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Education

Ph.D. (Computer Science), 1980, Massachusetts Institute of Technology (MIT), Cambridge, MA.

M. Tech. (Computer Science), 1973, Indian Institute of Technology (IIT), Kanpur, India.

B. Tech. (Electrical Engineering), 1971, Indian Institute of Technology (IIT), Kanpur, India.

Employment

Since August 2007: Distinguished Professor of Computer Science,
University of New Mexico (UNM), Albuquerque, NM.

Since July 2003: Adjunct Professor, School of Computer Science and Technology,
Tata Institute of Fundamental Research, Mumbai, India.

Since Feb. 2012: Honorary Visiting Professor, Dept. of Computer Science and Engg.,
Indian Institute of Technology, Delhi, India.

January 1999–June 2006: Chair, Department of Computer Science,
University of New Mexico (UNM), Albuquerque, NM.

April 2007–June 2007: Visiting Professor, Department of Artificial Intelligence,
Universidad Polytechnica Madrid, Madrid, Spain.

Sept. 2006–Jan. 2007: Visiting Professor, Computer Science and Engg. Department,
Indian Institute of Technology, Delhi, India.

Sept. 2006–Jan. 2007: Sabbatical Visitor, IBM India Research Lab., India.

January 1999–July 2007: Professor, Department of Computer Science,
University of New Mexico (UNM), Albuquerque, NM.

January 1988–December 1998: Professor, Department of Computer Science,
University at Albany, State University of New York (SUNY), Albany, NY.

November 1989–December 1998: Founder and Director, Institute for Programming and Logics,
University at Albany, State University of New York (SUNY), Albany, NY.

May 1996–July 1996: Visiting Professor, Laboratoire d'Informatique Fondamentale d'Orleans,
Universite de Orleans, France.

August 1995: Visiting Scientist, Max-Planck Institute fur Informatik, Saarbrucken, Germany.

September 1994–June 1995: Visiting Scientist, Artificial Intelligence Laboratory as well as
Laboratory for Computer Science, MIT, Cambridge, MA.

June 1989–July 1989: Visiting Professor, Tata Institute of Fundamental Research,
Bombay, India. Numerous short visits since January 1990 as a Visiting Professor.

January 1984–December 1988: Adjunct Associate Professor, Rensselaer Polytechnic Institute,
Troy, NY.

March 1980–December 1987: Research Staff, Computer Science Branch,
General Electric Corporate Research and Development, Schenectady, NY.

Research Interests

Formal Methods. Mathematical Modeling. Specification and Verification of Hardware and Software. Automated Deduction. Term Rewriting. Algebraic and Geometric Reasoning. Static Analysis of Software. Representation of women and minorities in CS. Social Aspects of Computing.

I have designed and led the development of *Rewrite Rule Laboratory (RRL)*, a theorem prover based on rewriting and completion, for mechanizing equational and inductive reasoning. At General Electric Corporate Research and Development Center, I designed and led the development of *GeoMeter*, a system for geometric and algebraic reasoning for applications in solid modeling, computer-aided design, and computer vision.

At the University at Albany, State University of New York, I led the development of a software package *Tecton* for hierarchical proof management. This system was built on top of *RRL*.

At the University of New Mexico, I am leading the development of *SAIL (SAT and Induction Laboratory)* combining an induction theorem prover with an SMT solver, and *Dixon* for computing resultants and supporting algebraic reasoning. These systems have been used in applications of hardware verification, specification analysis, geometric modeling, and computer vision.

