Stanley B. Zdonik
Curriculum Vitae
January, 2018

1. Personal

Professor
Department of Computer Science
Brown University
Providence, RI 02912

2. Home Address

139 Phillips Brooks Road
Westwood, MA 02090

3. Education

Bachelor of Science, MIT, Electrical Engineering (Computer Science), June 1970
Bachelor of Science, MIT, Industrial Management, June 1970
M.S., Electrical Engineering and Computer Science, June 1980
Electrical Engineer, MIT, Electrical Engineering and Computer Science, June 1980
Ph.D., MIT, Electrical Engineering and Computer Science, March 1983

4. Professional Appointments

1968-1972	QEI, Inc., Senior Systems Programmer
1972-1976	Bolt Beranek and Newman, Inc., Senior Systems Analyst
1976-1983	MIT, Laboratory for Computer Science, Database Systems/Office Automation Group
1979-1981	Arthur D. Little, Inc., Database Systems Group
1983-1989	Assistant Professor of Computer Science, Brown University
1990-1991	Research Affiliate, MIT Laboratory for Computer Science
1989-1995	Associate Professor of Computer Science, Brown University
1995- present	Professor of Computer Science, Brown University
2003- 2006	(co-founder) Chief Architect, StreamBase Systems, Inc.
2005-2007	(co-founder) Chief Architect, Vertica Systems, Inc.
2006-2007	Visiting Research Scientist, MIT Laboratory for Computer Science

5. Honors

- Office of Naval Research - Young Investigator Award (1986)

- IBM Associate Professor of Computer Science (1993)

- Best Demo Award, ACM Conference on the Management of Data (SIGMOD), Baltimore, MD, June, 2005, *Distributed Operation in the Borealis Stream Processing Engine* .

- ACM Fellow (2006)

- 10 Year Test of Time Award, VLDB 2015, for "Cstore – A Column-oriented DBMS", (with M. Stonebraker, M. Cherniack, S. Madden, E. O'Neil, P. O'Neil, X. Chen, E. Lau, A. Lin, D. Abadi, M. Ferreira, A. Rasin, N. Tran, A. Batkin)

6. Board Memberships

1988 - 1994	Board of Technical Advisors, Object Design, Inc., Burlington, MA
1994 - 1999	Advisory Board for Institute for Medical Computing, Brown University
2004 – 2010	Member of the Board of Trustees of the VLDB (Very Large Databases) Endowment
2003 – 2010	Technical Advisory Board, Streambase Ssytems, Lexington, MA
2005 – 2010	Technical Advisory Board, Vertica Systems, Billerica, MA
2009--2011	Technical Advisory Board, Attivio, Inc., Newton, MA
2011 – 2016	Board of Directors, Finals Club, Cambridge, MA

7. Consultancies

1979-1981	Arthur D. Little, Inc., Cambridge, MA
1980-1981	GTE Laboratories, Waltham, MA
1980-1981	Raytheon Data Systems, Dedham, MA
1981	MIT, Industrial Liaison Program
1981-1982	Interactive Data Corporation, Waltham, MA
1983	University of North Carolina, Chapel Hill, NC
1983	Microelectronics Center of North Carolina, Research Triangle Park, NC
1983-1985	Mosaic Technologies, Billerica, MA
1985	Smith-Barney, New York, NY
1985	Goodyear Tire and Rubber Company, Akron, OH
1985	Teradyne, Inc., Boston, MA
1986-1987	Ontologic Inc., Billerica, MA
1986-	Digital Equipment Corporation, Marlboro, MA
1987-1989	Computer Corporation of America, Cambridge, MA
1989	Salomon Brothers, New York, NY
1989-1991	Xerox Advanced Information Technologies, Cambridge, MA
1990	Venerable, Baetcher, and Howard, Baltimore, MD
1990	Prime/Computervision, Inc., Bedford, MA
1991	BLOC Development Corp., Boca Raton, FL
1991	GTE, Waltham, MA
1992	Nutter, McClennon, and Fish, Boston, MA
1993	Electronic Book Technologies, Providence, RI
1993	Matsushita Information Technology Lab, Princeton, NJ
1994	Aquidneck Systems International, North Kingston, RI
1995	NASA CESDIS, Greenbelt, MD

```
1997 - 1998    C.J. Fox, Company, Providence, RI
1997 - 2001    GTE Laboratories, Waltham, MA
1999 - 2005    GeoCenters, Inc., Newton, MA (for US Army Institute for Environmental Medicine
2000 - 2001    Kirkland and Ellis, Chicago, IL
2000 – 2001    Weil, Gotsal, and Manges, San Francisco, CA
2003 – 2009    StreamBase Systems, Inc, Lexington, MA
2005 – 2009    Vertica Systems, Andover, MA
2009 - 2010    Choate, Hall, & Stewart, Boston, MA
2009 - 2010    Kodak, Rochester, NY
2009- 2013     AvePoint, Inc., Jersey City, NJ
2012           Fish & Richardson, Boston, MA
2012           Kirkland & Ellis, Chicago, IL
2013 - present Tamr, Inc, Cambridge, MA
```

8. Research Areas

Advanced query languages and optimization
Stream data management
Main-memory OLTP database systems
Prediction on time-series
Automatic database design

9. Patents

. A Rasin, S Zdonik, O Trajman, and S Lawande. Automatic vertical-database design, February 8 2008. WO
   Patent.

10. Publications

Publications in Refereed Journals and Conferences

1. ''The Implementation of the PROPHET System'', in *AFIPS Conference Proceedings* **43** (1974).

2. ''MISSION: A Low-cost Data Management System for the Biomedical Community'', in *Proceedings of the First Annual Symposium on Computer Applications in Medical Care*, Washington, DC (October 1977).

3. ''Knowledge-based Query Processing'' (with Michael Hammer), in *Proceedings of the International Conference on Very Large Databases (VLDB)*, Montreal, CA (October 1980).

4. ''Object Management System Concepts'', in *Proceedings of the Conference on Office Information Systems*, Toronto, CA (June 1984).

5. ''An Object Management System for Office Applications'', in *Languages for Automation*, Plenum Publishing (1985).

6. ''MBE: A Decision Support System for Management by Exception'' (with D. Green), in *Proceedings of the Hawaii International Conference on Systems Science*, HI (January 1985).

7. ''ISIS: Interface for a Semantic Information System''(with K. Goldman, S. Goldman, and P. Kanellakis), in *Proceedings of the ACM-International Conference on Management of Data (SIGMOD)*, Austin, TX (May l985).

8. ''A Database Approach to Languages, Libraries and Environments'', in *Proceedings of the Workshop on Software Environments for Programming in the Large*, Harwichport, MA (June l985). (Also in Papers for the Appin Workshop on Persistence and Data Types, University of Glasgow, Department of Computer Science.)

9. ''Object Management Systems for Design Applications'', *Special Issue of IEEE Database Engineering* (December 1985).

10. ''Language and Methodology for Object-Oriented Database Environments'' (with P. Wegner), in *Proceedings of the Hawaii International Conference on System Science*, (January 1986).

11. ''A Knowledge-Based Approach to Query Optimization'' (with C. Malley), in *Proceedings of the First International Conference on Expert Systems* (April 1986).

12. ''Version Management in an Object-Oriented Database'', in *Proceedings of the International Workshop on Advanced Programming Environments for Programming in the Large,* Trondheim, Norway, Springer-Verlag, (June 1986).

13. ''A Visual Interface to Version Management in Semantic Database Model'' (with J. Davison), *ACM Transactions on Office Information Systems* (July 1986).

14. ''An Object Server for an Object-Oriented Database System'' (with A.H. Skarra and S.P. Reiss), in *Proceedings of the International Workshop on Object-Oriented Database Systems,* Pacific Grove, CA (September 1986).

15. ''Maintaining Consistency in a Database with Changing Types,'' *Proceedings IBM Object-Oriented Programming Workshop, Sigplan Notices* (October 1986).

16. ''The Management of Changing Types in an Object-Oriented Database,'' *Proceedings of OOPSLA Conference, Sigplan Notices* (November 1986).

17. ''Why Properties are Objects or Some Problems with is-a,'' in *Proceedings of the Fall Joint Computer Conference*, Dallas, TX (November 1986).

18. ''Type Evolution in an Object-Oriented Database System'' (with A. Skarra), in *Research Directions in Object-Oriented Programming,* Addison-Wesley (1987).

19. ''The Implementation of a Shared, Clustered Memory System for an Object-Oriented Database System,''(with M. Hornick) *ACM Transactions on Office Information Systems* (April 1987).

