, Marina Shron Holmes and Meier, 2002. Among the reviews: <http://www.qualitative-research.net/fqs-texte/1-07/07-1-19-e.htm>
15. *Out of Their Minds: the lives and discoveries of 15 great computer scientists* by Dennis Shasha and Cathy Lazere, Springer-Verlag, New York, August, 1995.
(Book of short biographies and research philosophies. Translated to Japanese, Korean, traditional Chinese (Taiwan), and simplified Chinese (China).) The Chinese publisher Ituring interviewed me and provide a Chinese version: <http://www.ituring.com.cn/article/details/12519> and an English version: <http://www.ituring.com.cn/article/12520>
16. *Database Tuning — a principled approach*, by Dennis Shasha, Prentice-Hall, Englewood Cliffs, NJ, 1992.

(Book to help practitioners improve the performance of database applications that are built on top of commercial database management systems.)

17. *Codes, Puzzles, and Conspiracy* by Dennis Shasha, W. H. Freeman, New York 1992. Republished by Dover in 2004.
(Adventures of a mathematical detective whose problems are often algorithmic or combinatoric in nature. Second in series. Translated to French, Portuguese, Slovenian, and Turkish. Also translated to Spanish in two separate editions.)
18. *The Puzzling Adventures of Dr. Ecco* by Dennis Shasha, W. H. Freeman, New York 1988. Dover, 1997.
(Adventures of a mathematical detective whose problems are often algorithmic or combinatoric in nature. First in series. Translated to Chinese, French, German, Italian, Spanish, Japanese, Portuguese, Turkish, Slovenian, and Hungarian. Cited by Professor Andy Liu, selected the Canadian Professor of the Year in 1999, as his favorite book for teaching mathematics at the University of Alberta. The book is also used at Grant MacEwan College.)

Co-Edited Books

1. *Data Mining in Bioinformatics* J. T. L. Wang, M. J. Zaki, H. T. T. Toivonen and D. Shasha (eds.), 350 pages, Springer-Verlag, ISBN: 1-85233-671-4, August 2005.
2. *Pattern Discovery in Biomolecular Data: Tools, Techniques, and Applications* Jason Wang, Bruce Shapiro, and Dennis Shasha (Eds.) Oxford University Press, November, 1999.

Patents

1. "Conditional Transition Networks and Computational Processes for Use in Interactive Computer-based Systems" Dennis Shasha, March 2, 1998 US 5,809,212.
2. "Method and apparatus for optimizing and structuring data by designing a cube forest data structure for hierarchically split cube forest template" Theodore Johnson and Dennis Shasha, October 31, 2000, US 6,141,655.
3. "Concurrent Reconciliation of an Update Stream with Database Reassignment of Scheduling Databases" Peter Koppstein, Benjamin Park and Dennis Shasha, November, 2000, US 6,138,118.
4. "Fault Tolerant Storage System" Ted Johnson and Dennis Shasha April, 2001, US 6,219,800.

5. "Method and Apparatus for loading Data into a Cube Forest Data Structure" Ted Johnson and Dennis Shasha U.S. Patent 6,334,125 December 25, 2001
6. "Method and Apparatus for Querying a Cube Forest Data Structure" Ted Johnson and Dennis Shasha U.S. Patent 6,424,967 July 23, 2002
7. "Methods and Apparatus for Protecting Information" Michael Rabin and Dennis Shasha U.S. Patent 6,697,948 February 24, 2004 (29 references)
8. "Methods And Apparatus For Protecting Information" Michael O. Rabin, Dennis E. Shasha Australia, Patent 767286 19 February 2004
9. "Methods And Apparatus For Protecting Information" Michael O. Rabin, Dennis E. Shasha New Zealand Patent 515938 November 11, 2004
10. "Methods And Apparatus For Protecting Information" Michael O. Rabin, Dennis E. Shasha Mexico Patent 224912 December 13, 2004
11. "Method and Apparatus for Protecting Information and Privacy" Michael Rabin and Dennis Shasha U.S. Patent 6,889,209 May 3, 2005. (7 references)
12. "Method and Apparatus for Protecting Information" Michael Rabin and Dennis Shasha U.S. Patent 7,073,197 July 4, 2006.
13. "Method and Apparatus for Protecting Information" Michael Rabin and Dennis Shasha U.S. Patent 7,131,144 October 31, 2006.
14. "Detection and Identification Methods for Software" Michael O. Rabin, Dennis E. Shasha, Carleton J. Bosley, Ramon Caceres, Aaron Ingram, Timir Karia, David Molnar and Yossi Beinart U.S. Patent 7,287,159 October 23, 2007.
15. "Method and apparatus for protecting information and privacy" Michael Rabin and Dennis Shasha U.S. Patent 7,406,593 July 29, 2008
16. "System and process of determining a biological pathway based on a treatment of a biological specimen" Peter Palenchar, Dennis Shasha, Michael Chou, Marc Rejali, Yair Dorsett, Andrei Kouranov, Gloria Coruzzi U.S. Patent 7,739,053 June 15, 2010
17. "Method and Apparatus for Protecting Information and Privacy" Michael Rabin and Dennis Shasha U.S. Patent 7,747,873 June 29, 2010
18. "System and Method for Representing the Interactions between Multiple Inputs and At Least One Output" Dennis Shasha, Rodrigo Gutierrez, W. Bradford Paley, Christopher Poultney, and Gloria Coruzzi U.S. Patent 7,805,703 September 28, 2010