Publications

Books: 4

Journal Papers and Book Chapters: 64

Papers in Refereed Conference Proceedings: 119

Papers in Unrefereed Conference Proceedings: 32
Technical Reports: 35

Honors

- *Herbrand Award*, 2009. This is the highest award in the field of automated reasoning and deduction. The citation is reproduced from <http://www.cadeinc.org/HerbrandAward.html>:
Herbrand Award for Distinguished Contributions to Automated Reasoning presented to Deepak Kapur in recognition of his seminal contributions to several areas of automated deduction including inductive theorem proving, geometry theorem proving, term rewriting, unification theory, integration and combination of decision procedures, lemma and loop invariant generation, as well as his work in computer algebra, which helped to bridge the gap between the two areas.
- *Senior Faculty Research Excellence Award*, School of Engineering, the University of New Mexico, May 2010.
- *Excellence in Research Award*, the University at Albany, SUNY, 1998.
http://www.albany.edu/feature98/excellence_awards/kapur.html.
- Best Theory Paper Award, *ALPUK'92*, Association of Logic Programming, London, UK, March 1992.
- Best Paper Award, ACM Symposium on *Symbolic and Algebraic Computation (SYMSAC 1986)*, Waterloo, Canada, July 1986.
- Distinguished Paper Award, International Conference on Software Engg. (ICSE 2012), Zurich.

Ph.D. Dissertations Supervised

S. Falke, *Term Rewriting with built-in Numbers and Collection Data Structures*. August 2009, University of New Mexico. Falke is a post doctoral fellow at Karlsruhe Institute of Technology, Germany.

M. Marron, *Modeling the Heap: A Practical Approach*, August 2008, University of New Mexico. Marron is a researcher at Microsoft Research, Seattle.

E. Rodriguez-Carbonell, *Automatic Generation of Polynomial Invariants for System Verification*, May 2006, Universitat Polytechnica de Catalunya (UPC). Unofficial advisor with Prof. R. Nieuwenhuis as the official advisor. Carbonell is a post doctoral fellow at UPC, Barcelona.

A. Chtcherba, *A New Sylvester-type Resultant Method based on the Dixon-Bezout Formulation*, July 2003, University of New Mexico. Chtcherba is a software engineer at Google Inc.

T. Saxena, *Efficient Variable Elimination using Resultants*, 1996. Dr. Saxena is a manager at Verizon Research.

M. Subramaniam, *Failure Analyses of Inductive Theorem Provers*, 1996. Dr. Subramaniam is an Associate Professor in the Computer Science Department of the University of Nebraska, Omaha.

M.R. Krishna Rao, *Termination Characteristics of Logic Programs*, 1993, University of Bombay, India. Unofficial advisor with Prof. R.K. Shyamasundar, TIFR, Bombay, India. Rao is an Associate Professor in the Department of Information and Computer Science, King Fahd Univ. of Petroleum and Minerals, Dhahran, Saudi Arabia,

H. Zhang, *Reduction, Superposition and Induction: Automated Reasoning in an Equational Logic*, 1988. Zhang was awarded the prestigious NSF's Young Investigator Award in 1993. He is a professor in the Department of Computer Science at the University of Iowa.

A. Kandri-Rody, *Effective Methods in the Theory of Polynomial Ideals*, 1984. Dr. Kandri-Rody is a professor in the Department of Mathematics, Marrakech University, Marrakech, Morocco.

Invited Talks

- Invited Speaker, *International Seminar on Verification, Automated Debugging, and Symbolic Computation*, Beijing, Oct. 10-12, 2012.
- Keynote Speaker, *12th Annual Conference on Theory and Applications of Models of Computation (TAMC 2012)*, a special event of the Alan Turing Year, Beijing, May 16-21, 2012.
- Keynote Speaker, *Federate Logic Conference, 2010*, Edinburgh, July 2010.
- Invited Speaker, *Third Summer School in Symbolic Computation*. Chengdu, China, August 2009.
- Invited Speaker, *Intl. Conference on Mathematics Mechanization – in Honor of Prof. Wen-Tsun Wu's 90th Birthday (ICMM)*, 2009, Beijing, China.
- Invited Speaker, *Intl. Seminar on Symbolic Real Algebra and Trustworthy Computing (SRATC 2008)*, Shanghai, China, April 2008.
- Invited Speaker, *Symposium on Programs: Analysis, Technology, and Engineering (SPATE)*, TIFR, Mumbai, Jan. 2008.
- Invited Speaker, *WING 2007*, 1st International Workshop on Invariant Generation, 25-26 June 2007, Hagenberg, Austria.
- Invited Speaker, *Alpine Verification Workshop, 2007*, June 23-25, 2007, Aussois, France.
- