MOSHE Y. VARDI

Address

Office
Department of Computer Science
Rice University
P.O.Box 1892
Houston, TX 77251-1892
Tel: (713) 348-5977
Fax: (713) 348-5930
E-mail: vardi@cs.rice.edu
URL: http://www.cs.rice.edu/~vardi

Home
4515 Merrie Lane
Bellaire, TX 77401
Tel: (713) 665-5900
Fax: (713) 665-5900

Research Interests

Applications of logic to computer science:

- database systems
- complexity theory
- multi-agent systems
- specification and verification of hardware and software

Education

Sept. 1974 B.Sc. in Physics and Computer Science (*Summa cum Laude*), Bar-Ilan University, Ramat Gan, Israel

May 1980 M.Sc. in Computer Science, The Feinberg Graduate School, The Weizmann Institute of Science, Rehovoth, Israel
Thesis: *Axiomatization of Functional and Join Dependencies in the Relational Model.*

Advisors: Prof. C. Beeri (Hebrew University)
Prof. P. Rabinowitz

Sept 1981 Ph.D. in Computer Science, Hebrew University, Jerusalem, Israel
Thesis: *The Implication Problem for Data Dependencies in the Relational Model.*

Advisor: Prof. C. Beeri

Professional Experience

Nov. 1972 – June 1973 Teaching Assistant, Dept. of Mathematics, Bar-Ilan University. Course: Introduction to computing.

Nov. 1978 – June 1979 Programmer, The Weizmann Institute of Science. Assignments: implementing a discrete-event simulation package and writing input-output routines for a database management system.

Feb. 1979 – Oct. 1980 Research Assistant, Inst. of Math. and Computer Science, The Hebrew University of Jerusalem. Research subject: Theory of data dependencies.

Nov. 1980 – Aug. 1981 Instructor, Inst. of Math. and Computer Science, The Hebrew University of Jerusalem. Course: Advanced topics in database theory.

Sep. 1981 – Aug. 1983 Postdoctoral Scholar, Dept. of Computer Science, Stanford University.

Sep. 1983 – Aug. 1984 Visiting Scientist, Dept. of Computer Science, IBM Research Laboratory, San Jose, California.

Sep. 1984 – Aug. 1985 Research Associate, Center for Study of Language and Information, Stanford University.

Sep. 1985 – Nov. 1993 Research Staff Member, IBM Almaden Research Center, San Jose, California.

Dec. 1989 – Nov. 1993 Second-level manager, Department of Mathematics and Related Computer Science, IBM Almaden Research Center, San Jose, California. Managed four groups: Discrete Mathematics, Foundations of Computer Science, Functional Languages, and System Fundamentals.

March 1991 – August 1995 Consulting Professor, Dept. of Computer Science, Stanford University.

Dec. 1993 – June 2000 Noah Harding Professor, Dept. of Computer Science, Rice University.

July 2000 – August 2011 Karen Ostrum George Professor in Computational Engineering, Dept. of Computer Science, Rice University.

July 2011 – present Karen Ostrum George Distinguished Service Professor in Computational Engineering, Dept. of Computer Science, Rice University.

Jan. 1994 – June 2002 Chair, Dept. of Computer Science, Rice University.

June 1996 – August 1996 Consultant, Bell Labs, New Jersey.

June 1997 – August 1997 Visiting faculty, Intel Design Center, Haifa, Israel.

June 1998 – August 1998 Visiting faculty, Intel Design Center, Haifa, Israel.

Sept. 1998 – January 1999 Varon Visiting Professor, Weizmann Institute of Science, Israel.

June 1999 – August 1999 Visiting faculty, Intel Design Center, Haifa, Israel.

May 2000 - June 2000 Visiting Professor, Laboratoire d'Informatique Fondamentale d'Orleans, University of Orleans, France.

June 2000 – August 2000 Visiting faculty, Intel Design Center, Haifa, Israel.

January 2001 – present Director, Ken Kennedy Institute for Information Technology Institute, Rice University.

January 2006 – July 2006 Visiting Fellow, Clare Hall, University of Cambridge, UK.

January 2010 – June 2010 Forchheimer Visiting Professor, Hebrew University in Jerusalem, Israel.

Awards, Fellowships, and Honors

Nov. 1971 – Oct. 1973 Shapiro Fellowship, Bar-Ilan University.

Nov. 1972 Loker Award, Bar-Ilan University.

Nov. 1979 – July 1980 M.Sc. Fellowship, The Weizmann Institute of Science.

Sep. 1981 Fulbright Award, U.S.-Israel Education Foundation.

Sep. 1981 – Aug. 1983 Weizmann Post-Doctoral Fellowship, The Weizmann Institute of Science.

March 1987 Outstanding Innovation Award, Theory of Knowledge, IBM Research.

March 1989 Outstanding Innovation Award, Automata-Theoretic Approach to Program Verification, IBM Research.

March 1992 Outstanding Innovation Award, Zero-One Laws, IBM Research.

August 1998 Spinoza Lecture, 10th European Summer School on Logic, Language, and Information, Saarbruecken, Germany.

May 2000 Fellow, Association for Computing Machinery.

May 2000 Gödel Prize (with P. Wolper).

February 2002 Member, U.S. National Academy of Engineering

March 2002 Doctor Honoris Causa (accompanied by a special symposium), Saarland University, Germany

October 2002 Doctor Honoris Causa, Orleans University, France

October 2002 Member, European Academy of Science

October 2002 Fellow, American Association for the Advancement of Science

January 2003 Member, Texas Academy of Medicine, Engineering and Science

April 2003 Saul Gorn Memorial Lecture, University of Pennsylvania

July 2004 Fellow, American Association for Artificial Intelligence

May 2005 Guggenheim Fellow

May 2006 ACM Paris Kanellakis Award for Theory and Practice (w. G. Holzmann, R. Kurshan, and P. Wolper)

August 2006 IEEE Symp. on Logic in Computer Science Test-of-Time Award (w. P. Wolper)

April 2007 Foreign member, Academia Europaea

June 2008 ACM SIGMOD Edgar F. Codd Innovations Award

June 2008 ACM PODS Alberto O. Mendelzon Test-of-Time-Award (w. P. Kolaitis)

June 2008 ACM Presidential Award

November 2008 Blaise Pascal Medal, European Academy of Sciences

January 2009 IEEE Fellow

March 2009 EATCS Award for Best ETAPS Paper 2009

June 2009 Milner Lecture, University of Edinburgh

February 2010 Computing Research Association, Distinguished Service Awards

April 2010 ACM Outstanding Contribution Award

April 2010 Member, American Academy of Arts and Sciences

May 2011 IEEE Computer Society's 2011 Harry H. Goode Memorial Award

December 2011 Amir Pnueli – Ahead of His Time. Pnueli Memorial Lecture, Weizmann Institute of Science, Rehovot, Israel.

December 2011 And Logic Begat Computer Science, Institute Colloquium, IIT Bombay.

April 2013 Southeastern Universities Research Association's Distinguished Scientist Award.

January 2015 Fellow, the European Association for Theoretical Computer Science

March 2015 Fellow, Society for Industrial and Applied Mathematics

April 2015 Member, National Academy of Science

May 2015: Leibniz Visiting Scientist, Leipzig University, Germany

June 2015 Doctor Honoris Causa, UFRGS, Brazil

Professional Activities

University Service

1. Chair of Computer Science: Jan. 1994 – June 2002
2. Departmental Search Committee: Jan. 1994 – June 2002.
3. Departmental Computing Facility Committee: Jan. 1994 - June 2002
4. Departmental Corporate Affiliates Committee: Jan. 1994 - June 2008.
5. University Council: Sep. 1995 – August 1996
6. Promotion and Tenure Committee: Sep. 1995 – August 1996
7. Graduate Council: Sep. 1995 – August 1996
8. Conflict-of-Interest Committee: Dec. 1995 – April 1997
9. President, Rice Chapter of the American Association of University Professors, August 1996 – August 1998.
10. Graduate Council, chair: Sep. 1996 – June 1998.
11. Faculty Handbook Committee: Sep. 1996 – June 1998.
12. Intellectual Property Committee: Dec. 1996 – December 1997.
13. Rice Engineering Day Organizing Committee: Sep. 1996 - March 1997
14. Computational Engineering Computing Committee: Dec. 1996 – Dec. 2000
15. Research Council: January 1999 – June 1999
16. Library Committee: January 1999 – June 2002
17. Task Force on Future Electronic Grant Management: January 1999 – July 1999
18. Committee on Digital Architecture: November 1999 – June 2000
19. Executive Committee, Keck Center for Computational Biology: Sep. 2000 – June 2001
20. Steering Committee Chair, Gulf-Coast Consortium for Bioinformatics: Jan. 2001 – Dec. 2005
21. Computer and Information Technology Institute, Director: Jan. 2001 – December 2007
22. Ken Kennedy Institute for Information Technology, Director: Jan. 2008 – present
23. Science and Engineering Computing Committee, Chair: Sep. 2002 – May 2004
24. Advanced Placement Digital Library Project Advisory Board: November 2002 – October 2005