20. ''Can Objects Change Type? Can Type Objects Change?'', *Proceedings of the Workshop on Database Programming Languages,''* (September 1987).

21. ''Object Oriented Type Evolution,'' in *Proceedings of the Workshop on Database Programming Languages*, ACM Press, Addison-Wesley, 1987.

22. ''Intermedia: A Case Study of the Differences Between Relational and Object-Oriented Databases,'' (with K. Smith) in *Proceedings of the Conference on Object-Oriented Systems, Languages, and Applications* (October 1987).

23. ''Issues in the Design of Object-Oriented Database Programming Languages,'' (with T. Bloom) in *Proceedings of the Conference on Object-Oriented Systems, Languages, and Applications,* (October 1987).

24. ''FUGUE: A Model for Engineering Information Systems and other Baroque Applications,''(with S. Heiler) in *Proceedings of the Jerusalem Conference on Database Systems* (June 1988).

25. ''Type Similarity, Inheritance, and Evolution,'' (with P. Wegner) in *Proceddings of the Second European Conference on Object-Oriented Programming (ECOOP),* Oslo, Norway (August 1988).

26. ''Concurrency Control in Object-Oriented Databases,'' (with A. Skarra) *in Object-Oriented Concepts, Applications, and Databases*, ed. Won Kim and Fred Lochovsky, Addison-Wesley (1988).

27. ''Views, Data Abstractions, and Inheritance in the FUGUE Data Model,'' (with S. Heiler), in *Advances in Object-Oriented Database Systems*, Lecture Notes in Computer Science, Vol. 334, K.R. Dittrich, ed., Springer Verlag (1988).

28. ''Data Abstraction and Query Optimization,'' in *Advances in Object-Oriented Database Systems,* Lecture Notes in Computer Science, Vol. 334, K.R. Dittrich, ed., Springer Verlag (1988).

29. ''Query Optimization in Object-Oriented Database Systems," in '*Proceedings of the Hawaii Conference on Systems Science,* (January 1989).

30. ''Transaction Groups: A Model for Controlling Cooperative Transactions," *Proceedings of the Third International Workshop on Persistent Object Systems*, Queensland, Australia (January 1989).

31. ''Fundamentals of Object-Oriented Databases'' (with D. Maier), in *Readings in OODBs*, S. Zdonik and D. Maier (Editors), Morgan Kaufmann (1989).

32. ''An Object-Oriented Query Algebra'' (with G. Shaw), in *Proceedings of the Second International Workshop on Database Programming Languages*, Gleneden Beach, OR (June 1989).

33. Stanley B. Zdonik, Toby Bloom, David W. Stemple, Jeannette M. Wing: Panel on Transactions in Object-Oriented Systems. OOPSLA 1989: 473-476

34. ''Object-Oriented Queries: Equivalence and Optimization'' (with G. Shaw), in *Proceedings of the First International Conference on Deductive and Object-Oriented Databases (DOOD)*, Kyoto, Japan (December 1989).

35. ''The Object-0riented Database System Manifesto'' (with Atkinson, Bancilhon, Dewitt, Dittrich and Maier), in *Proceedings of the First International Conference on Deductive and Object-Oriented Databases (DOOD)*, Kyoto, Japan (December 1989) .

36. ''A Query Algebra for Object-Oriented Databases'' (with G. Shaw), in *Proceedings of the Sixth International Conference on Data Engineering (ICDE)*, Los Angeles, CA (February 1990).

37. ''Object Views: Extending the Vision'' (with S. Heiler), in *Proceedings of the Sixth International Conference on Data Engineering (ICDE)*, Los Angeles, CA, (February 1990).

38. ''Cooperative Transaction Hierarchies: A Transaction Model to Support Design Applications'' (with M. Nodine), *Proceedings of the International Conference on Very Large Databases (VLDB)*, Brisbane, Australia, (August 1990).

39. "Heterogeneous information systems: understanding integration", (with S. Heiler and M. Siegel), in Proceedings of the First International Workshop on Interoperability in Multidatabase Systems, Kyoto, Japan, April, 1991.

40. ''FIDO: A Data Cache That Learns to Fetch'' (with M. Palmer),in *Proceedings of the International Conference on Very Large Databases (VLDB)*, Barcelona, Spain, (August 1991).

41. ''ENCORE: An Object-Oriented Approach to Database Modelling and Querying,'' (with G. Mitchell), *IEEE Database Engineering Bulletin*, Vol. 14, No. 12 (June 1991).

42. ''A Cooperative Transaction Model for Design Databases,'' (with M. Nodine and S. Ramaswamy) in *Transaction Models for Advanced Database Applications*, A. Elmagarmid (editor), Morgan Kaufmann Publishers, Inc. (1991).

43. ''A Flexible Framework for Transaction Management in Engineering Environments,'' (with S. Heiler, S. Haradhvala, B. Blaustein, A. Rosenthal) in *Transaction Models for Advanced Database Applications*, A. Elmagarmid (editor), Morgan Kaufmann Publishers, Inc. (1991).

44. ''An Architecture for Query Processing in Persistent Object Stores,'' (with U. Dayal and G. Mitchell), in *Proceedings of the 25th Hawaii International Conference on System Sciences*, (January 1992). Also appears as Brown University Technical Report CS-91-38.

45. ''Cooperative Transaction Hierarchies: Transaction Support for Design Applications,'' (with M. Nodine). *VLDB Journal*, Vol. I, No.1 (July, 1992).

46. ''The AQUA Data Model and Algebra'',(with T. Leung, G. Mitchell, B. Subramanian, B. Vance and S. Vandenberg), in *Proceedings of the Fourth International Workshop on Database Programming Languages*, 1993.

47. ''Ordered Types in the AQUA Data Model'', (with B. Subramanian, T. Leung and S. Vandenberg), in *Proceedings of the Fourth International Workshop on Database* Programming Languages, 1993.

48. ''Control of an Extensible Query Optimizer: A Planning-Based Approach'', (with G. Mitchell, and U. Dayal), in *Proceedings of the 19th VLDB Conference*, 1993.

49. ''Optimization of Object-Oriented Queries: Problems and Approaches'',(with G. Mitchell and U. Dayal), in *Object-Oriented Databases,* Dogac, Ozsu, Biliris and Sellis (editors), 1993, Springer-Verlag.

50. ''Object-Oriented Databases: What Makes Them Different?'', in *Object-Oriented Databases,* Dogac, Ozsu, Biliris and Sellis (editors),1993, Springer-Verlag.

51. ''Incremental Databases: Databases from the Ground Up'', in *Proceedings of the ACM SIGMOD International Conference on Management of Data*, 1993.

52. ''Automating Compensation in a Multidatabase'', (with M. Nodine), in *Proceedings of the*Hawaii International Conference on System Science, January 1994.

53. ''Specifying Flexible Tasks in a Multidatabase'', (with M. Nodine and N. Nakos), in Proceedings of the Conference on Cooperative Information Systems, Toronto, Canada,1994.

54. ''The Impact of Transaction Management on Object-Oriented Multidatbase Views'', (with M. Nodine), in *Object-Oriented Multidatabases,* Prentice-Hall, 1994.

55. " Storage Class Extensibility in the Brown Object Storage System", (with D. Langworthy), in *Proceedings of the Workshop on Persistent Object Systems (POS)*, Tarascon, France, September, 1994.

56. "Extensibility and Asynchrony in the Brown Object Storage System", (with D. Langworthy), in *Performance of Concurrency Control Mechanisms in Centralized Database Management Systems*, ed. V. Kumar, Prentice-Hall, 1994.

57. ''Are Disks in the Air Just Pie in the Sky'', (with S. Acharyra, R. Alonso, and M. Franklin), in *Proceedings of the Workshop on Mobile Computing,* CA, December, 1994.

58. ''The AQUA Approach to Querying Lists and Trees in Object-Oriented Databases'', (with S. Subramanian, T. Leung and S. Vandenberg), in *Proceedings of the International Conference on Data Engineering,* Taiwan, 1995.

59. ''Broadcast Disks: Data Management for Asymmetric Communication Environments'',(with S. Acharyra, R. Alonso, and M. Franklin), .ACM SIGMOD Conference, San Jose, CA, May, 1995.

60. "To Form a More Perfect Union (Intersection, Difference)", (with M. Cherniack and M. Nodine), *International Workshop on Database Programming Languages,* Gubbio, Italy, September, 1995.

61. " Disseminaation-based Data Delivery Using Broadcast Disks," (with S. Acharyra and M. Franklin), *IEEE Personal Communications*, vol. 2, no. 6, December, 1995.

62. "Prefetching from a Broadcast Disk", (with S. Acharyra, and M. Franklin), *International Conference on Data Engineering,* New Orleans, LA, February, 1996.