19. "Method and Apparatus for Protecting Information and Privacy" Michael Rabin and Dennis Shasha U.S. Patent 7,991,995 August 2, 2011.
20. "Method and Apparatus for Protecting Information and Privacy" Michael Rabin and Dennis Shasha U.S. Patent 8,327,453 December 4, 2012
21. "Database outsourcing with access privacy" Dennis Shasha, Peter Williams, and Radu Sion U.S. Patent 8,458,451 June 4, 2013
22. "Methods and systems for multi-dimensional motion" Dennis Shasha and Mike Whittaker, U.S. Patent 13/155,448 Patent number 8689698, April 8, 2014
23. "Methods and systems for multi-dimensional motion" Dennis Shasha and Mike Whittaker, U.S. Patent number 8931417 Jan 13, 2015
24. "Computer System, Client Device and Method" Dennis Shasha and Arthur Meacham, U.S. Patent Number 9171271 Oct. 27, 2015
25. "Corrupting data structures for privacy protection" Dennis Shasha US Patent 9,507,734 November 29, 2016
26. "Secure Transactions Using Alphacodes" Lakshminarayanan Subramanian, Ashlesh Sharma, Dennis Shasha U.S. Patent No. 9,680,806 on June 13, 2017
27. "System and method for mitigating frequency offsets in wireless systems" Aditya Dhananjay, Sundeep Rangan, Dennis Shasha U.S. Patent No 9,912,510 on March 6, 2018
28. System, Device, and Method for High-Frequency Millimeter-Wave Wireless Communication Using Interface Points" Theodore S. Rappaport and Dennis Shasha U.S. Patent 10,547,372 B2

Co-Edited Conference Proceeding

1. Catriel Beeri, Atsushi Ohori and Dennis E. Shasha (Eds.) *Database Programming Languages (DBPL-4) Proceedings of the Fourth International Workshop on Database Programming Languages - Object Models and Languages*, Manhattan, New York City, USA, 30 August - 1 September 1993 ISBN: 3-540-19853-9 / Springer-Verlag Workshops in Computing Series Feb. 94.