25. Search committee, Vice Provost for Information Technology, April 2003 – October 2003.
26. Ad-Hoc Committee on Copyright Policy, February – April 2004.
27. Information Technology Advisory Committee, July 2004 – February 2007.
28. Co-chair, Information Technology Advisory Committee, February 2007 – June 2013
29. Senate Working Group on Email Privacy, Jan. 2007 – Feb. 2008
30. Bioinformatics and computational biology chair search committee, M.D. Anderson Cancer Center, spring 2007
31. Chair, Graduate Council, September 2007 – August 2011
32. Research Administration Advisory Group, September 2007 – present
33. Departmental Search Committee: Jan. 2008 – June 2008
34. President's Faculty Advisory Committee: Nov. 2008 – April 2009
35. Faculty Merger-Review Committee: May 2009 – January 2010
36. Faculty Senate: Sep. 2010 – August 2013
37. Executive Committee, Faculty Senate: Sep. 2011 – August 2013
38. Chair, Faculty Appeals and Grievances Working Group: Sep. 2010 – August 2011.
39. Biosciences and Human Health Task Force: Sep.-Dec. 2010
40. Departmental Search Committee: Nov. 2010 – May 2010
41. Chair, Senate Working Group on Research and Scholarship: Sep. 2011 – November 2013.
42. Information Technology Task Force, Sep. 2012 – May 2014.
43. Search Committee, Vice President for Information Technology: Sep. – Nov. 2014.
44. Scientia, Sep. 2014 – present
45. Quality Enhancement Plan Steering Committee: Jan. 2015 – present

Program Committees:

1. 3rd ACM Symp. on Principles of Database Systems, March 1984.
2. 4th ACM Symp. on Principles of Database Systems, March 1985.
3. 1st Conf. on Theoretical Aspects of Reasoning about Knowledge, March 1986.
4. 5th ACM Symp. on Principles of Database Systems, March 1986.
5. 1st Symp. on Logic in Computer Science, June 1986.

6. 1st International Conf. on Database Theory, Aug. 1986.
7. 27th IEEE Symp. on Foundation of Computer Science, Oct. 1986.
8. **program chair**, 6th ACM Symp. on Principles of Database Systems, March 1987.
9. **program chair**, 2nd Conf. on Theoretical Aspects of Reasoning about Knowledge, March 1988.
10. 16th ACM Symp. on Principles of Programming Languages, Jan. 1989.
11. 2nd Conf. on Mathematical Foundations of Database Systems, July 1989.
12. 1st Int'l Conf. on Deductive and Object-Oriented Databases, Dec. 1989.
13. ACM Int'l Conf. on Management of Data, May 1990.
14. 31st IEEE Symp. on Foundations of Computer Science, Oct. 1990.
15. 5th Jerusalem Conf. on Information Technology, October 1990.
16. 3rd International Conf. on Database Theory, Dec. 1990.
17. 18th Int'l Colloq. on Automata, Languages, and Programming, July 1991.
18. 2nd Int'l Symp. on AI and Mathematics, Jan. 1992.
19. 7th IEEE Symp. on Logic in Computer Science, June 1992.
20. 32nd IEEE Symp. on Foundations of Computer Science, Oct. 1992.
21. **program chair**, 8th IEEE Symp. on Logic in Computer Science, June 1993.
22. IJCAI Workshop on Principles of Hybrid Representation and Reasoning, Aug. 1993.
23. 13th ACM Symp. on Principles of Database Systems, May 1994.
24. Symp. on Logical Foundations of Computer Science, July 1994.
25. 34nd IEEE Symp. on Foundations of Computer Science, Oct. 1994.
26. **program co-chair**, Int'l Conf. on Database Theory, Jan. 1995.
27. 27th ACM Symp. on Theory of Computing, May 1995.
28. 7th Int'l Conf. on Computer-Aided Verification, July 1995.
29. 3rd Int'l Conf. on Information and Knowledge Management, Nov. 1995.
30. 4th Int'l Symp. on Artificial Intelligence and Mathematics, Jan. 1996.
31. **program chair**, 4th Israeli Symposium on the Theory of Computing and Systems, June 1996.

32. 8th Conf. on Computer-Aided Verification, July 1996.
33. 22nd Int'l Conf. on Very Large Databases, Sep. 1996.
34. 5th Israeli Symposium on Theory of Computing and Systems, June 1996.
35. 9th Conf. on Computer-Aided Verification, June 1997.
36. 5th Int'l Symp. on Artificial Intelligence and Mathematics, January 1998.
37. 17th ACM Symp. on Principles of Database Systems, June 1998.
38. **program co-chair**, 10th Conf. on Computer-Aided Verification, June 1998.
39. AAAI'98, Symposium of the American Association for Artificial Intelligence, August 1998.
40. 18th Symposium on Foundations of Software Technology and Theoretical Computer Science, Chennai, India, December 1998.
41. 6th Workshop on Logic, Language, Information and Computation, Rio de Janeiro, Brazil, May 1999.
42. 6th International Conference on Logic for Programming and Automated Reasoning, Tbilisi, Georgia, September 1999.
43. 5th International Conference on Logic Programming and Nonmonotonic Reasoning, El Paso, December 1999.
44. 6th International Symposium on Artificial Intelligence and Mathematics, Fort Lauderdale, January 2000.
45. Conference on Foundations of Software Science and Computation Structures, Berlin, March 2000.
46. 19th ACM Symp. on Principles of Database Systems, Dallas, May 2000.
47. 17th Int'l Conf. on Automated Deduction , Pittsburgh, Pennsylvania, June 2000.
48. 11th Int'l Conf. on Concurrency Theory, State College, Pennsylvania, August 2000
49. Annual Conf. of the European Association for Computer Science Logic, Fischbachau/Munich, Germany, August 2000.
50. 7th International SPIN Workshop on Model Checking of Software, Stanford University, August 2000
51. 8th International Conference on Database Theory, London, January 2001.
52. International Joint Conference on Automated Reasoning, Siena, Italy, June 2001.
53. 8th International Symposium on Temporal Representation and Reasoning, Cividale del Friuli, Italy, June 2001.

54. 5th Annual Conference of the European Association for Computer Science Logic, Paris, France, September 2001.

55. 8th Int'l Workshop on Knowledge Representation Meets Databases, Rome, Italy, September 2001.

56. Joint Workshop on Process Algebra and Performance Modelling and Probabilistic Methods in Verification, Aachen, Germany, September 2001.

57. 3rd ACM Conference on Electronic Commerce, Tampa, October 2001.

58. 8th International Conference on Logic for Programming, Artificial Intelligence and Reasoning, Havana, Cuba, December 2001.

59. European Conference on Design, Automation and Test, Paris, France, March 2002.

60. 9th International SPIN Workshop on Model Checking of Software, Grenoble, France, April 2002.

61. 9th International Symposium on Temporal Representation and Reasoning, Manchester, United Kingdom, June 2002.

62. 18th Int'l Conf. on Automated Deduction, Copenhagen, Denmark, July 2002.

63. 4th Int'l Workshop on Verification of Infinite-State Systems, Brno, Czech Republic, August 2002.

64. 8th Int'l Conference on Principles and Practice of Constraint Programming, Ithaca, September 2002.

65. **program co-chair**, 22nd IFIP WG 6.1 International Conference on Formal Techniques for Networked and Distributed Systems, Houston, November 2002.

66. European Conference on Design, Automation and Test, Munich, Germany, March 2003.

67. 9th Conference on Theoretical Aspects of Rationality and Knowledge, Bloomington, June 2003.

68. 19th Int'l Conf. on Automated Deduction, Miami, July 2003.

69. 12th Int'l Congress of Logic, Philosophy, and Methodology of Science, Oviedo, Spain, August 2003.

70. **program co-chair**, 10th Int'l Conference on Logic for Programming, Artificial Intelligence, and Reasoning, Almaty, Kazakhstan, September 2003.

71. 23nd IFIP WG 6.1 International Conference on Formal Techniques for Networked and Distributed Systems, Berlin, Germany September 2003.

72. 12th Conference on Correct Hardware Design and Verification Methods, L'Aquila, Italy, October 2003.

73. European Conference on Design, Automation and Test, Paris, France, March 2004.

74. 23rd ACM Symposium on Principles of Database Systems, Paris, France, June 2004.

75. 19th IEEE Symposium on Logic in Computer Science, Turku, Finland, July 2004.

76. **program co-chair**, Computing Research Association Biennial Meeting, Snowbird, Utah, July 2004.

77. 1st Int'l Conference on Quantitative Evaluation of Systems, Enschede, the Netherlands, September 2004.

78. 20th Int'l Conference on Automated Deduction, Tallinn, Estonia, July, 2005.

79. 3rd Int'l Symposium on Automated Technology for Verification and Analysis, Taipei, Taiwan, October, 2005.

80. 33rd International Conference on Very Large Data Bases, Vienna, Austria, September 2007.

81. *program co-chair*, Turing Centenary Celebration, San Francisco, June 2012.

82. *program co-chair*, 1st Int'l Workshop on Strategic Reasoning, Rome, Italy, March 2013.

Invited Talks:

1. On the properties of total join dependencies. Workshop on Formal Bases for Data Bases, CERT-DERI, Toulouse, Dec. 1979.

