

DAVID MAIER

Department of Computer Science
Portland State University
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Born

2 June 1953, Eugene, Oregon

Education

B.A., Honors College University of Oregon, 1974
Double major: Mathematics and Computer Science

Ph.D. Princeton University, 1978
Electrical Engineering and Computer Science

Positions Held

2004 - present Maseeh Professor of Emerging Technologies
Department of Computer Science
Portland State University

2012 - present Faculty Member
Intel Science and Technology Center for Big Data

2012 - 2015 Shaw Visiting Professor
Department of Computer Science
National University of Singapore

2007 - 2010 Visiting Researcher
Microsoft Research, Redmond, Washington
(3 stays)

2006 - present Adjunct Professor; Affiliate Professor (since 2014)
Department of Medical Informatics & Clinical Epidemiology
Oregon Health & Science University

2004 - 2017 Professor (joint appointment)
Environmental and Biomolecular Systems
Oregon Health & Science University

1988 - 2006 Professor (joint appointment as of 2004)
Department of Computer Science and Engineering
Oregon Graduate Institute

1997 - 1998 Visiting Professor
Computer Sciences Department, University of Wisconsin

1989 -1990 Visiting Scientist
GIP Altair, INRIA-Rocquencourt, France
(Institute National de Recherche en Informatique et en Automatique)

1988 Acting Chair (Jan. - June)

1983 - 1988 Associate Professor

1982 - 1983 Assistant Professor
Department of Computer Science and Engineering
Oregon Graduate Institute

1978 - 1982 Assistant Professor
Department of Computer Science
State University of New York at Stony Brook

AWARDS AND HONORS

1. NSF Presidential Young Investigator Award, *Foundations of Knowledge Management Systems*, IST 83 51730, June 1984 - May 1985, renewed to May 1989. Industrial sponsors: Tektronix Foundation, Intel, Digital Equipment, Servio Logic, Mentor Graphics, Xerox, Beaverton Area Chamber of Commerce.
2. Distinguished Teaching Award, Oregon Graduate Institute, 1985-1986, 1987-1988, 1993-1994.
3. President's Award for Research Excellence, Oregon Graduate Institute, 1988-1989.
4. Outstanding Teacher Award CSE, OGI Student Council, 1987-1988, 1988-1989, 1990-1991, 1993-1994, 1994-1995.
5. 1997 SIGMOD Innovations Award.
6. ACM Fellow, 1998.
7. Branford Price Millar award for faculty excellence, PSU, 2014.
8. Cultural Competency Recognition Award, PSU, 2015.
9. Microsoft Research Outstanding Collaborator Award, 2016.

GRANTS, GIFTS AND CONTRACTS

1. Department of Energy Emergency Information Management System (EEMIS), *Logical Data Base Design for EEMIS*. Principal Investigator, Jack Heller. February - August 1979. Supervised by Brookhaven National Laboratory.
2. University Awards Committee Fellowship, State University of New York, *Applications of Minimal Covers in Relational Databases*. June - July 1979.
3. NSF, *The Relational Theory of Databases: Research Initiation*, IST 79 18264. September 1979-February 1982.
4. NSF, *Representing Semantic Information within Databases*, IST 81 04834, with David S. Warren and Sharon C. Salveter. May 1981 - October 1983.
5. NSF, *Verbs in Databases*, IST 82 14622, with Sharon C. Salveter, October 1982 -September 1984.
6. NSF, *Theory of Database Systems*, MCS 82 07216, November 1982 - October 1984.
7. Tektronix Computer Research Laboratory, *Data Models for Networked Workstations*, November 1983 - September 1986.
8. Tektronix Information Display Group (Artificial Intelligence Machines), *Smalltalk Short Course*, November 1984 - March 1985.
9. Microelectronics and Computer Technology Corporation (MCC), *Update in the Logical Data Language*, November 1985 - January 1987.
10. NSF, *Automatic Generation of Interactive Displays*, IST 86 04977, with Alan H. Borning and Ralph London, June 1986 - November 1988 (separate grant to Washington).
11. Apple Computer, Graduate Student Support in Object-Oriented Databases, 1988-1989.
12. NSF, *Generating Interactive Displays from Declarative Specifications*, IRI 88 05564, with Alan H. Borning, June 1988 - November 1990 (separate grant to Washington).
13. NSF, *Query Optimization in Object-Oriented Database Management Systems with Encapsulated Behavior*, IRI 89 20642, with Goetz Graefe, September 1989 - February 1991 (separate grant to Colorado).
14. Battelle Pacific Northwest Laboratories, *Establishment of Affiliated Laboratory for Computation Science*, 097714-A-L2, with David Novick, Steve Otto, Jonathan Walpole, Mike Wolfe, January 1991 - September 1991.
15. Battelle Pacific Northwest Laboratories and OACIS, *Database Support for Computational Chemistry*, 097714-A-L2, #5, March - September 1991.
16. Sequent Computer Systems, *Scientific Database Systems*, equipment donation, July 1991.
17. NSF, *Database Support for Scientific Computing*, IRI 91 17008, with Michael Wolfe, James Stanley and Jonathan Walpole, September 1991 - February 1994.