Invited Book Chapters

1. Distributed Algorithms to Find Similar Time Series "Oleksandra Levchenko, Boyan Kolev, Djamel-Edine Yagoubi, Dennis Shasha, Themis Palpanas, Patrick Valduriez, Reza Akbarinia, Florent Masegla" in *Machine Learning and Knowledge Discovery in Databases* Lecture Notes in Computer Science, volume 11908. April 30, 2020.
2. "gLabTrie: A Data Structure for Motif Discovery with Constraints" Misael Mongiov, Giovanni Micale, Alfredo Ferro, Rosalba Giugno, Alfredo Pulvirenti, Dennis Shasha in *Graph Data Management* 71-95 Publisher: Springer 2018
3. Short chapters in the Encyclopedia of Database Systems "Tuning Concurrency Control", "Schema Tuning", "Physical Layer Tuning", "Index Tuning", "Administration Wizards", "Performance Monitoring Tools", "Benchmark Frameworks", "Data Generation", "Database Benchmarks", "Tuning Concurrency Control", "Transaction Chopping". Philippe Bonnet and Dennis Shasha
4. "Fast Methods for Statistical Arbitrage" Eleftherios Soulas and Dennis Shasha pp. 473-497 in *Data Stream Management: Processing High-Speed Data Streams* eds: Minos Garofalakis, Johannes Gehrke, Rajeev Rastogi Springer, Jul 11, 2016, 576 pages ISBN 978-3-540-28608-0
5. gLabTrie: a data structure for motif discovery with constraints Misael Mongiovi, Giovanni Micale, Alfredo Ferro, Rosalba Giugno, Alfredo Pulvirenti and Dennis Shasha in *Advances in Graph Data Management*, Springer Verlag, eds: Fletcher, Hidders, Larriba-Pey 2016
6. "Visualizing the Outcomes of N Experiments on M Entities: an aid to insight" Chris Poultney and Dennis Shasha in *Plant Systems Biology* Gloria Coruzzi and Rodrigo Gutierrez (eds) Blackwell Publishing Ltd 12 pages.
7. Cinzia Di Pietro, Alfredo Ferro, Giuseppe Pigola, Alfredo Pulvirenti, Michele Purrello, Marco Ragusa, Dennis Shasha AntiClustAl: Multiple sequence alignment by antipole clustering *Data Mining in Bioinformatics 2005*: pp. 43-57.
8. "Tuning Database Design for High Performance" Dennis Shasha and Philippe Bonnet, in *CRC Handbook of Computer Science and Engineering* 2004 Allen Tucker (ed.) in press
9. "Scheduling Overloaded Real-Time Systems with Competitive/Worst Case Guarantees" Gilad Koren and Dennis Shasha in *Handbook of Scheduling: Algorithms, Models, and Performance Analysis* Joseph Y-T Leung, Chapman Hall/CRC, publishers.

10. “Approximate Tree Pattern Matching” Dennis Shasha and Kaizhong Zhang, in *Pattern Matching in Strings, Trees, and Arrays* A. Apostolico and Z. Galil (eds.) pp. 341-371. Oxford University Press, 1997. ISBN 0-19-511367-5
11. “Tuning Database Design for High Performance” Dennis Shasha, in *CRC Handbook of Computer Science and Engineering 1997*, ISBN 0-8493-2909-4 Allen Tucker (ed.) pp 995 - 1011

Web Publications

1. “FinTime, a financial time series benchmark,” <http://cs.nyu.edu/cs/faculty/shasha/fintime.html> Kaiippallimalil J. Jacob and Dennis Shasha April, 1999.

Invited Talks

1. September 30, 2021 SafePredict and Friends Stanford Machine Learning Systems Seminar (MLSys) <https://www.youtube.com/watch?v=W2q-8MiW8no>
2. December 5, 2020 SafePredict: Reducing Errors by Refusing to Predict (Occasionally) IIT Delhi, KnowDis Machine Learning Day conference
3. November 12, 2019 The Puzzling Tango Between Life Sciences and Algorithms Second day keynote address, AI for Health conference, New York City
4. May 27, 2019 Bounce Blockchain INRIA Montpellier.
5. August 26, 2018 SafePredict: Reducing Errors by Refusing to Predict (Occasionally) 33rd BRAZILIAN SYMPOSIUM ON DATABASES (SBBD 2018)
6. Feb 6, 2018 SafePredict: Reducing Errors by Refusing to Predict (Occasionally) first speaker in the seminar series on Machine Learning and Data Science Icahn Institute for Genomics and Multiscale Biology
7. January 22, 2018 The Changing Nature of Invention in Computer Science. University of Nicosia, Cyprus.
8. June 30, 2017 Version Climber: a reproducibility-based approach for upgrading complex software INESC, Lisbon, Portugal
9. June 1, 2017 Reducing Errors by Refusing to Guess (Occasionally) INRIA, Montpellier France
10. April 7, 2017 Reducing Errors by Refusing to Guess (Occasionally) University of California at Los Angeles