63. Approximate Queries and Representations for Large Data Sequences", (with H. Shatkay), *International Conference on Data Engineering,* New Orleans, LA, February, 1996.

64. "Rule Languages and Query Representations" (with M. Charniack), ACM SIGMOD International Conference on the Management of Data, Montreal, Canada, May, 1996.

65. "Disseminating Updates on Broadcast Disks" (with S. Acharya and M. Franklin), *International Conference on Very Large Databases* (VLDB), Mumbai, India, September, 1996.

66. "Dissemination-Based Information Systems," (with M. Franklin), *IEEE Data Engineering Bulletin*, Vol. 19, No. 3, pp. 20-30,September, 1996.

67. "Database Systems - Breaking Out of the Box," (with A. Silberschatz), *ACM Computing Surveys*, December, 1996.

68. "Balancing Push and Pull for Data Broadcast", (with S. Acharya and M. Franklin), Proceedings of the ACM Conference on the Management of Data (SIGMOD), Tuscon, AZ, May, 1997.

69. "A Framework for Scalable Dissemination-Based Systems", (with M. Franklin), Proceedings of the ACM Conference on Object-Oriented Programming, Systems and Languages (OOPSLA), Atlanta, GA, October, 1997.

70. "Changing the Rules: Transformations for Rule-Based Optimization", (with M. Cherniack), Proceedings of the ACM Conference on the Management of Data (SIGMOD), Seattle, WA, May, 1998.

71. "Data in Your Face: Push Technology in Perspective", (with M. Franklin), Proceedings of the ACM Conference on the Management of Data (SIGMOD), Seattle, WA, May, 1998.

72. "Research in Data Broadcast and Dissemination", (with D. Aksoy, M. Altinel, R. Bose, U. Centintemel, M. Franklin, J. Wang), Proc. 1st International Conference on Advanced Multimedia Content Processing Osaka University, Osaka, Japan, November, 1998.

73. "Inferring Function Semantics to Optimize Queries", (with M. Cherniack), Proceedings of the International Conference on Very Large Databases (VLDB), New York, NY, August, 1998.

74. "Clovers", (with L. Stein), Journal of Computer Science and Information Management, Vol. 2, No. 2, June, 1999.

75. ''DBIS-Toolkit: Adaptive Middleware for Large Scale Data Delivery'', (with M. Altinel, D. Aksoy, T. Baby, M. Franklin, W. Shapiro), Proceedings of the ACM Int'l Conf. on Management of Data (SIGMOD), Philadelphia, PA, June, 1999, pp 544-546.

76. "Expressing User Profiles for Data Recharging", (with M. Cherniack and M. Franklin), IEEE Personnal Communications Magazine (special issue on ubiquitous computing), August, 2001.

77. "Data Staging for On-Demand Broadcast", (with D. Aksoy and M. Franklin), Proceedings of the International Conference on Very Large Databases (VLDB), Rome, Italy, September, 2001.

78. "Monitoring Streams - A New Class of DBMS Application", (with M. Stonebraker, M. Cherniack, U. Cetintemel, S. Lee, N. Tatbul, D. Carney, Y. Xing), International Conference on Very Large Databases (VLDB), Hong Kong, September, 2002.

79. "Scalable Distributed Stream Processing", (with M. Cherniack, H. Balakrishnan, M. Balazinska, Don C., U. Çetintemel, and Y. Xing), First Biennial Conference on Innovative Data Systems Research (CIDR), Asilomar, CA, January, 2003.

80. "Profile-Driven Cache Management", (with M. Cherniack and M. Franklin), International Conference on Data Engineering (ICDE), Bangalore, February, 2003.

81. "Scalable Application-Aware Data Freshening", (with D. Carney and S. Lee), International Conference on Data Engineering (ICDE), Bangalore, February, 2003.

82. "Index Hints for On-demand Broadcasting" (with S. Lee and D. Carney):ICDE 2003: 726-728.

83. "Monitoring Streams - A New Class of DBMS Application", (with M. Stonebraker, M. Cherniack, U. Cetintemel, S. Lee, N. Tatbul, D. Carney, Y. Xing), (expanded version) *VLDB Journal*, Spring, 2003.

84. Reducing Execution Overhead in a Data Stream Manager, (with Don Carney, Ugur Cetintemel, Alex Rasin, Mitch Cherniack and Mike Stonebraker), In Proceedings of the Workshop on Management and Processing of Data Streams (MPDS 03), San Diego, CA, USA, June, 2003.

85. Load Shedding on Data Streams, (with N. Tatbul, U. Cetintemel, M. Cherniack, M. Stonebraker), In Proceedings of the Workshop on Management and Processing of Data Streams (MPDS 03), San Diego, CA, USA, June, 2003.

86. Aurora: A Data Stream Management System (A Demonstration), (with D. Abadi, D. Carney, U. Cetintemel, M. Cherniack, C. Convey, C. Erwin, E. Galvez, M. Hatoun, J. Hwang, A. Maskey, A. Rasin, A. Singer, M. Stonebraker, N. Tatbul, Y.

Xing, R. Yan), Proceedings of the ACM SIGMOD International Conference on Management of Data, San Diego, CA, June, 2003.

87. "The Aurora and Medusa Projects", (with Michael Stonebraker, Mitch Cherniack, Ugur Cetintemel, Magdalena Balazinska and Hari Balakrishnan), IEEE Data Engineering Bulletin, Vol. 26, No. 1, March, 2003.

88. "Load Shedding in a Stream Data Management System", (with U. Cetintemel, M. Cherniack, M. Stonebraker, and N. Tatbul), International Conference on Very Large Databases (VLDB), Berlin, Germany, September, 2003.

89. "Scheduling in a Stream Management System", (with D. Carney, U. Cetintemel, M. Cherniack, A. Rasin, and M. Stonebraker), International Conference on Very Large Databases (VLDB), Berlin, Germany, September, 2003.

90. "Retrospective on Aurora", (with H. Balakrishnan, M. Balazinska, D. Carney, U. Cetintemel, M. Cherniack, C. Convey, E. Galvez, J. Salz, M. Stonebraker, N. Tatbul, R. Tibbetts), *VLDB Journal: Special Issue on Data Stream Processing*, 2004..

91. "Confidence-based Data Management for Personal Area Sensor Networks", (with N. Tatbul, M. Buller, R. Hoyt, S. Mullen, S. Zdonik), *International Workshop on Data Management for Sensor Networks (DMSN'04)*, Toronto, Canada, August 2004.

92. "Design Issues for Second Generation Stream Processing Engines", (with D. Abadi, Y. Ahmad, M. Balazinska, U. Cetintemel, M. Cherniack, J. Hwang, W. Lindner, A. Maskey, N. Tatbul, Y. Xing), *Proceedings of the Conference for Innovative Database Research (CIDR)*, Asilomar, CA, January, 2005.

93. "Dynamic Load Distribution in the Borealis Stream Processor", (with Y. Xing and J. Hwang), *Proceedings of the International Conference on Data Engineering* (ICDE), Tokyo, Japan, April, 2005.

94. "High-Availability Algorithms for Distributed Stream Processing", (with J. Hwang, M. Balazinska, A. Rasin, U. Cetintemel, M. Stonebraker), *Proceedings of the International Conference on Data Engineering* (ICDE), Tokyo, Japan, April, 2005.

95. "Network Awareness in Internet-Scale Stream Processing", (with Y. Ahmad, U. Cetintemel, J. Jannotti, A. Zgolinski) in IEEE Data Engineering Bulletin 28(1), 2005.

96. Distributed Operation in the Borealis Stream Processing Engine (demo)**,** (with The Borealis Team). in ACM Conference on the Management of Data (SIGMOD), Baltimore, MD, June, 2005 [won Best Demo].

97. "Cstore – A Column-oriented DBMS", (with M. Stonebraker, M. Cherniack, S. Madden, E. O'Neil, P. O'Neil, X. Chen, E. Lau, A. Lin, D. Abadi, M. Ferreira, A. Rasin, N. Tran, A. Batkin) in *Proceedings of the International Conference on Very Large Databases* (VLDB), Trondheim, Norway, August, 2005.

98. "The Lowell Database Research Self-assessment", (with S. Abiteboul, R. Agrawal, P. A. Bernstein, M.J. Carey, S. Ceri, W.B. Croft, D.J. DeWitt, M.J. Franklin, H. Garcia-Molina, D. Gawlick, J. Gray, L.M. Haas, A.Y. Halevy, J.M. Hellerstein, Y.E. Ioannidis, M.L. Kersten, M.J. Pazzani, M. Lesk, D. Maier, J.F. Naughton, H. Schek, T.K. Sellis, A. Silberschatz, M. Stonebraker, R.T. Snodgrass, J.D. Ullman, G. Weikum, J. Widom). *Communications of the ACM*, 48(5): 111-118 (2005).