2. Second-order dependency theory. XP4.5 Workshop on Database Theory, Stanford University, Aug. 1983.

3. On the semantics of database updates. Conf. on Logic in Computer Science, CUNY, New York, Dec. 1983.

4. The theory of data dependencies. AMS short course on The Mathematics of Information Processing, Louisville, Jan. 1984.

5. Fundamentals of database theory. Course on Computation Theory, CISM, Udine (Italy), Sep. 1984.

6. Fundamentals of dependency theory. Workshop on Logic and Computer Science, Lexington, June 1985.

7. Issues in logical databases (tutorial), 12th Int'l Conference on Very Large Data Bases, Kyoto, Japan, August 1986.

8. Unified verification theory, Colloq. on Temporal Logic in Specification, Altrincham, UK, April 1987.

9. Unified verification theory, US-Japan Workshop on Logic of Programs, Hawaii, May 1987.

10. An automata-theoretic approach to automatic protocol verification. Concurrency 88, Hamburg, Germany, Oct. 1988.

11. Automata theory for database theoreticians, 8th ACM Symp. on Principles of Database Systems, March 1989.

12. Global optimization problems for database logic programs, Workshop on Logic Related to Computer Science, Mathematical Science Research Institute, Nov. 1989.

13. Global optimization problems for database logic programs, 7th Int'l Conf. on Logic Programming, Jerusalem, Israel, June 1990.

14. Knowledge without probability, Workshop on Learning, Rationality, and Games. Santa Fe Inst., April 1991.

15. Infinitary logic in computer science, NSF-INRIA Workshop on Databases and Finite-Model Theory, June 1992.

16. Infinitary logic in computer science, 19th Int'l Coll. on Automata, Languages, and Programming, Vienna, Austria, July 1992.

17. Fixpoint logics, relational machines, and computational complexity, Annual Meeting of the Association for Symbolic Logic, Notre Dame University, March 1993.

18. Finite-model theory, process theory, and program logics. Jumelage'93, SRI International, Oct. 1993.

19. Nontraditional applications of automata theory. Symp. on Theoretical Aspects of Computer Software, Sendai, Japan, April 1994.

20. Infinitary logic in computer science. Logic Colloquium'94, Clermont-Ferrand, France, July 1994.

21. An automata-theoretic approach to program specification and verification. 8th Banff Higher-Order Workshop, Banff, Canada, Sep. 1994.

22. Fixpoint logic and program verification. 2nd International Workshop on Finite Model Theory, Luminy, France, April 1995.

23. Program logics and finite-model theory. DIMACS Workshop on Finite Models and Descriptive Complexity, Princeton, January 1996.

24. Computational model theory. *Keislerfest* – a Conference on Current Trends in Applied Model Theory in Honor of H.J. Keisler, Madison, March 1996.

25. Verification = Logic + Algorithmics. DIMACS Workshop on Computational and Complexity Issues in Automated Verification, Piscataway, March 1996.

26. Global optimization problems for database logic programs. 17th IPP Symposium – a Technical Perspective on Paris Kanellakis, Brown University, May 1996.

27. Infinite games against nature. DIMACS Workshop on Controllers for Manufacturing and Automation: Specification, Synthesis, and Verification Issues. Piscataway, May 1996.

28. Verification = Logic + Algorithmics. Keynote lecture, SPIN'96 – 2nd International SPIN Workshop, August 1996.

29. Computational model theory. CSL'96 – Annual Conference of the European Association for Computer Science Logic, September 1996.

30. Common knowledge: now you have it, now you don't. Intelligent Systems–a Semiotics Perspective, the 1996 Int'l Multidisciplinary Conference, October 1996.

31. Automated verification = graphs, logic, and automata. Intel Symposium on Formal Verification, Haifa, Israel, June 1997.

32. Alternating automata: unifying truth and validity checking for temporal logics. 14th International Conference on Automated Deduction, Townsville, Australia, July 1997.

33. Computational model theory. 4th Workshop on Logic, Language, Information and Computation (WoLLIC'97), Fortaleza (Ceara'), Brazil, August 1997.

34. Modular model checking. International Symposium on Compositionality (COMPOS'97), Bad Malente, Germany, September 1997.

35. Unifying truth and validity checking for temporal logics. Dagstuhl Workshop on Applications of Tree Automata, Germany, October 1997.

36. Verification of open systems. 17th Conf. on Foundations of Software Technology and Theoretical Computer Science, Kharagpur, India, December 1997.

37. Conjunctive-query containment and constraint satisfaction. Workshop on Finite-Model Theory, Oberwolfach, Germany, February 1998.

38. The automata-theoretic approach to verification of probabilistic programs. Workshop on Probabilistic Methods in Verification, Indianapolis, June 1998.

39. Linear vs. branching time: the complexity-theoretic perspective. 13th IEEE Symposium on Logic in Computer Science, Indianapolis, June 1998.

40. Automated verification = graphs, logic, and automata. Intel Symposium on Formal Verification, Portland, Oregon, June 1998.

41. Automated verification = graphs, logic, and automata. Workshop on Reasoning about Actions, 10th European Summer School on Logic, Language, and Information, Saarbruecken, Germany, August 1998.

42. Unifying truth and validity for temporal logic. *Spinoza Lecture*, 10th European Summer School on Logic, Language, and Information, Saarbruecken, Germany, August 1998.

43. Sometimes and not never re-revisited: on branching vs. linear time. 9th Int'l Vonf. on Concurrency Theory, Nice, France, September 1998.

44. Verification of open systems. DIMACS 10th Year Anniversary, Rutgers University, October 1998.

45. Temporal Logic – Finite-Model Theory vs. Automata Theory. School on Finite-Model Theory, Chennai, India, December 1998.

46. The complexity of constraint-satisfaction problem. IRCS/DIMACS Tutorial on Logic and Cognitive Science, University of Pennsylvania, April 1999.

47. Probabilistic Linear-Time Model Checking: an Overview of The Automata-Theoretic Approach. 5th Int. AMAST Workshop on Real-Time and Probabilistic Systems, Bamberg, Germany, May 1999.

48. The descriptive complexity of constraint satisfaction. Workshop on Implicit Computational Complexty, Federated Logic Conference, Trento, Italy, July 1999.

49. Logic and computer-aided verification, mini-course, Second Pan-Hellenic Logic Symposium, Delphi, Greece, July 1999.

50. The truth, the whole truth, and nothing but the truth. 6th International Workshop on Knowledge Representation Meets Databases, Linköping, Sweden, July 1999.

51. Automata theory: what is new since 1959? Workshop on Model Checking and Program Analysis, Schloss Ringberg, February 2000.

52. Automated verification = graphs, logic, and automata. Journees de Verification Formelle, LIFO, University of Orleans, France, June 2000.

53. From verification to synthesis. Journees de Verification Formelle, LIFO, University of Orleans, France, June 2000.

54. Constraint satisfaction and view integration. First International Conference on Computational Logic, London, July 2000.

55. The ultimate temporal specification language. IBM Formal Verification Summer Symposium, Israel, August 2000.

56. Automated verification = graphs, logic, and automata. Annual Conference of the European Association for Computer Science Logic, August 2000, Fischbachau, Germany

57. 0-1 Laws for Fragments of Existential Second-Order Logic: A Survey. 25th International Symposium on Mathematical Foundations of Computer Science, Bratislava, Slovak Republic, August 2000.

58. Alternation. Advances in Modal Logic - International Conference on Temporal Logic, Leipzig, Germany, October 2000.

59. Common Knowledge: Now You Have It, Now You Don't. Language, Logic and Logistics: Modeling and Cross-Disciplinary Discourse. New Mexico State University, January 2001.

60. Branching vs. Linear Time: Final Showdown. European Joint Conferences on Theory and Practice of Software, Genova, Italy, April 2001.

61. Automated verification = graphs, logic, and automata. Bar-Ilan International Symposium on Foundations of Artificial Intelligence, Ramat Gan, Israel, June 2001.

62. Designing a Property Specification Language. Intel Symposium on Formal Verification, Haifa, Israel, July 2001.

63. Benefits of bounded model checking in an industrial setting. Dagstuhl Seminar on Exploration of Large State Spaces, November 2001.

64. Constraint satisfaction and database theory. 7th Int'l Conference on Principles and Practice of Constraint Programming, Paphos, Cyprus, November 2001.

65. 0-1 Laws for Fragments of Existential Second-Order Logic: A Survey. AMS-MAA-ASL Joint Mathematics Meetings, San Diego, January 2002.

66. On the unusual effectiveness of logic in computer science. Symposium on the Effectiveness of Logic in Computer Science in Honour of Moshe Vardi, International Max Planck Research School for Computer Science, Saarbrücken, Germany, March 2002.

67. Logic and automata: a match made in heaven. Symposium on the Effectiveness of Logic in Computer Science in Honour of Moshe Vardi, International Max Planck Research School for Computer Science, Saarbrücken, Germany, March 2002.

68. Automated verification = graphs, logic, and automata. 2002 Clifford Lectures, Mathematical Logic for Computer Science, Tulane University, New Orleans, March 2002.

69. Common knowledge revisited. Symposium on Dimensions in Epistemic Logic, Danish Network for Philosophical Logic, Roskilde University, May 2002.

70. On the unusual effectiveness of logic in computer science. Workshop on Learning and Formal Verification - in Honor of Eli Shamir, Neve Ilan, Israel, May 2002.

71. Automata and logic: words, trees, and forests. Workshop on Hybrid Logic, Federated Logic Conference, Copenhagen, Denmark, July 2002.

72. The information revolution - reality or hype? International School on Disarmament and Research on Conflicts, Trento, Italy, August 2002.

73. Model checking: a complexity-theoretic perspective. 1st Int'l Workshop on Parallel and Distributed Model Checking, Brno, Czech Republic, August 2002.

74. Alternation. 8th European Conf. on Logics in Artificial Intelligence, Cosenza, Italy, september 2002.

75. Verification=logic+algorithms. Games Network Kick-Off Meeting, Edinburgh, UK, September 2002.

76. Common knowledge: now you have it, now you don't. Approches Formelles Outils D'Analyse et de Synthese, Orleans University, France, September 2002.

77. A call to regularity. Computer Science Symposium in Honor of Jeffrey D. Ullman, Stanford, December 2002.

78. Designing a Property Specification Language. Dutch Theory Day, Utrecht, The Netherlands, March 2003.

79. And logic begat computer science. Saul Gorn Memorial Lecture, University of Pennsylvania, April 2003.

80. Probabilistic Linear-Time Model Checking: an Overview of The Automata-Theoretic Approach. Dagstuhl Workshop on Probabilistic Methods in Verification and Planning, Dagstuhl, Germany, May 2003.

81. And Logic Begat Computer Science, Symposium in honor of Professor Baruch Muskat, Bar Ilan University, Israel, May 2003.

82. Constraints, Graphs, Algebra, and Logic. Third Haifa Workshop on Interdisciplinary Applications of Grapg Theory, Combinatorics, and Algorithms, May 2003.

83. A call to regularity. Workshop on Principles of Computing and Knowledge (in memory of Paris C. Kanellakis), Federated Computing Research Conference, June 2003.

84. Logic and automata: a match made in heaven. Int'l Colloq. on Automata, Languages, and Programming, July 2003.

85. Automated verification = graphs, logic, and automata. Int'l Joint Conference on Artificial Intelligence, Acapulco, Mexico, August 2003.

86. Liveness and co-liveness. Beyond Safety - an Int'l Workshop, Schloss Ringberg, Germany, April 2004.

87. Markov Processes and Markov Decision Processes - The Verification Perspective. 20th Conference on Uncertainty in Artificial Intelligence. Banff, Canada, July 2004.

88. The logic of life. Informatics–Defining the Research Agenda. Indiana University, Bloomington, September 2004.

89. Alternation as an algorithmic construct. A Tribute to Larry Stockmeyer, IBM Almaden Research Center, October 2004.

90. Model checking for database theoreticians, Tenth International Conference on Database Theory, Edinburgh, Scotland, January 2005.

91. A Game-theoretic approach to automated program generation, IFIP Working Group 2.11 on Program Generation, Rice University, March 2005.

92. Tutorial on computer-aided verification (three lectures). Annual Meeting of the Association for Symbolic Logic, Stanford University, March 2005.

93. Alternation as an algorithmic construct. Workshop on Programming Logics in memory of Harald Ganzinger, MPI, Germany, June 2005.

94. Tree automata in program synthesis. Dagstuhl Workshop on Synthesis and Planning, June 2005.

95. Büchi complementation – a 40-year saga. Ninth Asian Logic Conference, Novosibirsk, Russia, August 2005.

96. A Call to Regularity. Colloquium Honoris Causa, IRISA, Rennes, France, October 2005.

97. Alternation as an algorithmic construct. Invited talk, British Colloquium of Theoretical Computer Science, Swansea, April 2006.

98. Globalization and Offshoring of Software. The Innovation Imperative – Globalization and National Competitiveness Conference, Stockholm, April 2006.

99. Games as an algorithmic construct. Invited Tutorial, Annual Meeting, Games and Automata for Synthesis and Validation Research Training Network, Cambridge, UK, July 2006.

100. From Church and Prior to PSL, Workshop on 25 Years of Model Checking, Federated Logic Conference, Seattle, August 2006.

101. From verification to synthesis. Keynote talk, 5th International Symposium on Formal Methods for Components and Objects, Amsterdam, November 2006.

102. Automata-Theoretic Model Checking Revisited. Invited talk, 8th International Conference on Verification, Model Checking and Abstract Interpretation, Nice, France, January 2007.

103. The Büchi Complementation Saga. Invited talk, 24th Symp. on Theoretical Aspects of Computer Science, Aachen, Germany, February 2007.

104. Process Equivalene Revisited. 23rd Conference on the Mathematical Foundations of Programming Semantics, New Orleans, April 2007.

105. Globalizationa and Offshoring of Software. Plenary talk, American Distance Education Consortium, Seattle, April 2007.

106. Where Have All the IT Jobs Gone? There, There, and Right Here. Conference on the New Knowledge Economy – Global Trends and Opportunities, IIT Alumni Association of North Texas, May 2007.

107. Constraint Satisfaction – An Introduction. Invited tutorial, Workshop on Universal Algebra and the Constraint Satisfaction Problem, Nashville, June 2007.

108. Formal Techniques for SystemC Verification. Intel's Annual Symposium on VLSI CAD and Validation – Design and Validation Challenges of Multi-Core Systems in Nanoscale Silicon, Haifa, July 2007.

109. Linear-Time Model Checking – Automata Theory in Practice. 12th Int'l Conf. on Implementation and Applications of Automata, Prague, July 2007.

110. Logic, Automata, Games, and Algorithms. Invited Talk, 13th Int'l Congress on Logic, Methodology, and Philosophy of Science, Beijing, August 2007.

111. From Löwenheim to PSL. Invited Talk, British Logic Colloquium, London, September 2007.

112. The Automata-Theoretic Approach. Invited Tutorial, 5th International Symposium on Automated Technology for Verification and Analysis, Tokyo, Japan, October 2007.

113. Branching vs. Linear Time: Semantical Perspective. Keynote Talk, 5th International Symposium on Automated Technology for Verification and Analysis, Tokyo, Japan, October, 2007.

114. The Büchi Complementation Saga. 1st Workshop on Omega-Automata, Tokyo, Japan, October, 2007.

115. From Löwenheim to PSL. Workshop on Automata and Logic, Aachen, Germany, December 2007.

116. The High-Tech Industry in Israel. The Houston Jewish Community 2008 Study Day, February 2008.

117. And Logic Begat Computer Science. Algebra Mini-Conference, Sam Houston State Universty, April 2008.

118. From Philosophical to Industrial Logic. Keynote Talk, 6th NASA Langley Formal Methods Workshop, April 2008.

119. Designing a property specification language. Workship on 25 Years of Concurrency at CWI, Amsterdam, May 2008.

120. Logic, Automata, Games, and Algorithms. Invited Tutorial, Computability in Europe 2008, Athens, Greece, June 2008.

121. And Logic Begat Computer Science. International Guest Lecture, Kiel Week Festival, Kiel, Germany, June 2008.

122. From Philosophical to Industrial Logic. Symposium on XML, Logic, and Automata, Grantown-on-Spey, Scotland, July 2008.

123. From Verification to Synthesis. Invited talk, First BCS Conference on Visions of Computer Science, London, UK, Sep. 2008.

124. From verification to synthesis. Keynote talk, 2nd IFIP Working Conference on Verified Software – Theories, Tools, and Experiments, Toronto, Canada, Sep. 2008.

125. Automata-Theoretic Model Checking Revisited. Keynote talk, 4th Haifa Verification Conference, Haifa, Israel, October 2008.

126. Logic and Computation. European Academy of Science, Brussels, Belgium, November 2008.

127. From Philosophical to Industrial Logics. Invited Talk, 3rd Indian Conference on Logic and Its Applications, Chennai, India, January 2009.

128. From program synthesis to service composition. Bertinoro Workshop on Data and Service Integration. Bertinoro, Italy, March 2009.

129. From Aristotle to the Pentium. Public Symposium on The Convergence of Logic, Mathematics and Computer Science, UCLA, April 2009.

130. Constraints, Graphs, Algebra, Logic, and Complexity. Plenary talk, 6th Annual Conference on Theory and Applications of Models of Computation, ChangSha, China, May 2009.

131. And Logic Begat Computer Science. Milner Lecture, School of Informatics, Edinburgh University, Scotland, June 2009.

132. Constraints, Graphs, Algebra, Logic, and Complexity. An Honorary Day for Robert L. Constable, Ben Gurion University, Israel, June 2009.

133. Symbolic Techniques in Propositional Satisfiability Solving. 12th Int'l Conf. on Theory and Applications of Satisfiability Testing, Swansea, Wales, July 2009.

134. From Verification to Synthesis. Keynote Talk, 29th Brazilian Computer Society Congress, Bento Goncalves, Brazil, July 2009.

135. Constraints, graphs, algebra, logic, and complexity. Invited talk, Maltsev Meeting, Novosibirsk, Russia, August 2009.