11. February 9, 2017 Reducing Errors by Refusing to Guess (Occasionally) INGEBI-CONICET Buenos Aires (1428) Argentina
12. January 23, 2017 Reducing Errors by Refusing to Guess (Occasionally) Technion, Israel
13. January 23, 2017 The Changing Nature of Invention in Computer Science Technion, Israel
14. January 22, 2017 Reducing Errors by Refusing to Guess (Occasionally) University of Tel Aviv, Israel
15. October 19, 2016 Banquet Talk – logical puzzles with a deck of cards ICLP16 – 32nd International Conference on Logic Programming
16. July 14, 2016 “Fast Analytical Methods for Finding Significant Colored Graph Motifs” 2nd International ScaDS Summer School on Big Data Leipzig Germany
17. June 8, 2016 “Fast data analytics for time series and other ordered data” BDA MDD 2016 (Masses de Donnees Distribuees) Urrugne, France.
18. October 12, 2015 Liquid Version Climber: a reproducibility-based approach for upgrading complex software ATT Labs, New York City.
19. September 1 and 2, 2015: Graph Motifs: query and discovery EDBT Summer School 2015, Palamos, Spain.
20. May 19, 2015: Computational Reproducibility: why needed, first tools, open problems DigiCosme, Ensta Tech, Paris, France
21. April 2, 2015: The Changing Nature of Invention in Computer Science. INRIA Sophia Antipolis
22. April 1, 2015: Network Inference from CRISPR-like Experiments INRIA Sophia Antipolis
23. March 6, 2015: Statistics is Easy, INRIA Montpellier.
24. September 2014: The Changing Nature of Invention in Computer Science. [ja href=https://www.youtube.com/watch?list=PLn0nrSd4xjjZa4KDqFBCMonk52CItWqyU&v=8dkZCj/a_i](https://www.youtube.com/watch?list=PLn0nrSd4xjjZa4KDqFBCMonk52CItWqyU&v=8dkZCj/a_i) ACM Webinar. [i/a_i](#)
25. “Fast Methods for Finding Patterns in Time Series” Microsoft Research, New York July 15, 2014.
26. “Statistics is Easy” Microsoft Research, New York July 15, 2014.
27. “The Changing Nature of Invention in Computer Science” Bloomberg, New York February 26, 2014

28. "The Changing Nature of Invention in Computer Science" Masdar research institute, Abu Dhabi, January 14, 2014
29. "Fast Methods for Finding Patterns in Time Series" Big Data in Finance May 3, 2013
30. "Stored Clocked DNA Computing" University of Southern California March 13, 2013
31. "Stored Clocked DNA Computing" INRIA Sophia-Antipolis January 28, 2013
32. "Changing Nature of Invention in Computer Science" UC Santa Barbara April 9, 2012
33. "Stored Clocked DNA Computing" IBM Research September 28, 2011
34. "Stored Clocked DNA Computing" Carnegie Mellon University September 16, 2011
35. "Natural Computing" ATT Tech Talk, April 2011 <http://techchannel.att.com/>
36. "Digital Rights Management" ATT Tech Talk, April 2011 <http://techchannel.att.com/>
37. "Data Quality is Bad? Deal With It" DIMACS/CCICADA Workshop on Data Quality Metrics February 4, 2011.
38. "Linguistic Explorer: a tool for cross-linguistic research" Middlebury College, October 22, 2010
39. "Secure Data Outsourcing" BBI Colloquium in Berlin, Technische Universität, May 29, 2009.
40. "Secure Data Outsourcing" Telcordia, January 29, 2009.
41. "DNA Hash Pooling and its Applications" Program in Integrative Information, Computer and Application Sciences. Princeton University. April 14, 2008.
42. "Dealing with Scale in Visualization and Machine Learning" Bringing Plant and Computing Scientists Together to Solve Plant Biology's Grand Challenges 2008. Cold Spring Harbor Lab. April 7, 2008.
43. "Biocomputational Puzzles: data, algorithms, and visualizations" Extending Database Technology, 2008, p. 2. Nantes, France. March 27, 2008.
44. "StrangerDB: database management with an untrusted server" Université Pierre et Marie Curie, Paris. May 23, 2007.