99. "The 8 Requirements of Real-Time Stream Processing (with U. Cetintemel and M. Stonebraker), in SIGMOD Record, December, 2005.

100. "Revision Processing in a Stream Processing Engine: A High-Level Design", (with E. Ryvkina, A. Maskey, M. Cherniack), International Conference on Data Engineering (ICDE), January, 2006, Atlanta, GA.

101. "Dealing with Overload in Distributed Stream Processing Systems", (with N. Tatbul), IEEE Int'l Workshop on Networking Meet Databases (NetDB), Atlanta, Georgia, April, 2006.

102. "Window-aware Load Shedding for Aggregation Queries over Data Streams", (with N. Tatbul), in Proceedings of the International Conference on Very Large Databases (VLDB), Seoul, South Korea, Sept., 2006.

103. "Providing Resiliency to Load Variations in Distributed Stream Processing", (with Y. Xing, J. Hwang, U. Cetintemel), in Proceedings of the International Conference on Very Large Databases (VLDB), Seoul, South Korea, Sept., 2006.

104. "The Borealis Distributed Stream Processing Engine" (with Y. Ahmad, B. Berg, U. Cetintemel, M. Humphrey, J. Hwang, A. Maskey, A. Jhingran, O. Papaemmanouil, A. Rasin, N. Tatbul, W. Xing, Y. Xing), in Proceeding of the 2nd International Conference on GeoSensor Networks (GSN '06), Boston, October 2006. (Invited Demonstration).

105. "Load Management and High Availability in the Borealis Distributed Stream Processing Engine", (with N. Tatbul, Y. Ahmad, U. Çetintemel, J. Hwang, Y. Xing) in Proceeding of the 2nd International Conference on GeoSensor Networks (GSN '06), Boston, MA, October, 2006, pp 66-85.

106. "Secure Encryption for Indexing in A Column-Oriented DBMS", (with T. Ge), in *Proceedings of the International Conference on Data Engineering (ICDE)*, Istanbul, Turkey, April, 2007.

107. "A Cooperative, Self-Configuring High-Availability Solution for Stream Processing", (with J. Hwang, Y. Xing, U. Cetintemel), in Proceedings of the International Conference on Data Engineering (ICDE), Istanbul, Turkey, April, 2007.

108. "Fast and Reliable Stream Processing over Wide Area Networks", (with J. Hwang and U. Cetintemel), Scalable Stream Processing Workshop (SSPS), co-located with ICDE, 2007, Istanbul, Turkey, April, 2007.

109. "One Size Fits All? Part 2: Benchmarking Studies", (with M. Stonebraker, C. Bear, U. Cetintemel, M. Cherniack, T. Ge, N. Hachem, S. Harizopoulos, J. Lifter, J. Rogers) in Third Biennial Conference on Innovative Data Systems Research (CIDR), Asilomar, CA, January, 2007.

110. "Answering Aggregation Queries in a Secure System Model," (with T. Ge), in *Proceedings of the International Conference on Very Large Databases* (VLDB), Vienna, Austria, September, 2007.

111. "Staying FIT: Scalable Load Shedding Techniques for Distributed Stream Processing," (with N. Tatbul and U. Cetintemel) in Proceedings of the International Conference on Very Large Databases (VLDB), Vienna, Austria, September, 2007.

112. "Handling Uncertain Data in Array Database Systems", (with T. Ge), in *Proceedings of the International Conference on Data Engineering (ICDE)*, Cancun, Mexico, April, 2008.

113. "Fast and Highly-Available Stream Processing over Wide Area Networks", (with J. Hwang and U. Cetintemel)), in *Proceedings of the International Conference on Data Engineering (ICDE)*, Cancun, Mexico, April, 2008.

114. "A skip-list approach for efficiently processing forecasting queries." (with T. Ge) PVLDB, 2008. **1**(1): p. 984-995.

115. "Towards a streaming SQL standard". (with N. Jain., et al) PVLDB, 2008. **1**(2): p. 1379-1390.

116. "H-store: a high-performance, distributed main memory transaction processing system". (with R. Kallman,., et al) PVLDB, 2008. **1**(2): p. 1496-1499.

117. "Borealis-R: a replication-transparent stream processing system for wide-area monitoring applications". (with , J. Hwang. et al) SIGMOD Conference, 2008: p. 1303-1306.

118. "Stream-Oriented Query Languages and Operators", (with M. Cherniack), in Encyclopedia of Database Systems, 2009.

119. "A Demonstration of SciDB: A Science-Oriented DBMS" (with P. Cudré-Mauroux, H. Kimura, K.T. Lim, J. Rogers, R. Simakov, E. Soroush, P. Velikhov, D. Wang, M. Balazinska, J. Becla, D. DeWitt, B. Heath, D. Maier, S. Madden, J.Patel, M. Stonebraker,). PVLDB 2(2): 1534-1537 (2009)

120. "Correlation Maps: A Compressed Access Method for Exploiting Soft Functional Dependencies". (with H. Kimura, G. Huo, A. Rasin, S. Madden) PVLDB 2(1): 1222-1233 (2009).

121. "Top-*k* queries on uncertain data: on score distribution and typical answers", (with T. Ge and, S. Madden) SIGMOD Conference 2009, Providence, RI, June, 2009, pp. 375-388,

122. "Light-Weight, Runtime Verification of Query Sources", (with T. Ge): ICDE 2009, Shanghai, China, April, 2009, pp. 30-41.

123. "Requirements for Science Data Bases and SciDB". (with M. Stonebraker, J. Becla, D. DeWitt, K.T. Lim, D. Maier, O. Ratzesberger), in Fourth Biennial Conference on Innovative Data Systems Research (CIDR), Asilomar, CA, Jamuary, 2009.

124. "CORADD: Correlation Aware Database Designer for Materialized Views and Indexes". (with H. Kimura, G. Huo, A. Rasin, S. Madden):PVLDB 3(1): 1103-1113 (2010).

125. "UPI: A Primary Index for Uncertain Databases". (with H. Kimura, S. Madden) PVLDB 3(1): 630-637 (2010).

126. :"A*-tree: A Structure for Storage and Modeling of Uncertain Multidimensional Arrays", (with T. Ge), PVLDB 3(1): 964-974 (2010).

127. "The Case for Predictive Database Systems: Opportunities and Challenges" (with M. Akdere, U. Cetintemel, M. Riondato, E. Upfal), in The Proceedings of the Fifth Conference on Innovative Data Systems Research (CIDR), Asilomar, CA, January 2011.

128. "Monte Carlo Query Processing of Uncertain Multidimensional Array Data", (with D. Grabiner and T. Ge), in Proceedings of the International Conference on Data Engineering (ICDE), Hannover, Germany, April, 2011.

129. "On Predictive Modeling for Optimizing Transaction Execution in Parallel OLTP Systems". (with A. Pavlo, E. Jones): PVLDB 5(2): 85-96 (2011).

130. "The VC-Dimension of SQL Queries and Selectivity Estimation through Sampling", (with M. Riondato, M. Akdere, U. Çetintemel, E. Upfal). ECML/PKDD (2) 2011: 661-676.

131. "The Case for Predictive Database Systems: Opportunities and Challenges" (with M. Akdere , U. Çetintemel, M. Riondato, E. Upfal),. CIDR 2011: 167-174.

132. "Optimizing index deployment order for evolving OLAP," (with H. Kimura, C. Coffrin, A. Rasin),. EDBT 2012: 276-287

133. "Learning-based Query Performance Modeling and Prediction" (with M. Akdere, U. Çetintemel, M. Riondato, E. Upfal),. ICDE 2012: 390-401.

134. "Skew-aware automatic database partitioning in shared-nothing, parallel OLTP systems", (with A. Pavlo, C. Curino), SIGMOD Conference 2012: 61-72

135. "Anti-Caching: A New Approach to Database Management System Architecture". (withJ. DeBrabant, A. Pavlo, S. Tu, M. Stonebraker),: PVLDB 6(14): 1942-1953 (2013).

136. "Query Steering for Interactive Data Exploration" (with U. Cetintemel, M., Cherniack, J. DeBrabant, Y. Diao, K. Dimitriadou, Al. Kalinin, Ol. Papaemmanouil,):. CIDR 2013.

137. "Data Curation at Scale: The Data Tamer System" (with M. Stonebraker, D. Bruckner, I. Ilyas, G. Beskales, M. Cherniack, A. Pagan, S. Xu). CIDR 2013.