136. Model checking as a reachability problem. Invited talk, 3rd Workshop on Reachability Problems, Paris, France, September 2009.

137. And Logic Begat Computer Science. Invited talk, Computer Science 50th Annversary, University of Birmingham, UK, November 2009.

138. Formal Techniques for System-Level Verification. Invited tutorial, 9th Conf. on Formal Methods in Computer-Aided Design, Austin, November 2009.

139. The Logic of Life. Invited talk, Symposium on Transformational Information Engineering and Science. Nanyang Technical University, Singapore, January 2010.

140. Datalog Containment and Regular Queries. Datalog 2.0 Workshop, Magdalene College, Oxford University, UK, March 2010.

141. And Logic Begat Computer Science. Unifying Keynote Talk, ETAPS 2010, Cyprus, March 2010.

142. Branching vs. Linear Time: A Semantical Perspective. Israeli Verification Day, Weizmann Institute of Science, Israel, April 2010.

143. From Löwenheim to Pnueli, from Pnueli to PSL and SVA. Amir Pnueli Memorial Symposium, New York University, May 2010.

144. Hybrid Logics: The Search for Decidability and Tractability Frontiers. Invited Talk, Workshop on Hybrid Logic and Applications, Edinburgh, UK, July 2010.

145. Symbolic Techniques in Propositional Satisfiability Solving. Invited talk, International Workshop on Comparing Logical Decision Methods, Edinburgh, UK, July 2010.

146. Amir Pnueli, Ahead of His Time. Invited Talk, 22nd Computer-Aided Verification, Edinburgh, UK, July 2010.

147. Constraints, Graphs, Algebra, Logic, and complexity. Invited Talk, 16th International Conference on Principles and Practice of Constraint Programming, St. Andrews, UK, September 2010.

148. The Tragedy of The Computing Research Commons. Keynote Talk, European Computer Science Summit, Prague, October 2010.

149. From Industrial to Philosophical Logics. 10th Annual Paris C. Kanellakis Memorial Lecture, Brown University, December 2010.

150. The Rise, Fall, and Rise of Dependency Theory - Part I, Rise and Fall. 30th ACM Symp. on Principles of Database Systems, Athens, Greece, June 2011.

151. The Rise and Fall of LTL. 2nd Int'l Symp. on Games, Automata, Logics and Formal Verification, Minori, Italy, June 2011.

152. And Logic Begat Computer Science. Coxeter Lecture, Fields Institute, Toronto, Canada, July 2011.

153. From Philosophical to Industrial Logics Coxeter Lecture, Fields Institute, Toronto, Canada, July 2011.

154. Logic, Automata, Games, and Algorithms Coxeter Lecture, Fields Institute, Toronto, Canada, July 2011.

155. Parallelism: A Siren Song? 10th International Workshop on Parallel and Distributed Methods in VerifiCation, Snowbird, July 2011.

156. A Multi-layered Synergistic Approach to Motion Planning with Temporal Goals. Workshop on Formal Methods for Robotics and Automation, Snowbird, July 2011.

157. From Philosophical to Industrial Logics. Affiliated Symposium: Analysing Programs–Logic to the Rescue, 14th International Congress of Logic, Methodology and Philosophy of Science, Nancy, France, July 2011.

158. Branching vs. Linear Time: Semantical Perspective. 20th Conference on Computer Science Logic, Bergen, Norway, September 2011.

159. The Rise and Fall of Linear Temporal Logic. Workshop on Games, Logic and Security, Rennes, France, October 2011.

160. Constraints, Graphs, Algebra, Logic, and Complexity. Annual Conference on Foundations of Software Technology and Theoretical Computer Science, Mumbai, India, December 2011.

161. The Rise and Fall of Linear Temporal Logic. Keynote Lecture, Int'l Symposium on Artificial Intelligence and Mathematics. Fort Lauderdale, January 2012.

162. The Rise and Fall of Linear Temporal Logic. Workshop on Theory of Software Verification, ENS Cachan, France, March 2012.

163. Database Queries – Logic and Complexity. Course on Informatics and Digital Science, College of France, Paris, France, March 2012.

164. Phase Transitions and Computational Complexity. Workshop on Finite and Algorithmic Model Theory, Les Houches, May 2012.

165. The Rise and Fall of Linear Temporal Logic. 13th Int'l Conference on Principles of Knowledge Representation and Reasoning, Rome, Italy, June 2012.

166. A Logical Revolution. Award Lecture, 39th Int'l Colloquium on Automata, Languages and Programming, Warwick, UK, July 2012.

167. And Logic Begat Computer Science. International Conference and the Second East-Asian School on Logic, Language and Computation, Congqing, China, August 2012.

168. Compositional Temporal Synthesis. Keynote Talk, 9th International Conference on Quantitative Evaluation of Systems and 10th Int'l Conference on Formal Modeling and Analysis of Timed Systems, London, UK, September 2012.

169. To Boycott or Not to Boycott, Dagstuhl Perspective Workshop on Publication-Culture in Computing Research, Schloss Dagstuhl, November 2012.

170. And Logic Begat Computer Science Keynote Talk, 23rd Conference of the Chilean Computer Science Society, Vapapariso, Chile, November 2012.

171. The Rise and Fall of Linear Temporal Logic. Keynote Talk, 23rd Conference of the Chilean Computer Science Society, Vapapariso, Chile, November 2012.

172. A Logical Revolution. Workshop pn Language, Logic, and Computation. Tel Aviv University, Israel, December 2012.

173. From Philosophical to Industrial Logics. Invited Talk, Symposium on Logical Foundations of Computer Science, San Diego, January 2013.

174. Database Queries – Logic and Complexity. AMS Special Session on Mathematical Underpinnings of Multivariate Complexity Theory and Algorithm Design, and the Field of Incrementalization, Joint Mathematics Meeting, San Diego, January 2013.

175. If Machines Are Capable of Doing Almost Any Work that Humans Can Do, What Will Humans Do? International Summit on Innovation for Jobs, Menlo Park, March 2013.

176. Branching vs. Linear Time: Semantical Perspective. Distinguished Carl Adam Petri Lecture, 34th International Conference on Application and Theory of Petri Nets and Concurrency, Milan, Italy, June 2013.

177. A Logical Revolution. Keynote Talk, 9th Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering, St. Petersburg, Russia, August 2013.

178. The Rise and Fall of Linear Temporal Logic. Invited Talk, Horizons in TCS: A Celebration of Mihalis Yannakakis's 60th Birthday. Princeton, August 2013.

179. A Logical Revolution. Plenary Talk, 25th Academia Europaea Anniversary Conference, Wroclaw, Poland, September 2013.

180. The Rise and Fall of Linear Temporal Logic. Invited Talk, Highlights of Logic, Games, and Automata. Paris, France, September 2013.

181. The Rise and Fall of Linear Temporal Logic. Invited Talk, Workshop on Software Correctness and Reliability. ETH, Zurich, Switzerland, October 2013.

182. From Aristotle to The iPhone. Invited Talk, Conference on Logic Across The University – Foundations and Applications. Tsinghua University, Beijing, China, October 2013.

183. Phase Transitions and Computational Complexity. Invited Talk, Workshop on Theoretical Foundations of Applied SAT Solving, Banff Int'l Research Station for Mathematical Innovation and Discovery, January 2014.

184. Compositional Temporal Synthesis. Invited Talk, From Programs to Systems – The Systems Perspective in Computing – ETAPS Workshop in honor of Joseph Sifakis, Grenoble, France, April 2014

185. Enhancing Academic Research and Scholarship. Invited Talk, Symposium on Modern Information and Communication Technologies in Higher Education, Rome, Italy, April 2014.

186. A Logical Revolution. Invited Lecture, Reactive Systems – Modeling, Development, and Analysis – A Conference in Honor of David Harel. Weizmann Institute of Science, Rehovot, Israel, April 2014.

187. Compositional Temporal Synthesis. Keynote Talk, 6th NASA Formal Methods Symposium, Clear Lake, TX, April 2014.

188. Compositional Temporal Synthesis. Invited Talk, Seminar on Synthesis from Components, Scholss Dagstuhl, June 2014.

189. Compositional Temporal Synthesis. Invited Talk, Workshop on Reactive Systems, Federated Logic Conference, Vienna, July 2014.

190. SAT Sampling and Counting: FromTheory to Practice. Keynote Talk, Haifa Verification Conference, Haifa, Israel, November 2014.

191. A Logical Revolution. Invited Talk, Workshop on Logic in Computer Science and Artifician Intelligence, University of Rome La Sapienza, December 2014.

192. A Logical Revolution. Invited Talk, 14th Asian Logic Conference, Mumbai, India, January 2015.

193. Would Turing Have Passed the Turing Test? Invited Talk, Work on Beyond the Turing Test, Austin, TX, January 2015.

194. If machines are capable of doing almost any work humans can do, what will humans do? Invited Talk, Open House, Annual Meeting of the Association for the Advancement of Artificial Intelligence, Austin, TX, January 2015.

195.

196. The Rise and Fall of Linear Temporal Logic. Invited Talk, Young Researchers' Conference on Frontiers of Formal Methods, Aachen, Germany, February 2015.