45. “The Nature of Invention in Computer Science: a collaborative reflection based on the book *Out of their Minds*” Humboldt University, Berlin. May 7, 2007.
46. “Upstart Puzzles” Distinguished lecture series. Max Planck Institut fuer Informatik, Saarbruecken, Germany April 25, 2007.
47. “The Nature of Invention in Computer Science: a collaborative reflection based on the book *Out of their Minds*” American University of Paris, France, April 23, 2007.
48. “Biocomputational Puzzles” University of Montpellier, France February 1, 2007.
49. “StrangerDB: database management with an untrusted server” Conference on Management of Data (COMAD) keynote, Delhi, India, December 15, 2006
50. “The Nature of Invention in Computer Science: a collaborative reflection based on the book *Out of their Minds*” French Ministry of Research, Paris, France, November 29, 2006.
51. “Biocomputational Puzzles” Ecole Polytechnique de Lausanne, Switzerland, November 11, 2006.
52. “Fast Calculations of Simple Primitives in Time Series” Universite Marne la Vallee, France, November 7, 2006.
53. “Upstart Puzzles” American University of Paris, France, November 7, 2006.
54. “StrangerDB: database management with an untrusted server” Utrecht, the Netherlands. September 18, 2006
55. “The Nature of Invention in Computer Science: a collaborative reflection based on the book *Out of their Minds*” Utrecht, the Netherlands. September 18, 2006
56. “StrangerDB: database management with an untrusted server” DB/IR conference. Rutgers New Jersey, April 29 2006
57. “Biocomputational Puzzles” IBM corporation, September 30, 2005.
58. “Biocomputational Puzzles” Xerox corporation, July 28, 2005, distinguished lecture series.
59. “Incremental Methods for Simple Problems in Time Series: algorithms and experiments” Xiaojian Zhao, Xin Zhang, Tyler Neylon, and Dennis Shasha International Database Engineering and Applications Symposium, July 2005, Montreal Canada July 25, 2005.

60. "Privacy-preserving Piracy Prevention", Fifth Haifa Workshop on Interdisciplinary Applications of Graph Theory, Combinatorics and Algorithms, May 16, 2005
61. "Biocomputational Puzzles" Sloan Kettering (Chris Sander group) May 12, 2005
62. "Privacy-preserving Piracy prevention" Massachusetts Institute of Technology March 14, 2005
63. "Upstart Puzzles" University of Waterloo, Canada. January 18, 2005
64. "Privacy-preserving Piracy prevention" University of Waterloo, Canada. January 17, 2005
65. "The Graph of Life" American Museum of Natural History, New York, USA January 14, 2005
66. "Upstart Puzzles" City University of New York May 13, 2004.
67. "Upstart Puzzles" Distinguished Speaker Seminar Series - Dennis Shasha New Jersey Institute of Technology. February 25, 2004.
68. "Upstart Puzzles" Canadian Mathematical Society, June 15, 2003. Plenary speaker.
69. "Tools for Time Course Data", New York Academy of Sciences, May 21, 2003
70. "Aquery: a database system for order" Stanford University, January 10, 2003
71. "Building a Database for Order" New England Database Symposium, Brandeis, April 12, 2002.
72. "Mathematical Insight, Science, and Finance" Penn State, February 28, 2002
73. "Graphs, Puzzles, and Graph Generators" DIMACS, November 16, 2001.
74. "Activist Data Mining (as applied to Carbon:Nitrogen sensing in plants)" DIMACS Summer School on New Frontiers in Data Mining August 17, 2001. Rutgers New Jersey.
75. "Figuring Out Transcription Factor Networks" IBM Yorktown Research, April 26, 2000. Laxmi Parida, host.
76. "Approximate Graph Matching: approaches and a tool" University of Pennsylvania. April 13, 2000. Peter Buneman, host.

77. "Figuring Out Transcription Factor Networks" Rockefeller University, April 4, 2000. Eric Siggia, host.
78. 5 talks at the University of Catania June 17 and 18, 1999:
 - i) Data Mining and Tree Matching
 - ii) An attribute management system
 - iii) Time Series in Finance.
 - iv) Advanced Database Tuning and Configuration
 - v) Upstart Puzzles
79. Time Series in Finance
Dennis Shasha
ENST Bretagne, France
invited by: Philippe Picouet
80. Time Series in Finance
Dennis Shasha Summer School in Extending Database Technology, May 20, 1999, La Baule, France.
81. An Attribute Management System
Dennis Shasha Humboldt University, Berlin, Germany April 30, 1999.
(invited by Professor Oliver Guenther)
82. A System for Exploration Management
Dennis Shasha University of Aachen, April 8, 1999. (invited by Professor Matthias Jarke)
83. A System for Exploration Management
Dennis Shasha University of Rome, La Sapienza March 4, 1999. (invited by Professor Maurizio Lenzerini)
84. A System for Exploration Management
Dennis Shasha ETH, Zurich Switzerland February 22, 1999. (invited by Professor Hans-Joerg Schek)
85. A System for Exploration Management
Dennis Shasha University of Saarbruecken, Germany February 19, 1999.
(invited by Professor Gerhard Weikum)
86. A System for Exploration Management
Dennis Shasha University of Muenster, Germany December 9, 1998. (invited by Professor Gottfried Vossen)
87. "Time Series in Finance: the array database approach" Dennis Shasha VLDB Conference, August, 1998.

88. New York's Top Software Researchers
Top Researchers from NYU
Wednesday, March 11, 1998
153 E. 53rd St., NY, NY "Thinksheet: a Spreadsheet for Complex Thinking" Dennis Shasha sponsored by the New York Software Industry Association.
89. "Free Parallel Data Mining" ACM Sigmod 1998, Bin Li and Dennis Shasha.
90. "Lessons from Wall Street: case studies in database tuning, configuration, and replication" Dennis Shasha ACM Sigmod 1997, pp. 498-501.
91. "Structural Matching and Discovery in Document Databases" ACM SIGMOD 1997, demonstration. J. T. L. Wang, Dennis Shasha, G. J. S. Chang, L. Relihan and K. Zhang, *Proceedings of the ACM SIGMOD International Conference on Management of Data*, Tucson, Arizona, May 1997, pp. 560-563.
92. "Finding Patterns in Scientific Databases" Dennis Shasha National Science Foundation, Arlington, Virginia. April, 1997.
93. "High Volume Transaction Processing
Without Concurrency Control, Two Phase Commit, SQL or C++" Dennis Shasha University of Texas at Austin, February 1997.
94. "High Volume Transaction Processing
Without Concurrency Control, Two Phase Commit, SQL or C++" Dennis Shasha Bell Communications Research September 19, 1996
95. "Thinksheet: a tool for tailoring complex documents" ACM SIGMOD 1996, June, 1996, demonstration (Peter Piatko, Roman Yangarber, Daoi Lin, Dennis Shasha)
96. "Hierarchically Split Cube Forests for Decision Support: Description and Tuned Design" Dennis Shasha February 21, 1996, Northeastern University
97. "Thinksheet: a system to help readers and writers of complex documents" Dennis Shasha Bell Communications Research, Morristown New Jersey, October 19, 1995.
98. "Thinksheet: a system to help readers and writers of complex documents" Dennis Shasha Inria, Rocquencourt, France. July 15, 1995.
99. "Pattern Matching and Pattern Discovery in Scientific, Program, and Document Databases" T-L. Wang, K. Zhang and Dennis Shasha at ACM Sigmod 95.

100. "Database Tuning: principles and surprises" Dennis Shasha New York Academy of Sciences (Computer Science section), October, 1994.
101. "Upstart Puzzles" Dennis Shasha New York Academy of Sciences (math section), March, 1993.
102. "Database Tuning: a principled approach" Dennis Shasha ACM SIGMOD conference, June, 1992.
103. "Database Tuning: a principled approach" Dennis Shasha Very Large Database Systems Conference, June, 1992.
104. "D-Over: an optimal algorithm for overloaded real-time systems" Dennis Shasha Institut Nationale de Recherche en Informatique et en Automatique, France, January, 1992.
105. "D-Over: an optimal algorithm for overloaded real-time systems" Dennis Shasha University of Paris, 6, April, 1992.
106. "Promises Versus Assumptions in Database Fault Tolerance," Dennis Shasha and J. Turek *VIIemes Journees Bases de Donnees Avancees* 25-27 Septembre 1991, pp. 349-366.
107. "PLinda: Linda + Transactions + Query Processing + Fault Tolerance" Dennis Shasha ETH, Zurich (December 3, 1991) and Aachen, West Germany (October 7, 1991)
108. "Wait-Free Serializability and Recoverability" Dennis Shasha IBM T. J. Watson Research Laboratories December 19, 1990
109. "Towards a Theory of Hypermedia" Dennis Shasha IBM T. J. Watson Research Laboratories February 16, 1990
110. "A Toolkit for Finding the Editing Distance between Trees" Dennis Shasha IBM T. J. Watson Research Laboratories February 16, 1990

Service

Administrative Positions Within NYU

Director of Graduate Studies in Computer Science, 1999-2005

Director of the Masters in Information Systems, 1997-1998

Editorship

1. Co-editor-in-chief of *Information Systems*, a journal published by Elsevier North-Holland. (with Prof. Gottfried Vossen of the University of Muenster).
2. Series editor *Systems Biology* for Oxford University Press.

Reviewing Service

1. Sigmod 2021, best paper award committee chair
2. EDBT 2021, reviewer for industrial track
3. Transactions on Knowledge Discovery from Data, reviewer May 2019
4. Member of best paper awards committee, ACM SIGMOD 2019.
5. Springer Nature BMC Bioinformatics Reviewer, April 2019
6. Chair of best paper awards committee, 35th IEEE International Conference on Data Engineering (ICDE 2019)
7. Austrian Science Fund July 2018
8. ICDE (IEEE International Conference on Data Engineering) 2019, best paper award committee.
9. US National Science Foundation Large Panel, November 2017
10. Reviewer for Data Analysis and Machine Intelligence, November 2017
- 11.
12. Reviewer for Habilitation Diriger des Recherches of the Universit de Montpellier for Dr. Dino Ienco, July, 2016.
13. International Conference on Scientific and Statistical Database Management, Program Committee member 2016.
14. Vienna Science and Technology Fund, reviewer May 2015
15. Bases de Donnees Avancees 2015, program committee member.
16. ACM Sigmod 2015, program committee member.
17. ACM Sigmod 2014, program committee member.
18. Extended Database Technology (EDBT) 2014 Program committee member.
19. Proceedings of the National Academy of Science, 2013
20. NSF Large Project Proposals, panel 2012
21. KDD 2011 (Knowledge and Data Discovery), program committee
22. Transactions on Knowledge Discovery in Data, 2010
23. VLDB program committee, 2010

24. NSF Large Project Proposals, panel 2010
25. Combinatorial Pattern Recognition, 2010, program committee
26. NSF reviewer, 2009
27. ACM SIGMOD 2008, program chair
28. Genome Research, reviewer
29. VLDB 2007, tutorial co-chair
30. ACM SIGMOD 2007, program committee.
31. Second International Workshop on Self-Managing Database Systems (2007), program committee.
32. ICDE 2007 (23rd International Conference on Data Engineering), program committee.
33. NSF Panel May 10-12 2006 for Arabidopsis 2010 grants (plant biology).
34. KDD 2006 (Knowledge and Data Discovery), program committee
35. ICDM 2005 (International Conference on Data Mining), program committee member
36. VLDB 2005 program committee.
37. VLDB 2004 (Very Large Databases), program committee member.
38. NASA Intelligent Systems reviewer, May 2004.
39. National Science Foundation panel, medium ITR grants. May 19,20 2003.
40. Workshop on Bioinformatics 2003, program committee member.
41. Best paper award committee, 2002 ACM SIGKDD 2002 (Knowledge Discovery and Data Mining)
42. member of program committee, Extending Database Technology, 2002.
43. member of program committee, Scientific Data Management, 2002.
44. member of program committee, KDD 2001, (Knowledge and Data Discovery)
45. member of program committee, COMAD 2000
46. member of program committee, SSDBM2000 (Scientific and Statistical Database Management)

47. member of program committee, VLDB 2000 (Very Large Database Conference)
48. tutorial chair, ACM SIGMOD 99.
49. member of program committee, BDA'98 (French Database Conference).
50. member of program committee, 10th Conference on Scientific and Statistical databases, 1998
51. co-chair of the industrial committee, Very Large Data Base Conference, 1998.
52. member of program committee, Combinatorial Pattern Recognition, 1996.
53. member of program committee, ACM Sigmod 1996.
54. member of program committee, Very Large Data Base Conference 1995.
55. member of program committee, IEEE Real-time Systems Symposium, 1995
56. panel chair, ACM SIGMOD 1995.
57. member of program committee, ACM Principles of Database Systems, 1994.
58. member of program committee, EDBT (extending database technology conference) 1994.
59. Co-chair of program committee, Database Programming Language Workshop, August, 1993.
60. Member of program committee, ACM Sigmod Conference program committee, May, 1993.
61. Member of program committee, 2nd International Symposium on Databases in Parallel and Distributed Systems 1990
62. Member of program committee, Very Large Data Base Conference 1991.

Journal Reviews:

1. IEEE Computational Biology and Bioinformatics 2008.
2. Genome Research, 2003
3. Plant Cell 2003.
4. ACM Trans on Computer Systems, 2003.

5. ACM Crossroads, 2002, in interdisciplinary computer science.
6. National Science Foundation Panel: 1993.
7. National Science Foundation Panel: 1995.
8. Europhysics Letters
9. Articles reviewed for Journal of the ACM,
ACM Transactions on Database Systems,
ACM Transactions on Office Information Systems,
IEEE Journal on Selected Areas in Communications,
Real Time Systems Journal,
IEEE Computer,
IEEE Transactions on Software Engineering,
IEEE Transactions on Computer,
IEEE Transactions on Knowledge and Data Engineering (most recent
2009)
ACM Computing Surveys
Siam Journal on Computing
Acta Informatica,
Journal of Parallel and Distributed Computing,
Journal of Man-Machine Studies,
Letters on Programming Languages and Systems,
Journal of Algorithms,
VLDB Journal,
Algorithmica.
10. Proposals reviewed for National Science Foundation.
11. Proposal reviewed for the French minister of research (1992) and Centre
National de Recherche Scientifique (1993).
12. Proposal reviewed for Australian Research Council. (1994).
13. Proposals reviewed for the Israel Science Foundation (1998).
14. Books reviewed for Academic Press, Addison Wesley, Prentice Hall, Mor-
gan Kaufmann, Birkhauser.
15. External appraiser for Univ. of Toronto and Rutgers.

Research Funding

1. Conceptual Data Integration for the Virtual Plant PI: Gloria Coruzzi
(FAS-Bio)/Dennis Shasha 6/1/2005 - 5/31/2008 Award number DBI-
0445666

2. Genomics of Comparative Seed Evolution Gloria Coruzzi/Dennis Shasha 10/1/2004 - 9/30/2009 Award Number: DBI-0421604
3. High-throughput functional analysis of differentiation network genes Kenneth Birnbaum (FAS-Bio)/Dennis Shasha 9/1/05 - 8/31/09 Award Number: DBI-0519984
4. Primitives for Online Time Series Analysis Dennis Shasha, PI IIS-0414763
5. Arabidopsis 2010: Genomics Approaches to Finding Transcriptional Networks Philip Benfey, PI MCB-0209754
6. Cold Spring Harbor/NYU/NYBG Genomics Consortium 2001-2004. Support for one graduate student.
7. N2010: Nitrogen Networks in Plants National Science Foundation : 2001-2005. Collaborators: Dan Bush, Nigel Crawford and Gloria Coruzzi, UIUC, UCSD and NYU. NSF Award Number: 0115586
8. *ASES: an approximate search engine for structure* 2000-2003. National Science Foundation. Award number: 9988345. Approximately, \$282,440 over three years.
9. Grant: 1F32 GM20716-01 *Research Fellowship Award, Department of Health and Human Services, National Institutes of Health. For project entitled: "Using Computers to Analyze Transcription Factor Networks"* Duration: 3 years Activation date: July 1, 2000. Support for Dr. Ken Birnbaum in our joint project. (\$100,848 over three years)
10. IRI 97-11374, Isolation Testing, 3-yr grant from 9/1/97 to 8/31/00. (www.cs.umb.edu/isotest) PI: Pat and Betty O'Neil 1/2 month per year consultant.
11. *"Pattern Discovery in Combinatorial Databases: Algorithms, Applications, and Software for the Scientific Community.*, 1996-1999. IRI-9531554, approximately \$135,000 per year.
12. *Discovering Motifs in Scientific Databases*, principal investigator, 1993-1995, National Science Foundation IRI-9224601.
13. *The Design and Implementation of Griffin*, Co-principal investigator (with R. Dewar, B. Goldberg, M. Harrison, and E. Schonberg), 1989–1993, Office of Naval Research.
14. *Robust Parallel Computation*, Co-principal investigator (with Z. Kedem), 1991-1992, National Science Foundation.
15. *Performance of Concurrent Data Structure Algorithms*, Principal Investigator, 1989-1991, National Science Foundation.

16. *Research on Semantically-based Concurrency Control for Data Structures*, Principal Investigator, 1985-1988, National Science Foundation.

Who's Who Entries

1. International Authors and Writers Who's Who, fifteenth edition.