138. "An automatic physical design tool for clustered column-stores",(with A. Rasin), EDBT 2013: 203-214.

139. "S-Store: A Streaming NewSQL System for Big Velocity Applications", (with U. Çetintemel, J. Du, T. Kraska, S. Madden, D. Maier, J. Meehan, A. Pavlo, M. Stonebraker, E. Sutherland, N. Tatbul, K. Tufte, H. Wang), PVLDB 7(13): 1633-1636 (2014).

140. "Interactive data exploration using semantic windows", (with Alexander Kalinin, Ugur Çetintemel) SIGMOD Conference 2014: 505-516.

141. "A Prolegomenon on OLTP Database Systems for Non-Volatile Memory",(with J. DeBrabant, J. Arulraj, A. Pavlo, M. Stonebraker, S. Dulloor) DMS@VLDB 2014: 57-63.

142. "Tupleware: Redefining Modern Analytics", (with A. Crotty, A. Galakatos, T. Kraska, Ugur Çetintemel), CoRR abs/1406.6667 (2014)

143. "Searchlight: Enabling Integrated Search and Exploration over Large Multidimensional Data.", (with A. Kalinin and U. Çetintemel), :PVLDB 8(10): 1094-1105(2015).

144. "An Architecture for Compiling UDF-centric Workflows" (with A Crotty, A. Galakatos, K. Dursun, T. Kraska, C. Binnig, U. Çetintemel), PVLDB 8(12): 1466-1477 (2015).

145. "A Demonstration of the BigDAWG Polystore System" (with A. Elmore, J. Duggan, M. Stonebraker, M. Balazinska, U. Çetintemel, V. Gadepally, J. Heer, B. Howe,J. Kepner, T. Kraska, S. Madden, D. Maier, T. Mattson, S. Papadopoulos, J. Parkhurst, N. Tatbul, M. Vartak):, PVLDB 8(12): 1908-1919 (2015).

146.. "S-Store: Streaming Meets Transaction Processing" (with J.Meehan, N. Tatbul, C. Aslantas, U. Çetintemel, J. Du, T. Kraska, S. Madden, D. Maier, A. Pavlo, M. Stonebraker, K. Tufte, H. Wang):. PVLDB 8(13): 2134-2145 (2015).

147. "The BigDAWG Polystore System", (with J. Duggan, A. Elmore, M. Stonebraker, M. Balazinska, B. Howe, J. Kepner, S. Madden, D. Maier, T. Mattson); SIGMOD Record 44(2): 11-16 (2015).

148. "Tupleware: Big Data, Big Analytics, Small Clusters". (A. Crotty, A. Galakatos, K. Dursun, T. Kraska, U. Çetintemel): CIDR 2015.

149. Larger-than-memory data management on modern storage hardware for in-memory OLTP database systems Ma, Lin,." Proceedings of the 12th

International Workshop on Data Management on""et al. New Hardware. ACM, 2016.

150. Integrating real-time and batch processing in a polystore.Meehan, John, Stan Zdonik, Shaobo Tian, Yulong Tian, Nesime Tatbul, Adam Dziedzic, and Aaron Elmore. "" In High Performance Extreme Computing Conference (HPEC), 2016 IEEE, pp. 1-7. IEEE, 2016.

151. Interactive Search and Exploration of Waveform Data with Searchlight lexander Kalinin, Ugur Çetintemel, Stan Zdonik:. SIGMOD Conference 2016: 2105-2108

152. Data Ingestion for the Connected World, Cansu Aslantas, Stan Zdonik, Nesime Tatbul, Jiang Du:. CIDR 2017

153. Towards Dynamic Data Placement for Polystore Ingestion Jiang Du, John Meehan, Nesime Tatbul, Stan Zdonik:. BIRTE 2017: 2:1-2:8

Edited Volumes

1. ''Readings in Object-Oriented Databases'' (co-editor with D. Maier), Morgan Kaufmann (1989).
2. ''Implementing Persistent Object Bases: Principles and Practice,'' *Proceedings of the Fourth International Workshop on Persistent Object Systems*, Morgan-Kaufmann (1990) (co-editor with A. Dearle and G. Shaw).

3. ''IEEE Bulletin on Office and Knowledge Engineering,'' *Special Issue on Non-Standard Transaction Mechanismss* (editor), (December 1990).

4. "International Journal on Digital Libraries", *Special Issue on Languages for Digital Libraries*, (co-editor with P. Buneman), Vol. 1, No. 1, (April, 1997).

5. "Proceedings of the ACM SIGMOD International Conference on Management of Data", (with U. Çetintemel, D. Kossmann, N. Tatbul), SIGMOD 2009, Providence, Rhode Island, USA, June 29 - July 2, 2009 ACM 2009

6. "Proceedings of the Fifth ACM International Conference on Distributed Event-Based Systems", DEBS 2011, (co-editor with D. Eyers, O. Etzion, A. Gal, P. Vincent), New York, NY, USA, July 11-15.

11. Invited Lectures

1981	*Office Database Systems Panel*, ACM, SIGMOD, Ann Arbor, MI .
1981	*The Logical Design of Database Systems*, DRS Users Group Conference .
1984	*Databases and Office Automation*, SOI, Rome, Italy .
1984	*Databases and Knowledge Based Systems*, Purvis Systems, Newport, RI.

1985	*The Use of Databases in Knowledge-Based Systems*, Symposium on Knowledge-Based Systems and their Application to the Navy, Newport, RI.

1985   *The Use of Databases in Knowledge-Based Systems*, Symposium on Knowledge-Based Systems and their Application to the Navy, Newport, RI.
ACM Workshop on Fundamental Principles of Office Automation, Paharo Dunes, CA.
Fundamentals of Object-Oriented Database Systems, GTE Labs, Waltham, MA .

1986   *Intelligent Databases,* Expert Systems: Design Construction, Implementation, Cambridge, MA.
An Object-Oriented Database System in Support of Office Information Systems, University of Pittsburgh, Pittsburgh, PA .
An Object-Oriented Database System, Wang Institute of Graduate Studies, Tyngsboro, MA .
Object-Oriented Database Techniques, Naval Research Labs, Washington, D.C.
An Object-Oriented Database System and its Implementation, Massachusetts Computer Associates, Wakefield, MA .
The Implementation of an Object-Oriented Database System, MCC, Austin, TX .

1987   *Object-Oriented Databases for Design Applications,* Digital Equipment Corp.
An Object-Oriented Database System for Design Applications, University of Massachusetts, Dept. of Computer Science, Amherst, MA .
Implementation Issues for Object-Oriented Database, at Database Implementation Workshop, OOPSLA, Orlando, FL .
Introduction to Object-Oriented Databases, Conference Tutorial, OOPSLA, Orlando, FL .
An Object-Oriented Database in Support of Software Engineering, Advanced Technology Symposium on Software Engineering, GTE, Waltham, MA .
An Object-Oriented Database in Support of Software Engineering, SIGPLAN, Boston, MA
An Object-Oriented Database and its Associated Storage Server, ACM SIG-PLAN .

1988   *Research in Object-Oriented Databases,* Oregon Council on Advanced Technical Education, Portland State University, OR .
Object-Oriented Database Systems in Collaborative Applications, University of Maryland, April .
Research Directions in Object-Oriented Databases, Conference Tutorial, OOPSLA88, September, San Diego, CA .
Object-Oriented Data Models, Third Conference on Object-Oriented Programming Languages, Systems, and Applications, September, San Diego, CA .
An Object-Oriented Database System for Design Environments, British Computer Society, September .
The Design and Implementation of an Object-Oriented Database System, Boston University, October .
The Design and Implementation of an Object-Oriented Database System, Harvard University, December .

1989   *An Object-Oriented Database System*, MIT, Cambridge, MA, May.
Object-Oriented Databases, Half-Day Tutorial, International Conference on Very Large Databases, Amsterdam, Holland, August .
*Research Directions in Object-Oriented Database*s, OOPSLA89, September, New Orleans, LA .
*Object-Oriented Database System*s, Second International Conference on Data and Knowledge Systems for Manufacturing and Engineering, Gaithersburg, MD, October .
Implementation Techniques for Object-Oriented Database Systems, IBM York-

town Heights, Hawthorne, NY, October.

Applications of Object-Oriented Databases, First International Conference on Deductive and Object-Oriented Databases, Kyoto, Japan, December .

Using an Object-Oriented Database System to Support Hypermedia Applications, Matsushita Corporation, Osaka, Japan, December .

Using an Object-Oriented Database System to Support Hypermedia Applications, NEC Corporation, Tokyo, Japan, December .

1990   *Object-Oriented Technologies* (with G. Shaw), (full day, closed circuit TV broadcast), IBM, February.

Introduction to Object-Oriented Database Systems, Arthur-Anderson, New York, NY, March.

Objects and Databases, Fourth Annual Seybold Technology Forum: Distributed Network Computing and Object-Oriented Environments, Boston, MA, April.

Applications of Object-Oriented Databases, panel on Object-Oriented Databases, Seybond Information Processing Forum, Boston, MA, April.

The Next-Generation Database Debate, panel at ACM SIGMOD Conference, Atlantic City, NJ, May.

Save the Objects: Visual Object-Oriented Workspaces, IBM, Hawthorne, NY, October.

Principles of Object-Oriented Databases, Canadian Information Processing Conference, Edmonton, Ontario, October.

1991   *Query Languages in Object-Oriented Databases*, ACM Boston Professional Development Seminar (with U. Dayal and G. Mitchell), March.

Object-Oriented Database Management Systems (with G. Mitchell), U.C. Irvine, April.

Query Languages and Processing in Object-Oriented Databases, OOPSLA Tutorial, (with U. Dayal and G. Mitchell), October.

Object-Oriented Databases: Software Engineering meets Database Management, Database World, Chicago, IL, November.

The Great Object vs. Relations Debate, Database World, Chicago, IL., November.

What is the Potential for Object-Oriented Databases? National Institute for Science and Technology, Washington, DC, October.

Current Research in Object-Oriented Databases, DEC, December.

Object-Oriented Databases: Fact or Fiction, NTH, Trondheim, Norway, November.

Putting High-Level Semantics into Object-Oriented Databases, University of Linkoping, Sweden., November.

Putting High-Level Semantics into Object-Oriented Databases, University of Oslo, Norway, November.

Putting High-Level Semantics into Object-Oriented Databases, NTH, Trondheim, Norway, November.

Putting High-Level Semantics into Object-Oriented Databases, University of Bergen, Norway, November.

1992   *Managing Complexity with Object-Oriented Database Systems*, IBM, Charlotte, NC, April 1992.

An Approach to Queries in an Object-Oriented Database System, University of Lund, Lund, Sweden, May 1992.

What Makes Object-Oriented Database Systems Different?, Keynote Lecture, Mjolner Conference, Stockholm, Sweden, May, 1992.

An Approach to Queries in an Object-Oriented Database System, University of

Aarhus, Aarhus, Denmark, May, 1992.
Is SQL the Right Language for Object-Oriented Database Systems, DB World, Boston, MA, June,1992.
What's Wrong with Object-Oriented Database Systems?, Panel, San Francisco, CA, July, 1992.
Distributed Object-Oriented Database Systems, Brown University Industrial Partners Program, Providence, RI, October, 1992.

1993   *Distributed Object-Oriented Databases*, Software World, Toronto, Canada
April, 1993.
Query Languages and Query Processing in Object-Oriented Databases,
Brown University, Industrial Partners Program, April 1993.
Issues in Distributerd Object-Oriented Databases, Database World,
Boston, MA., May 1993.
Principles of Object-Oriented Databases, MIT Summer Program, June 1993.
Introduction to Object-Oriented Databases, NATO ASI, Kusadasi, Turkey,
August 1993.
Query Languages for Object-Oriented Databases, NATO ASI, Kusadasi,
Turkey, August 1993.
Mobile Computing: Fertile Research Area or Black Hole?, International
Conference on Very Large Database Systems, Dublin, Ireland, August 1993.
What's Wrong with Object-Oriented Database Systems, CASE World,
Boston, MA, October 1993.

1994   *Are Object-Oriented Databases Up to Tomorrow's Applications?,*CASE World,
Toronto, Canada
How WIll Objects Fit into the NII?, DB World, Boston, MA, April, 1994
The Alexandria Digital Library Project, Workshop on Digital Libraries,
Rutgers Univ., Newark, NJ, May, 1994
Principles of Object-Oriented Database Systems, MIT, Cambridge, MA, June,
1994
Broadcast Disks: Data Management fot Asymmetric Network Environments,
Hewlett-Packard Laboratories, Palo Alto, CA, December, 1994.

1995   *Broadcast Disks: Data Management fot Asymmetric Communication Environments*, Oregon Council for Advanced Technical Education (OCATE), Potland, OR, February, 1995.
Broadcast Disks: Data Management fot Asymmetric Communication Environments, Unversity of Oslo, Oslo, Noway, March, 1995.
Broadcast Disks: Data Management fot Asymmetric Communication Environments, Dept. of Computer Systems and Telematics, Norwegian Institute of Technology, Trondheim, Norway, 1995.
Broadcast Disks: Data Management fot Asymmetric Communication Environments, Hewlett-Packard, Chelmsford, MA, May, 1995.
Broadcast Disks: Data Management fot Asymmetric Communication Environments, IBM Research Labs, Hawthorne, NY, May, 1995.
Retrieval of Information from Large, Scientific Databases, NASA CESDIS, June, 1995.
Object Database Systems in the Global Information Marketplace, Database and Client/Server World, Boston, MA, June, 1995.
*Data Mapping and Matchin*g, Workshop on Database Programming Languages, Gubbio, Italy, September, 1995.
Your Data May Be Where You Least Expect It, (Distinguished Lecture Series), University of Alberta, Edmonton, Alberta, Canada, October, 1995.

	Scientists Need Queries Too, IBM CASCON Conference, Toronto, Canada, November, 1995.
1996	*Dissemination-Based Information Systems*, (keynote talk), British National Conference on Databases (BNCOD), Edinborough, Scotland, July, 1996.
	Dissemination-Based Information Systems: Addressing Asymmetry, Brandeis University, Waltham, MA, September, 1996.
	Data Data Everywhere, 1996-97 Triangle Computer Science Distinguished Lecture Series, Duke University, Durham, NC, October, 1996.
	Data Mapping and Matching, NASA CESDIS, Greenbelt, MD, November, 1996.
	Dissemination-Based Information Systems, IBM T.J. Watson Research Lab, Yorktown Heights, NY, December, 1996.
1997	*Dissemination-Based Information Systems: Balancing Push and Pull in Asymmetric Networks*, GTE Research Labs, Waltham, MA, January, 1997.
	Push vs. Pull: Plumbing or Perception, Keynote Talk, ACM Conference on Object-Oriented Programming, Systems, and Languages (OOPSLA), Altlanta, GA, October, 1997.
1998	*Network Data Management*, ACM Conference on Local Computer Networks, Lowell, MA, August, 1998.
1999	*Profile-Based Data Management*, Worcester Polytecnic University, Worcester, MA, June, 1999.
2001	*Profile Driven Data Management: How to Make the Network Smarter*, Sun Microsystems, Bedford, MA, June, 2001
	Tutorial on Data Management for Pervasive Computing (with M. Franklin and M. Cherniack), International conference on Very Large Databases (VLDB), Rome, Italy, September 11, 2001.
	Pervasive Data Management, **Distinguished Lecture Series**, University of Pittsburgh, Pittsburgh, PA, November, 2001.
2002	Stream Processing is Just Data Dissemination, (Panel Talk in Session on Data Streams: Fresh Current or Stagnant Backwater?) SIGMOD, Madison, WI, June, 2002.
	Aurora: A System for Managing Stream Data, US Army Research in Environmental Medicine (USARIEM) Lab, Natick, MA, July, 2002.
2005	*Fast Data in the Enterprise*, PC Forum, Scottsdale, AZ, March, 2005.
2006	*Network Data Management for Push-Based Data Sources*, (invited talk), American Institute of Biological Sciences (AIBS) Review of the Biophysics and Biomedical Modeling (BBMD) Research Program, Natick, MA, November, 2006.
2008	*Special-Purpose Data Management and Automatic Design,* UCLA, **Distinguished Lecture Series**, April, 2008.

12. Service

To the university

1983	Colloquium Chairman, Department of Computer Science, Brown University
1984	Chairman, Search Committee (Lecturer), Department of Computer Science, Brown University
1985-1986	Freshman Advisor
1985	Search Committee (Assistant Professor)
1986	Publications Committee

1987-1990	Facilities Committee
1988-1991	Industrial Liaison Committee
1988-1993	Undergraduate Advising Committee (Chair)
1991-1993	Search Committee
1994 -1998	Graduate Admissions Committee
1998-2000	Chair, Faculty Search Committee (senior search)
1999-2000	Faculty Search Committee
2000-2001	Faculty Search Committee
2001-2004	Brown University, Graduate Council
2001-2005	Director of Graduate Studies, Dept. of Computer Science
2001-2005	Faculty Search Committee
2002-2003	Chair, Faculty Search Committee
2001-2005	Committee on Graduate Examinations
2009-2011	Facilities Committee (Chair)
2012-2014	Diversity Committee (Chair)
2014-2015	Initiatives Committee (Chair)
2015--2016	Vision Committee (Chair)
2017-resent	Self-study Committee
2017-present	Faculty Search Committee
2017 - present	University Conflict of Interest Advisory Board

To the profession

1985	Program Committee, Workshop on Software Engineering Environments for Programming in the Large
1985	Organizing Committee, International Workshop on End-User Computing, Capri, Italy
1985	Panel Chairman, 1985 ACM Annual Conference, New Directions in Office Automation Research, Denver, CO
1986	Organizer and Chairman for Workshop on Object-Oriented Databases, at First International Conference on Object-Oriented Programming, Systems, Languages, and Applications, Portland, OR (September 29, 1986)
1986	Program Chairman, Third ACM-SIGOA Conference on Office Information Systems, Providence, RI
1987	Organizer and co-chairman for Workshop on the Semantics of Object-Oriented Databases, at Second International Conference on Object-Oriented Programming Systems, Languages, and Applications, Orlando, FL
1987	Panel Chair, ''What is an Object-Oriented Database?'' OOPSLA, Orlando, FL
1987	Program Committee, Conference on Office Information Systems
1987-1988	Program Committee, Third Conference on Object-Oriented Systems, Languages, and Applications
1987-1990	Associate Editor, ACM Transactions on Office Information Systems
1987	Associate Editor, IEEE Office Knowledge Engineering
1988	Program Committee, Conference on Entity/Relationship Model
1988	Program Committee, Second International Workshop on Object-Oriented Data-

	bases, Germany
1988	Program Committee, Workshop on Persistent Object Systems, Queensland, Australia
1989	Program Committee, Workshop on Databases for Software CAD, Napa, CA (February)
1989	Program Committee, Third European Conference on Object-Oriented Programming, Nottingham, England (July)
1989	Program Committee, First International Conference on Deductive and Object-Oriented Databases, Kyoto, Japan (December)
1989-1993	Associate Editor, VLDB Journal
1989-1997	Editor and Founder, ACM SIGPLAN OOPS Messenger.
1990	Program Committee, International Conference on Very Large Databases, Brisbane, Australia (August).
1990	Program Committee Fourth International Workshop on Persistent Object Systems, Martha's Vineyard (September.
1990	General Chair (with A. Dearle, G. Shaw), Fourth International Workshop on Persistent Object Systems, Martha's Vineyard (September).
1991	Program Committee, ACM SIGMOD Conference on the Management of Data, Denver, CO.
1991	Program Committee, European Conference on Object-Oriented Programming.
1991	Program Committee, ACM Conference on Organizational Computer Systems, Atlanta, GA.
1991-present	Associate Editor, Journal of Intelligent Information Systems.
1992	Program Committee, International Conference on Very Large Database Systems, Vancouver, Canada
1992	Program Committee, International Workshop on Distributed Object-Oriented Database Systems, Edmonton, Canada.
1993	Program Committee, 4th International Workshop on Database Programming Languages.
1994- 1999	Editorial Board, Theory and Practice of Object Systems (TAPOS) , Wiley
1994	Program Committee, Sixth International Conference on Persistent Object Systems.
1994	Program Committee, ACM SIGSOFT Conference on Foundations of Software Engineering
1994	Program Committee, RIDE Workshop on Distributed Object Management, Taiwan
1994	Program Committee, Conference on Computer Supported Cooperative Work
1994	Program Committee, Workshop on Mobile Data Management, Rutgers University
1995	Program Committee, Intenational Conference on Deductive Object-Oriented Databases (DOOD)
1995	Program Committee, ACM Conference on the Management of Data (SIGMOD)
1995	Program Committee, Fifth International Workshop on Database Programming Languages (DBPL)
1996	Program Committee, Second International Symposium on Object Technologies for Advanced Software (ISOTAS), Kanazawa, Japan, March, 1996.
1996	Program Committee, International Conference on Very Large Databases (VLDB), September, 1996.
1996	Program Committee, Seventh International Workshop on Pesistent Object Systens (POS), May, 1996.
1996	ACM Workshop on Strategic Directions in Computing Research, **chair** of

	Databaase Systems Group, MIT, June, 1996.
1996	Program Committee, First International Workshop on Satellite-based Information Services (WOSBIS), November, 1996.
1997	NSF Reveiw Panel, Database and Knowledge-Based Systems, Washington, DC
1997	Program Committee, 8th International Conference on Database and Expert Systems Applications (DEXA97), Toulouse, France, September, 1997.
1997	Program Committee, International Conference on Extending Database Technology (EDBT98) , Valencia, Spain, March, 1998.
1998	Program Committee, 9th International Conference on Database and Expert Systems Applications (DEXA98), Vienna, Austria, August, 1998.
1998	Program Committee, International Conference on Very Large Databases (VLDB), New York, NY, August, 1998..
1998-1999	Americas **Program Chair**, International Conference on Very Large Databases (VLDB), Edinburgh, Scotland, September, 1999.
1999	Program Committee, 9th International Conference on Database and Expert Systems Applications (DEXA99), Florence, Italy August, 1999.
1999	Program Committee, 1st International Conference on Mobile Data Access, Hong Kong, December, 1999.
1999	Program Committee, Workshop on Wireless Networks and Mobile Computing, Taipei, Taiwan, April 2000.
1998-present	Associate Editor, Journal of Parallel and Distributed Databases, Klewer Publications.
1998-present	Associate Editor for Data Engineering and Management, Journal of Computer Science and Information Management.
2000	Program Committee, International Conference on Very Large Databases (VLDB), Cairo, Egypt, September, 2000.
2000	Program Committee, International Workshop on Persistent Object Systems (POS), Lillihammer, Norway, September, 2000.
2001- present	Associate Editor, ACM *Computing Surveys*.
2001	Program Committee, First ACM Mobile Commerce Workshop, Rome, Italy, July 2001.
2001	Program Committee, Third International Conference on Mobile Data Management (MDM), Singapore, January, 2002.
2002	Program Committee, ACM Conference on the Management of Data (SIGMOD), Madison, Wisconsin, June, 2002,
2002	Program Committee, The 3rd International Conference on Web Information Systems Engineering, Singapore, December 11-14th, 2002.
2002	Program Committee, First Biennial Conference on Innovative Data Systems Research (CIDR), Asilomar, CA, January, 2003
2002-2004	Program Committee **Co-Chair**, International Conference on Data Engineering (ICDE), Boston, MA, April, 2004.
2004	Program Committee, Second Biennial Conference on Innovative Data Systems Research (CIDR), Asilomar, CA, January, 2005.
2006	Program Committee, International Conference on Data Engineering (ICDE), Istanbul, Turkey, April, 2007.
2006	**Co-chair**, NSF IIS Workshop on the Role of Data Management in the GENI Infrastructure Initiative, Arlington, VA, November, 2006.
2007	**co-chair**, NSF Workshop on Data Management for Mobile Sensor Networks (MobiSensors)
2008	Program Vice-Chair for *Personalized databases, social information*

	management, annotation and data curation, International Conference on Data Engineering (ICDE), Shanghai, China, MA, April, 2009.
2009	General **co-chair**, ACM Conference on the Management of Data (SIGMOD), Providence, RI, June, 2009.
2009	Program Committee, PhD Workshop, *International Conference on Data Engineering* (ICDE), Long Beach, CA, March, 2010.
2010	Program Committee, International Conference on Very Large Databases (VLDB), Singapore, Sept., 2010.
2010-2011	Program **co-chair**, Fifth ACM International Conference on Distributed, Event-Based Systems (DEBS), Yorktown Heights, NY, July, 2011.
2012	Program Committee for Outrageous Ideas and Visions Track of CIDR 2013.
2013	SIGMOD PhD Workshop reviewer and panelist.
2015	NSF Review Panel
2017	SIGMOD 2018 Program Committee