197. Invited Talk, A Theory of Regular Queries. Jewels of Automata: From Mathematics to Applications. Leipzig, Germany, May 2015.

Meetings Led and Organized:

1. *Conference chair*, 2nd Conf. on Theoretical Aspects of Reasoning about Knowledge, March 1988.

2. *Conference chair*, 3nd Conf. on Theoretical Aspects of Reasoning about Knowledge, March 1990.

3. *Member, board of directors*, Theoretical Aspects of Reasoning about Knowledge, Inc., Sep. 91 – present.

4. *Conference chair*, 11th ACM Symp. on Principles of Database Systems, May 1992.

5. *Member, organizing committee*, IEEE Symp. on Logic in Computer Science, June 1991 – present.

6. *Monference chair*, 12th ACM Symp. on Principles of Database Systems, May 1993.

7. *Member, advisory board*, ACM Special Interest Group on Management of Data (SIGMOD), June 1993 – June 1998.

8. *Meneral chair*, 10th IEEE Symp. on Logic in Computer Science, June 1995.

9. *Co-director*, DIMACS Special Year on Logic and Algorithms, 1995–6.

10. *Steering committee chair*, Federated Logic Conference, June 1996.

11. *Workshop co-organizer*, Logic and Algorithms – One Year Later, DIMACS Workshop, July 1997.

12. *Board member*, European Association for Computer Science Logic, August 1997 – September 2005.

13. *Workshop co-organizer*, Dagstuhl Seminar on Applications of Tree Automata, October 1997.

14. *Workshop co-organizer*, IRCS/DIMACS Tutorial and Workshop on Logic and Cognitive Science: Linking Finite Model Theory, Descriptive Complexity, and the Study of Cognition. University of Pennsylvania, April 1999.

15. *Steering committee chair*, Federated Logic Conference, July 1999.

16. *Workshop co-organizer*, Dagstuhl Seminar on Finite-Model Theory, Databases, and Computer-Aided Verification, October 1999.

17. *Workshop co-organizer*, Model Checking and Program Analysis, Schloss Ringberg, February 2000.

18. *Workshop co-organizer*, Dagstuhl Seminar on Probabilistic Methods in Verification, May 2000.

19. *Workshop organizer*, NSF/CISE Workshop on The Unusual Effectiveness of Logic in Computer Science, Arlington, January 2001.

20. *General chair*, 8th International SPIN Workshop on Model Checking of Software, May 2001.

21. *Workshop co-organizer*, Dagstuhl Seminar on Exploration of Large State Spaces, November 2001.

22. *General chair*, 9th International SPIN Workshop on Model Checking of Software, April 2002.

23. *Steering committee chair*, Federated Logic Conference, July 2002.

24. *Workshop co-organizer*, Workshop on Learning and Formal Verification - in Honor of Eli Shamir, Neve Ilan, Israel, May 2002.

25. *Symposium chair*, GCC/Keck Bioinformatics 2002, Houston, October 2002.

26. *Conference chair*, 22nd IFIP WG 6.1 International Conference on Formal Techniques for Networked and Distributed Systems, Houston, November 2002.

27. *Co-director*, Special Programme on Logic and Algorithms, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, January - July 2006.

28. *Workshop co-organizer*, Workshop on Constraints and Verification, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, May 2006.

29. *General Chair*, 4th Federated Logic Conference, Seattle, August 2006.

30. *Chair*, Symposium on Challenges in Computing and Information Technologies, Rice University, December 2007.

31. *Co-chair*, De Lange Conference on Emerging Libraries, Rice University, March 2007.

32. *Co-chair*, Workshop on Logic and Algorithms, International Center for Mathematical Science, Edinburgh, Scotland, July 2008.

33. *General Chair*, 5th Federated Logic Conference, Edinburgh, Scotland, July 2010.

34. Co-Chair, Dagstuhl Perspectives Workshop, Formal Methods – Just a Euro-Science? December 2010.

35. *Program Co-chair*, ACM Turing Centenary Celebration, San Francisco, June 2012.

36. *Co-Chair*, Dagstuhl Perspectives Workshop, Publication Culture in Computing Research, November 2012.

37. *General chair*, 2nd Int'l Workshop on Strategic Reasoning, Grenoble, France, April 2014.

38. *Workshop co-organizer*: Dagstuhl Seminar 14232, Design and Synthesis from Components. June 2014.

39. *General Chair*, Federated Logic Conference, Vienna, Austria, July 2014.

Editorships:

1. Guest editor, special issue of *J. Computer and System Sciences* (selected papers from the 6th ACM Symp. on Principles of Database Systems, March 1987), 1990.

2. Guest editor, special issue on Database Logic Programming. *J. Logic Programming* 10:3&4(1991).

3. Issue editor, special issue dedicated to Paris Christos Kanellakis, *Information and Computation* 127:2(1996).

4. Guest editor, special selection in logic in computer science. *J. of Symbolic Logic* 62:2(1997).

5. Guest co-editor, special issue of *Theoretical Computer Science* (selected papers from the Int'l Conf. on Database Theory, January 1995) 190:2(1998).

6. Associate editor, *Information and Computation*, April 1989 – January 2015.

7. Associate editor, *J. of Computer and System Sciences*, June 1993 – January 2015.

8. Associate editor, *Chicago J. of Theoretical Computer Science*, April 1994 – present.

9. Member of editoral board, *SIAM J. on Computing*, July 1994 – December 2007.

10. Associate editor, *ACM Tran. on Database Systems*, Sep. 1995 – Sep. 2001.

11. Associate editor, *Formal Methods in System Design*, Dec. 1996 – August 2005.

12. Advisory Board, *International Journals on Software Tools for Technology Transfer*, Feb. 1999 – present.

13. Associate editor, *Electronic Notes in Theoretical Computer Science*, Jan. 2000 – December 2008.

14. Member of editorial board, *Lecture Notes in Computer Science*, Springer-Verlag, May 2004 – December 2007.

15. Managing editor, *Logical Methods on Computer Science*, Sep. 2004 – present.

16. Editor in Chief, *Communications of ACM*, June 2008 – present.

17. Advisory Board, *XRDS, ACM Magazine for Students*, 2010 – present.

18. Co-editor, special issue of *Information and Computation* (selected papers from the 2013 Workshop on Strategic Reasoning, 2015).

Funding:

1. PI, NSF Grant no. IRI-8715814, 1988 ($21.5K): 2nd Conf. on Theoretical Aspects of Reasoning about Knowledge.

2. PI, AFOSR Contract no. F49620-90-C-0020, 1990 ($10K): 3nd Conf. on Theoretical Aspects of Reasoning about Knowledge.

3. Co-PI, DOD Grant for Independent Research and Development: System Fundamentals, 1986-1993

4. Co-PI, NSF Grant no. CDA-9502791, July 1995 - June 2000 ($1.05M) Multi-processor cluster computing.

5. PI, NSF CISE Postdoctoral Program no. CDA-9625898, March 1996 – Feb. 1999 ($50K): Diagrammatical Reasoning in Hardware Verification.

6. PI, NSF Grant no. CCR-9628400, Aug. 1996 - July 1998 ($130K): Development of Reliable Distributed Protocols.

7. PI, NSF Grant no. CCR-9700061, June 1997 - May 2001 ($235K): Variable-Confined Logics in Finite-Model Theory.

8. PI, NSF Grant no. CCR-9711212, Sep. 1997 - Aug. 1998 ($9K): Workshop on Applications of Tree Automata.

9. PI, Intel grant, July 1997 - June 2000 ($120K): Automated Verification of Large Designs.

10. Co-PI, Intel equipment grant, Jan. 1998 - Dec. 2000 ($185K): Architectural simulations and verification.

11. Program co-chair, a 20-company sponsorship grant, 10th Conf. on Computer-Aided Verification, June 1998 ($40K).

12. Co-PI, US-Israel Binational Science Foundation, BSF-9800096, Sept. 1999 - August 2002 ($65K): Automata-theoretic approach to design verification.

13. PI, Intel grant, July 2000 - June 2003 ($120K): Automated Verification of Semiconductor Designs – A Linear-Time Approach.

14. PI, NSF Grant no. IIS-9908435, August 2000 - July 2003 ($330K): Constraint satisfaction, database query evaluation, and information integration.

15. Co-PI, NSF Grant no. IIS-9978135, September 2000 - August 2004 ($593K): Constructing probability models for large corpora of well-informed by probabilistically incoherent judgements.

16. PI, NSF Grant no. CCR-9988322, August 2000 - July 2003 ($330K): Developing Linear-time Model-checking Technology.

17. PI, NSF Grant no. EIA-0086264, September 2000 - August 2003 ($490K): Educational Innovation–Integrating Logic in the Computer Science Curriculum.

18. PI, ONR Grant no. N00014-01-1-0767, April 2001 - March 2002 ($2K): 8th International SPIN Workshop on Model Checking of Software.

19. PI, NSF Grant no. EIA-0216467, September 2002 - August 2005 ($1.15M): MRI–Acquisition of CITI Terascale Cluster (CTC).

20. Network Site, European Research Training Network: Games and Automata for Synthesis and Validation, September 2002 - August 2006.