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18. DARPA, *Architectures for Query Processing in Persistent Object Bases*, ARPA order #8230, CECOM contract DAAB07-91-C-Q518, with Michael Carey, David DeWitt and Stanley Zdonik, September 1991 - September 1994. Extended to March 1996.
19. OACIS, *Graduate Fellowship*: Desktop Material Scientist, James Stanley, PI, January - December 1992.
20. Battelle Pacific Northwest Laboratories and OACIS. *Computational Proxies: Controlling and Capturing Computational Chemistry Experiments*, 097714-A-L2, #5, rev. 2 with Judy Cushing, January - December 1992.
21. U.S. West Advanced Technologies, Graduate Student Support in Object Oriented Database Technology, 1992.
22. NSF, *Collaborative Research: The REVELATION Project: Query Processing in Behavioral Object-Oriented Database*, IRI-9118360, with Goetz Graefe, September 1992-February 1995 (separate grant to Portland State)
23. DOD AASERT Award, *Query Processing in Loosely-Coupled Object Bases*, P-3223-RT-AAS, June 1993-May 1996.
24. Pacific Power and Light and OACIS, *The Capture and Analysis of Application Semantics*, with Lois Delcambre and Leonard Shapiro, April 1993-March 1994.
25. NSF, *Supporting Predictable Latency and Throughput in Large Storage Systems*, IRI-9223788, with Jonathan Walpole, PI, August 1993-January 1995.
26. Battelle Pacific Northwest Laboratories, *Computational Chemistry Database*, Task order 248003, Contract 206010-A-L2, with Judy Cushing, July-December 1993.
27. Battelle Pacific Northwest Laboratories, *Multidisciplinary Scientific Database*, Task Order 246273, Contract 206010-A-L2, with Lois Delcambre, April - September 1994.
28. Battelle Pacific Northwest Laboratories, *HEIS Data Management*, Task Order 266643, Contract 206010-4-L2, with Lois Delcambre, Tim Sheard and Andrew Black, August - September 1994.
29. DOD, *Quality of Service Specification and Use in Massive Digital Data Systems*, MDA904-95-C-5547, with Calton Pu and Jonathan Walpole, March 1995 - February 1998.
30. NSF, *An Effective Framework for Processing OODB Languages*, IRI-9509955, with Leonidas Fegaras, September 1995 - August 1998.
31. NSF, *SGER: Content-Based Connections for Navigating on the NII*, IRI-9502084, with Lois Delcambre, July 1995 - June 1996.
32. ONR, *Control and Scaling of Distributed Agent Systems*, N00014-95-1-1164, with Philip Cohen, Sharon Oviatt, David Novick, Jonathan Walpole and Calton Pu, May 1995 - April 1998.
33. Rik Smoody, *Gift to Support Purchase of Workstation*, with Jonathan Walpole, 1995.
34. Goetz Graefe and Microsoft, *Gift to Support Research and Education*, 1995.
35. Intel, *QoS-Based Adaptive Resource Management for Multimedia Systems*, with Jonathan Walpole and Calton Pu, 1996, 1997.
36. DARPA, *Heterodyne: A Regenerative Receiver for Dynamic Specialization Technology*, F30602-96-1-0302, with Andrew Black, Charles Consel, Lois Delcambre, Calton Pu and Jonathan Walpole, September 1996 - August 1999.
37. DOE, *Information Technology for Coordinated Long Term Care*, subcontract from OHSU 6398171 (DOE F603-94ER61918/A004), with Lois Delcambre, October 1996 - September 1997.
38. NSF, *Enhancing Researcher Site Productivity at Shared Research Facilities: Database Tools for Analyzing Forest Canopy Structure Data*, subcontract from The Evergreen State College on grant 96-30316, with Lois Delcambre, September 1996 - August 1997.
39. NSF, *Query Optimization Engineering*, IRI-9619977, Companion proposal to one by Len Shapiro of PSU, September 1997 - August 2000.
40. DARPA, *Systemic Quality of Service Support for Adaptive Distributed Systems*, N66001-97-C-8522, with Jonathan Walpole, PI, Calton Pu, Dylan McNamee, July 1997 - June 2000.

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41. DARPA, *Broadcast Objects for Effective Data Dissemination in BADD*, F30602-97-2-0241, subcontract from Brown University, Stanley Zdonik, PI, July 1997 - November 1998.
42. NSF, *A Wide-Spectrum Infrastructure for Software Research* (Research Infrastructure Award), CDA-9703218, Andrew Black and Calton Pu, PIs, 6 Co-PIs, August 1997 - July 2002.
43. DARPA, *Robust Agent-based Systems Incorporating Teams of Communicating Agents*, F30602-98-2-0098, with Philip Cohen, PI, Calton Pu and Ling Liu, July 1998 - September 2002.
44. NSF/DLI2, *Tracking Footprints Through an Information Space: Leveraging the Document Selections of Expert Problem Solvers*, IIS-9817492, with Paul Gorman (OHSU) and Lois Delcambre, PIs, January 1999 - December 2002.
45. DARPA, *NIAGARA – An Excursion into Net Data Management*, with David DeWitt (Wisconsin) and Jeffrey Naughton, PIs, N66001-99-1-8908, June 1999 – June 2002.
46. NSF, *RUI: Databases and Database Tools for Canopy Science – What Trees Can Teach Us about Integrating Database Use in the Research Process*, with Nalini Nadkarni (Evergreen) and Judy Cushing (Evergreen), PIs, and Lois Delcambre, Co-PI, DBI-9975510, June 1999 – June 2002.
47. DARPA, Autonomic Information Assurance program, *Autonomix: Component, System and Network Autonomy*, with C. Cowan (Wirex) and L. Delcambre, DAAH01-99-C-R206, September 1999 – October 2002.
48. NSF, Digital Government, *Harvesting Information to Sustain Our Forests*, with L. Delcambre, F. Phillips (MST) and P. Toccalino (ECE). In cooperation with Tim Tolle (US Forest Service), Eric Landis (consultant) and Craig Palmer (UNLV), EIA-9983518 plus REU and technology transfer supplements, August 2000 – July 2003.
49. NSF ITR, *A Petabyte in Your Pocket*, with D. DeWitt (Wisconsin) and J. Naughton (Wisconsin), IIS 0086002, September 2000 – August 2005.
50. NSF, Digital Government: *Workshop on Biodiversity Informatics*, EIA-0084541, September 2000 – April 2001.
51. NIH, National Library of Medicine, *Training Program in Health Informatics/Biomedical Information Science and Technology Initiative (BISTI)*, with Christopher Dubay (OHSU), July 2000 – June 2001. Supplement to existing training grant, Kent Spackman (OHSU), PI.
52. NSF ITR, *Quality-Scalable Information Flow Systems for Environmental Observation and Forecasting*, with A. Baptista (ESE), PI, W.-C. Feng, T. Leen, and J. Walpole, ACI 0121475, September 01 – September 06. REU Supplement, Summer 2004.
53. NSF, *DELOS/NSF Study Panel on Information Extraction for Digital Libraries*, IIS 0226501, August 02 – August 03.
54. PNNL, *Stream Queries for Network Monitoring*, (Part of ARDA Network Data Transformation and Analysis Project), with L. Delcambre (PI) and W.-C. Feng, June 02 – August 02.
55. NSF, Forensix: *Larger-Scale Tamper Resistant Computer Forensic System*, with W.-C. Feng (PI), W.-C. Feng, J. Walpole, STI 0230960, October 02 – September 05.
56. Intel-Oregon University System, *Curriculum Fellowship: Undergraduate Research Institute*, with D. Hansen (George Fox University) and W-C. Feng. January 04 – December 04.
57. Agency for Healthcare Research and Quality (AHRQ), *Using IT to Improve Medication Safety of Rural Elders*, with P. Gorman (PI, OHSU), M. Pavel (OGI), K. Ordelheide (PI, Samaritan North Lincoln Hospital), L. Fagnan (ORPRN), J. Logan (OHSU), others, October 04 – September 08.
58. NSF NSDL, *Superimposed Tools for Active Arrangement and Elaboration of Educational Resources*, with L. Delcambre, E. Fox (Virginia Tech), Lillian Cassel (Villanova), and R. Kelapure (Virginia Tech), DUE 0435496, October 04 – September 06.
59. NSF, *Adapting Information using Superimposed Models and Structures*, with L. Delcambre (PI), IIS 0534762, February 2006 – January 2009.
60. NSF, *Exploiting Live Plus Archive Data for Intelligent Transportation Systems*, with R. Bertini (co-PI) and K. Tufte, IIS 0612311, July 2006 – June 2008.