13. Research Grants

1986-1990	Office of Naval Research, Young Investigator Award, $50,000/year.
1986-1987	IBM (with P. Wegner and S. Reiss) Object-Oriented Database Environments, $193,000.
1986-1988	NSF (with P. Wegner), Object-Oriented Databased Environments, $150,000.
1987-1988	IBM (with P. Wegner and S. Reiss), Object Oriented Database Environments, $140,000.
1987-1988	Office of Naval Research, Object-Oriented Databases and Parallel Architectures, $100,000
1987-1988	Office of Naval Research, Development of an Object-Oriented Database (Young Investigator, matching funds) $100,000.
1988-1989	Apple Computer, Research in Object-Oriented Databases, $30,000.
1988-1990	US West, Object-Oriented Database Languages, $287,804.
1988-1990	Digital Equipment Corporation, Research in Object Oriented Databases, $200,000 (cash) and $270,000 (equipment).
1988-1993	National Science Foundation, "Multiparadigm Design Environments," co-principal investigator with E. Charniak, T. Dean, T. Doeppner, P. Kanellakis, D. Lopresti, L. Morgenstern, S. Reiss, J. Savage, D. Sklar, R. Tamassia, A. van Dam, J. Vitter, P. Wegner, K. Zadeck $3,481,000.
1989-1990	Apple Computer, Research in Object-Oriented Databases, $30,000.
1989-1990	IBM, Research in Object-Oriented Databases, $80,000.
1991	Digital Equipment Corp., Research in Object-Oriented Databases, $50,000.
1991	Digital Equipment Corp., Self-Adaptive Databases, $44,000.
1991-1994	DARPA, A High-Performance Storage Server, $398,534.
1991-1994	DARPA, An Architecture for Query Processing in Object-Oriented Databases (with D. Maier and D. DeWitt), $1.8 million.
1991-1994	DARPA, "High-Performance Computing Environments", co-principal investigator with E. Charniak, T. Dean, T. Doeppner, J. Hughes, P. Kanellakis, P. Klein, Dan Lopresti, F. Preparata, S. Reiss, J. Savage, R. Tamassia, A. van Dam, P. Van Hentenryck, J. Vitter, P. Wegner and K. Zadeck, $2,654,835.

1994-1997	Intel Corp. Research on Broadcast Disks, $120.000.
1995-1996	DARPA, An Architecture for Query Processing in Object-Oriented Databases (with D. Maier and D. DeWitt), one year extension, $129,931.
1996-1999	NSF, Analytical and Empirical Tools for Advanced Query Optimizers, $381,939.
1997-1998	ARPA, Broadcast Objects for Effective Data Dissemination in BADD, $874,821 (18 months)
1997-1998	IBM, Algebraic Optimization the COKO-KOLA Way. Cooperative Research Agreement, $25,000.
2000-2005	NSF ITR Grant, Data Centers: Managing Data with Profiles, (with M. Franklin and M. Cherniack), $3,150,000.
2000-2001	Sun Microsystems, Data Recharging, $45, 000.
2000-2001	NSF, Support for Workshop on Context Aware Mobile Data Management, Brown University, June, 2001, $30K.
2002-2006	U.S. Army Medical Research Acquisition Agency, A Time-Series Database System for Sensor Applications, $205,000.
2003-2007	NSF ITR Grant, Aurora - Enabling Stream-Based Monitoring Applications, (with U. Cetintemel) $1,820,000.
2005	Vertica Systems, Inc. (research gift), $137,000
2009	Vertica Systems, Inc. (research gift) $40,000
2009	NSF, Longview: A Predictive DBMS, (with U. Cetintemel and E. Upfal), $1.2M
2009	NSF, Automatic Database Design, (with U. Cetintemel) $500,000.
2011	NSF, Collaborative Effort, SciDB: A DBMS for Scientific Databases, (with M. Stonebraker, S. Madden, M. Balazinska, G. Patel, and D. Maier) $2.5M
2012-2018	Intel Science and Technology Center (topic: Big Data), collaborative research with MIT, U. Washington, Stanford), $2.5 M per year.
2015- 2018	NSF, 20/20: A System for Human-In-The-Loop Data Exploration, (with C. Binnig, U. Cetintemel, T. Kraska, and A. vanDam), $1M
2017	Intel Gify $47,999, Anomaly Detection
2018	Intel $100,-- Anomaly Detection

14. Teaching

1978	Programming Language Processors (MIT 6.831)
1980	Computer Language Engineering (MIT 6.035)
	Seminar in Advanced Database Management (Arthur D. Little, Inc.)
1981-1982	Database Management Systems (MIT 6.837)
1983-1984	Database Management Systems (Wang Institute)
	Topics in Database Management (CS227)
	Database Management Systems (CS128)
	Introduction to Computing with PASCAL (CS4)
1984-1985	Topics in Database Management (CS227)
	Database Management Systems (CS128)
	Introduction to Software Engineering (CS132)
	Programming AI Systems (CS296)
1985-1986	Topics in Database Management (CS227)
	Database Management Systems (CS128)
	Management Information Systems (MIT - Sloan School - 15.565)
	Introduction to Software Engineering (CS132)
1986-1987	Topics in Database Management (CS227)

	Database Management Systems (CS127)
	Object-Oriented Technology (DEC)
	Introduction to Software Engineering (CS132)
1987-1988	Topics in Database Management (CS227)
	Database Management Systems (CS127)
	Introduction to Software Engineering (CS132)
1988-1989	Topics in Database Management (CS227)
	Database Management Systems (CS127)
	Object-Oriented Technology (DEC)
	Introduction to Software Engineering (CS132)
1989-1990	Topics in Database Management (CS227)
	Database Management Systems (CS127)
	Object-Oriented Technology (DEC - twice)
	Introduction to Software Engineering (CS132)
1990-1991	Object-Oriented Systems: Technology, and Applications (with Lochner, Sriram, and Shaw), MIT Summer School, June
	Object-Oriented Database Management Systems (UC Irvine)
	Object-Oriented Technology, DEC
1991-1992	Object-Oriented Systems: Technology and Applications (with Sriram and Mitchell), MIT Summer School, June
	Advanced Object-Oriented Databases, DEC, November
	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
1992-93	Object-Oriented Systems: Technology and Applications (with Sriram and Mitchell), MIT Summer School, June
	Object-Oriented Technology, DEC, June
	Object-Oriented Database Systems (with Maier, Carey,and Mitchell), Oregon Graduate Institute, July
	Introduction to Database Systems (CS127)
	Software System Design (CS191)
	Seminar in Advance Database Systems (CS227)
1993-1994	Introduction to Database Systems (CS127)
	Object-Oriented Technology (with Sriram), MIT Summer School, June
	Object-Oriented Database Systems (with Maier, Carey, and Mitchell) UC Berkeley, Extension, April
	Software System Design (CS191)
	Seminar in Advanced Database Systems (CS227)
1994-95	Introduction to Database Systems (CS127)
	Object-Oriented Technology (with Sriram), MIT Summer School, June, 1994
	Seminar in Advanced Database Systems (CS227)
	Object-Oriented Database Systems (with D. Maier), 5 day Short Couse, Oregon Graduate Institute, Portland, Oregon, June, 1995.
1995-96	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
	Software System Design (CS190)
1996-97	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
1997-98	Introduction to Database Systems (CS127)
1998-99	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
1999-2000	Introduction to Database Systems (CS127)

	Seminar in Advanced Database Systems (CS227)
2000-2001	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
2001-2002	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
2002-2003	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
2003-2004	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
2004-2005	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
2005-2006	Introduction to Database Systems (CS127)
	Introduction to Database Systems (CS127)
2007-2008	Seminar in Advanced Database Systems (CS227)
	Introduction to Database Systems (CS127)
2008-2009	Seminar in Advanced Database Systems (CS227)
2009-2010	Introduction to Database Systems (CS127)
2010-2011	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
2011-2012	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
2012-2013	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
2013-2014	Introduction to Database Systems (CS127)
2014-2015	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
	Introduction to Database Systems (CS127)
	Seminar in Advanced Database Systems (CS227)
	Introduction to Database Systems (CS127
	Seminar in Advanced Database Systems (CS227

15. Student Supervision

Supervise six to eight Master's theses per year (current total is over 80).

Supervised fourteen (15) completed Ph.D.'s

Andrea Skarra

Marian Nodine

David Langworthy

Bharathi Subramanian

Swarup Achyra

Mitch Cherniak

Don Carney

Ying Xing

Nesime Tatbul

.   Jeong-Hyon Hwang

            Tingjian Ge

            Alex Rasin

            Hideaki Kimura

            Andy Pavlo

    Currently supervising three Ph.D. students

            John Meehan

            Sam Zhao

            Eric Metcalf

External PhD Committees

            Erik Odberg, Norwegian Institute of Technology, March, 1995.

            Demet Aksoy, University of Maryland, Sept., 2000

             Kajal Claypool, Worcester Polytechnic University, May 2002

            Xiaoyu Wang, Brandeis University, expected completion, December, 2006

            Zhibo Peng, Brandeis University, , December, 2017

    Supervised numerous Reading and Research Courses.