21. PI, NSF Grant no. CCR-0311326, July 2003 - July 2006 ($200K): Automata-Theoretic Approach to Design Verification.

22. Co-PI, US-Israel Binational Science Foundation, BSF-2002268, Sep. 2003 - August 2006 ($60K): Automata and games in design verification.

23. PI, Texas Advanced Technology Program, Grant 003604-0058-2003, January 2004 - December 2005 ($198K): Scaling-Up Formal Verification Technology.

24. PI, Intel grant, June 2006 - June 2009 ($120K): Formal Technologies for High-Level Models.

25. PI, NSF Grant no. CCF-0613889, August 2006 - August 2008 ($200K): A Theory of Automated Design.

26. Co-PI, NSF Grant no. CNS-0615328, August 2006 - July 2009 ($720K): A Robotics-Inspired Approach for the Verification of Hybrid Systems.

27. Co-PI, US-Israel Binational Science Foundation, BSF-2006215, Sept. 2007 - August 2011 ($70K): Automated system synthesis.

28. PI, NSF Grant no. CCF-0728882, September 2007 - July 2010 ($300K): An Automata-Theoretic Approach to Design Synthesis.

29. PI, NSF Grant no. CCF-1009103, March 2010 - February 2011 ($30K): Support for the 2010 Federated Logic Conference

30. Co-PI, NSF Grant no. OCI-1041396, August 2010 - July 2013 ($450K): CI-Team Implementation Project–The Signal Processing Education Network

31. Co-PI, NSF Grant no. CCF-1018798, August 2010 - July 2013 ($500K): A Synergistic Multi-Layered Approach for Falsification of Specifications for Hybrid Systems.

32. PI, NSF Grant no. CNS-1049862, September 2010 - August 2012 ($250K): Automated Synthesis for System Design.

33. Co-PI, Intel Grant, September 2011 - August 2014 ($1.35M): Effective Validation of Firmware.

34. Co-PI, NSF Grant no. CCF-1139011, April 2012 - March 2017 ($10M): Expeditions in Computer Augmented Program Engineering (ExCAPE): Harnessing Synthesis for Software Design

35. Co-PI, NSF Grant no. CCF-1242205, September 2012 - August 2013 ($24K): Workshop on Publication-Culture in Computing Research.

36. PI, NSF Grant no. MRI-1338099, October 2013 – September 2016 ($400K): Acquisition of Big-Data Private-Cloud Research Cyberinfrastructure (BDPC).

37. PI, NSF Grant no. CCF-1319459. September 2013 - August 2016 ($305K): Pushing the Frontier of Linear-Time Model-Checking Technology

38. PI, NSF Grant no. CCF-1419283, January - December, 2014 ($40K), Student Support for the 2014 Federated Logic Conference

39. PI, IBM SUR Grant, July 2014 ($1.368M), Acquisition of Power 8 System,

40. co-PI, NSF Grant no. CMMI-143684, August 2014 – July 2017 ($270): Collaborative Research: Unraveling the Limits of Computation in Structural and Infrastructure Engineering.

Patents:

1. Directly verifying a black-box system, US Patent 6,526,544, Feb. 25, 2003.

2. System and method to analyze VLSI designs, US Patent 7,203,621, April 10, 2007.

Teaching Experience:

1. *Issues in database theory*, Hebrew University of Jerusalem, Israel, spring 1981.
2. *Fundamentals of dependency theory*, CISM, Udine, Italy, summer 1984.
3. *An automata-theoretic approach to temporal logic*, Weizmann Inst. of Science, Israel, summer 1987.
4. *Issues in Logical Databases*, University of Tampere, Finland, summer 1987.
5. *Seminar on Computer-Aided verification*, Rice University, fall 1994.
6. *Logic in computer Science*, Rice University, spring 1995–present.
7. *Database systems*, Rice University, fall 2003–2008.
8. *Research ethics seminar*, Rice University, fall 1997.
9. *The automata-theoretic approach to design verification*, Advanced course, 10th European Summer School on Logic, Language, and Information, Saarbruecken, Germany, August 1998
10. *The automata-theoretic approache to design verification*, Graduate course, Feiberg Graduate School, Weizmann Institute of Science, Israel, fall 1998.
11. *Logic and computer-aided verification*, mini-course, Second Pan-Hellenic Logic Symposium, Delphi, Greece, July 1999.
12. *The automata-theoretic approache to design verification*, First Southern African Summer School and Workshop on Logic, Universal Algebra, and Theoretical Computer Sceience (LUATCS'99), Rand Afrikaans University, Johannesburg, South Africa, December 1999.
13. *Games in verification.* Advanced course, 13th European Summer School on Logic, Language, and Information, Helsinki, Finland, August 2001.
14. *The automata-theoretic approache to automated verification*, minicourse, Department of Communication, Computer and System Sciences, University of Genoa, Italy, October 2001.
15. *The automata-theoretic approache to automated verification*, minicourse, Department of Computer Science, Haifa University, August 2002.
16. *Logic- and automata-based system design*, International Summer School on Proof Technology and Computation, Marktoberdorf, Germany, July-August 2003.
17. *The Automata-Theoretic Approach to Verification*, 17th International School for Computer Science Researchers, Lipari, Italy, July 2005,
18. *Games-, Automata- and Logic-Based Systems Design*, Summer School on Logical Aspects of Secure Computer Systems, Marktoberdorf, Germany, August 2005.

19. *Property-Specification Languages*, 6th International School on Formal Methods for the Design of Computer, Communication and Software Systems: Hardware Verification, Bertinoro, Italy, May 2006.

20. *Automata in Verification*, 5th International Ph.D. School in Formal Languages and Applications, Tarragona, Spain, December 2006.

21. *Technology and Religion*, Rice University, 2011.

22. *The Automata-Theoretic Approach to Linear Temporal Logic*, 2nd East-Asian School on Logic, Language, and Computation, Chongqing, China, August 2012.

23. *Reactive Synthesis*, Summer School, NSF Expeditions project in Computer Augmented Program Engineering, Berkeley, CA, June 2013.

24. *The Automata-Theoretic Approach to Design Verification*, 12th LASER Summer School on Software Engineering, Elba Island, September 2014.

Students Advised:

- Stanford University: Rajeev Alur, Surajit Chaudhuri, Hakan Jakobsson (committee), Gabriel Kuper, Thomas Plambeck (committee), Marianne Winslett, Howard Wong-Toi (committee).
- Weizmann Institute: Nir Piterman, Shmuel Safra,
- Haifa University: Ron Wiener (MS)
- Technion: Alon Flaisher (MS), Orna Kupferman (Bernholtz)
- Rice University: Donald Baker (committee), Brian Chen (committee), Mihir Choudhury (committee), Demetrious Demopoulos, Sonali Dutta (MS), Stephan Ellner (committee), Seth Fogarty, R. Juarez (committee), Mahesh Kallahalla (committee), Benjamin McMahan (MS), Kuldeep S. Meel, Sumit Nain, Guoqiang Pan, Karoline Pershell (committee), Erion Plaku, Patrick Porter (undergraduate), Kristin Rozier, Deian Tabakov, Spyros Tsavachidis (MS), Xiaxou Wang (MS), Chao Xu (MS, committee), Jung S. You (committee), James (Zijiang) Yang,
- University of Rome 1: Marco Daniele, Andrea Ferrara
- University of Naples: Giuseppe Perelli Aniello Murano, Fabio Mogavero,
- University of Trento: Stefano Tonetta

Postdoctoral Students Advised:

- Kathi Fisler: 1996–2000
- Armando Tacchella: 2001
- Doron Bustan: 2002–2004

- Yoad Lustig: 2008–2010
- Amit Bhatia: 2009–2011.
- Morteza Lahijanian: 2012–present
- Dror Fried: 2013–present
- Jianwen Li: 2014–present

Related Experience:

1. University Space Research Association, CESDIS Evaluation Panel, Goddard NASA Air Base, June 1988.
2. Panel chair, Database logic programming, deductive databases, and expert database systems. ACM-SIGMOD Conf., June 1988.
3. Site review team, Computer and Information Sciences School, Syracuse University, Sep. 1990.
4. Panel member, Complexity theory and finite-model theory, NSF-INRIA Workshop on Databases and Finite-Model Theory, June 1992.
5. External review committee, Department of Computer Science, Vanderbilt University, March 1995.
6. Panel member, Database research: lead follow or get out of the way. Int'l Conference on Data Engineering, Feb. 1996.
7. Invited participant, Workshop on Future Directions in Database Research, San Jose, June 1995.
8. Panel chair, Logic in the computer science curriculum, DIMACS Symposium on Teaching Logic in an Illogical World, July 1996.
9. Award committee, ACM Kanellakis Award for Theory and Practice, 1996–2000.
10. Oversight committee, Master's Program in Logic and Algorithms, University of Athens, Greece, April 1997 - present.
11. Program review committee, proposal for a professional doctoral degree program in advanced computing, School of Computer Science and Information Systems, Pace Univerity, October 1997.
12. Visiting committee, Department of Computer Science, Stanford University, November 1997.
13. Panel moderator: Logic in the computer science curriculum, 29th ACM Symp. on Computer Science Education, February 1998.
14. NSF funding panel, Information and Intelligent Systems, May 1998.