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61. NSF, *Science and Technology Center for Coastal Margin Observation and Prediction*, with A. Baptista (PI, OHSU), D. Martin (Co-PI, UW APL), B. Menge (Co-PI, OSU) and P. Zuber (Co-PI, OHSU), OCE 0424602, July 2006 – June 2011. Renewed July 2011 – June 2016.
62. NSF, *SGER: From Measurement to Management: Evidence-Based Practice in Natural Resource Management*, with J. Cushing (PI, Evergreen), L. Delcambre (Co-PI) and N. Nadkarni (Co-PI, Evergreen), IIS 0639588, August 2006 – January 2008.
63. Oregon Transportation and Research Consortium (OTREC), *Improving Travel Information Products via Robust Estimation Techniques*, with K. Tufte, 07-64, April 2007 – January 2008.
64. AHRQ, *RxSafe: Shared Medication Management and Decision Support for Rural Clinicians*, with L. J. Fagnan (OHSU), P. Gorman (PI, OHSU), Heather Young (OHSU), 1R18HS017102-01, September 2007 – August 2010.
65. Lockheed, *Pay-as-You-Go Information Integration* (Part of DARPA Information Integration seedling program), with L. Delcambre, September 2007 – June 2008.
66. Oregon Transportation and Research Consortium (OTREC), *Exploiting a Next Generation ITS Data Warehouse for Improved System Performance and Congestion Monitoring*, with R. Bertini (PI) and K. Tufte, 09-269, October 2008 – September 2009.
67. NSF, *Toward More Flexible, Expressive and Robust Stream Systems*, with K. Tufte (PI), IIS 0917349, July 2009 – June 2012.
68. NSF, *Database-As-A-Service for Long Tail Science*. Collaborative grant with U. Washington and U. Michigan, IIS 1064685, August 2011 – July 2015.
69. NSF, *SciDB – An Array Oriented Data Management System for Massive Scale Scientific Data*. Collaborative grant with U. Washington, MIT, Brown U. and U. Wisconsin, IIS 1110917, September 2011 – August 2016.
70. University Industry Research Consortium, *Intel Science and Technology Center for Big Data*, September 2012 – August 2017.
71. NSF, *EAGER: Agile Data Integration to Facilitate Scaling of Air Quality Research*, with K. Tufte (PI) and L. George, CNS 1640749, Sept 2016 – August 2018.

PUBLICATIONS and PATENTS

Papers and Reports

1. A construction of the real numbers. With E.A. Maier. *The Two-Year College Mathematics Journal*, Winter 1973.
2. The complexity of some problems on subsequences and supersequences. *Journal of the ACM* 25(2), April 1978.
3. An efficient method for storing ancestor information in trees. *SIAM Journal on Computing* 8(4), November 1979.
4. On finding minimal length superstrings. With J. Gallant and J.A. Storer. *Journal of Computer and System Sciences* 20(1), February 1980.
5. Representing databases in segmented name spaces. With V. Gligor. In *Databases: Improving Usability and Responsiveness*, B. Shneiderman, editor, Academic Press, 1978.
6. Minimum covers in the relational database model. *Journal of the ACM* 27(4), October 1980.
7. Testing implication of data dependencies. With A.O. Mendelzon and Y. Sagiv. *ACM Transactions on Database Systems* 4(4), December 1979.
8. Generalized mutual dependencies and the decomposition of database relations. With A.O. Mendelzon. *Proceedings of the Fifth International Conference on Very Large Data Bases*, October 1979.
9. Adequacy of decompositions of relational databases. With A.O. Mendelzon, F. Sadri and J.D. Ullman. *Advances in Data Base Theory*, vol. 1, H. Gallaire, J. Minker, and J.M. Nicolas, editors, Plenum, 1981. Also in *Journal of Computer and System Sciences* 21(3), December 1980.
10. Hysterical B-trees. With S.C. Salveter. *Information Processing Letters* 12(4), August 1981.

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