15. Hiring committee, Dept. of Computing Science, Uppsala University, Sweden, November 1998.

16. Symposium organizer: On the unusual effectiveness of logic in computer science. Annual Meeting of the American Association for the Advancement of Science, January 1999.

17. Symposium speaker: From Boole to the Pentium. Annual Meeting of the American Association for the Advancement of Science, January 1999.

18. Computer Science Advisory Committee, Worcester Polytechnic Institute, January 1999 –present.

19. Promotion Committee, Department of Computer Science, University of Cyprus, July 2000.

20. NSF CAREER panel, Computer and Communication Research, October 2000.

21. Research Evaluation Committee, Department of Computer Science, Aalborg University, Denmark, January 2001.

22. Accellera Formal Verification Technical Committee, April 2001 – August 2004.

23. Board member, Computing Research Association, May 2001 –July 2008.

24. Member, Taulbee Survey Committee, July 2001 – June 2002.

25. Chair, Taulbee Survey Committee, July 2002 – June 2003.

26. Member, SIGMOD Award Committee, 2002.

27. Panelist, Workshop for New Chairs, CRA Snowbird Conference, July 2002.

28. Member, External Review Committee, Department of Computer Science, New York University, November 2002.

29. Member, SIGMOD Award Committee, 2003.

30. Member, Dissertation Defense Committee, Alex Thomo, Concordia University, Canada, June 2003.

31. NSF CISE Panel, March 2004.

32. Chair, SIGMOD Award Committee, 2004.

33. Panel member: Future of Constraint Databses. 1st International Symposium on Applications of Constraint Databases, Paris, France, June 2004.

34. Chair, ACM Task Force on Job Migration, July 2004 – February 2006.

35. Member, Advisory committee, School of Computer Science, The Interdisciplinary Center, Herzliya, Israel, October 2004 – December 2004.

36. Member, Scientific Advisory Board, Icelandic Centre of Excellence in Theoretical Computer Science (ICE-TCS), December 2004 – present.

37. Chair, SIGMOD Award Committee, 2005.

38. Member, Board of Electors to Professorship of Computing Science, University of Oxford, 2005.

39. Chair, Editor-in-Chief Selection Committee, ACM Transactions on Computational Logic, 2005.

40. External examiner, Dissertation Defense Committee, Marcelo Arenas, University of Toronto, September 2005.

41. Habilitation Committee, Luc Segoufin, University of Paris South XI, Sep. 2005.

42. Habilitation Committee, Sebastian Limet, University of Orleans, Nov. 2005.

43. Panel moderator: Educational Response to Offshoring. 37th ACM Symp. on Computer Science Education, 2006.

44. Panel member: Automata Theory–Its Relevance to Computer Science Students and Course Contents. 37th ACM Symp. on Computer Science Education, 2006.

45. Chair, Computing Research Association Distinguished Service Award, 2007.

46. CAV Award Committee, January 2008 – June 2010.

47. Chair, CAV Award Committee, January 2011 – June 2011.

48. Member, Technical Advisory Board, Jasper Design Automation, April 2008 – present.

49. Panel member, Coverage Metrics across the Verification Domain. 4th Haifa Verification Conference, Haifa, Israel, October 2008.

50. Member, Dissertation Defense Jury, Barbara Kordy, Orleans University, France, November 2008.

51. Panel member, The Future of Formal Verification, 8th Int'l Conference on Formal Methods in Computer-Aided Design, Portland, OR, November 2008.

52. Panel chair, Peer Review in Computing Research, Biennial Meeting of the Computing Research Association, July 2010.

53. Chair, International Review Panel, School of Informatics, University of Edinburgh, Scotland, October 2010.

54. Member, International Review Panel, Institute of Science and Technology - Austria, January 2011.

55. Member, Scientific Advisory Committee, Israeli Centers of Research Excellence, January 2011 -present.

56. Member, Scientific Advisory Council, Fields Institute of Mathematics, Toronto, November 2011 – present.

57. Member, Distinguished Service Award Committee, Computing Research Association, January 2012.

58. Member, Scientific Advisory Board, Simons Institute for the Theory of Computing, Berkeley, April 2012 – August 2013.

59. Panel member, "Does the Future Need Us?", The Big Questions in Computation, Intelligence and Life. Turing Centenary Conference, Manchester, UK, June 2012.

60. Member, Distinguished Service Award Committee, Computing Research Association, January 2013.

61. Member, Search Committee, NSF Computing and Communication Division Director, Spring 2013.

62. Panel member, Publication culture in software engineering. 9th Joint Meeting of European Software Engineering Conf. and ACM SIGSOFT Symposium on the Foundations of Software Engineering, St. Petersburg, Russia, August 2013.

63. Dissertation Committee for Ruediger Ehlers, Saarlands University, October 2013.

64. ACM Strategic Planning Retreat, New York, November 2013.

65. Quality Assurance Committee for Computer Science, Israeli Council of Higher Education, 2013–2014.

66. Artificial Intelligence Summit, New York, February 2014.

67. Panel member, Future Directions of Specifications for Formal Methods. 6th NASA Formal Methods Symposium, Clear Lake, TX, April 2014.

68. External Review Committee, Graduate Program in Computer Science, Graduate Center, City University of New York, 2014.

69. Search Committee Executive, National Academy of Engineering, Section 5, 2013–2015.

Major Research Accomplishments

- **Logical Theory of Databases**: Database management systems are evolving from unsophisticated databases, which are essentially structured collections of data, toward "smart" databases possessing deductive capabilities. The line between databases and knowledge bases is becoming less and less clear. I have investigated the logical theory of databases, with a focus on the trade-off between expressiveness and computational complexity. My research laid the foundations in the following areas: integrity constraints, complexity of query evaluation, incomplete information, database updates, and information integration.

- **Reasoning about Knowledge**: Reasoning about knowledge has found applications in such diverse fields as economics, linguistics, artificial intelligence and computer science. For example, a robot in a system may have to know what other robots know in order to coordinate a plan. Similarly, in a bargaining session, side A may need to reason about what side B knows (and what side B knows about what side A knows, and so on) in order to bargain effectively. Together with Halpern and Fagin, I developed an extensive theory of reasoning about knowledge. This work focuses on (a) using reasoning about knowledge to design, analyze and verify the correctness of distributed systems, and (b) providing good formal models of knowledge that are appropriate for various applications

  In addition to pursuing this research, Fagin, Halpern and I initiated and organized an interdisciplinary conference on the subject. The conference ("Theoretical Aspects of Reasoning about Knowledge"), which brings together researchers from diverse fields, such as AI, game theory, philosophy, and distributed systems, met biannually since 1986. This work was recognized as one of the top accomplishments of the IBM Almaden Research Center in 1985, and won an IBM Outstanding Innovation Award in 1987. A book titled "Reasoning about Knowledge" by Fagin, Halpern, Moses, and myself, was published by MIT Press in 1995.

- **An Automata-Theoretic Approach to Concurrent Program Verification**: I have demonstrated that questions about correctness of concurrent programs can be reduced to questions about finite automata on infinitary input structures (infinite words or infinite trees). Carrying out this approach required advances in both automata theory and the theory of program logics. This connection brought a wealth of new techniques to the theory of program logic, and the new application revived the theory of automata on infinitary inputs. The work has several potential software engineering applications; a particularly important application concerns automatic verification of finite-state protocols, such as communication protocols. This work serves as the basis of several automated verification tools, such as Lucent's FormalCheck, SDLVALID, and SPIN, and Intel's ForSpec.

  This work was recognized as one of the top accomplishments of the IBM Almaden Research Center in 1987, won an IBM Outstanding Innovation Award in 1989, and the Gödel Prize (with P. Wolper) in 2000. PSL 1.1, an industrial-standard property-specification language in whose design I was involved, won a DesignVision Award from the International Engineering Consortium (IEC) in 2005, and has been established as IEEE Std 1850-2005.

- **Finite-Model Theory**: Model theory is a study of the logical properties of mathematical structures such as graphs and groups; finite-model theory focuses on finite structures. Finite-model theory is highly relevant to computer science, because of the intimate connection it has to several areas such as complexity theory, database theory and logic programming. For example, some of the most fundamental questions in complexity theory are equivalent to questions in finite-model theory. This is illustrated by a result of mine (obtained independently also by Immerman) that characterized the complexity class of polynomial time is terms of first-order logic enriched with the fixpoint operator.

  Of special interest is the study of asymptotic probabilities for properties of finite structures. The asymptotic probability of a property on the collection of all finite structures is the limit, as n gets arbitrarily large, of the fraction of structures with n elements satisfying

the property, provided the limit exists. This probability can be viewed as the likelihood that an "average" graph satisfies the property. Kolaitis I investigated the asymptotic probability of certain classes of NP properties. These classes are expressible in fragments of existential second-order logic in which we restrict the patterns of first-order quantifiers. We proved that several such classes have a 0-1 law, i.e., the asymptotic probabilities of properties in these classes is always either 0 or 1.

This work was recognized as of the top accomplishments of the IBM Almaden Research Center in 1990, and won an IBM Outstanding Innovation Award in 1992.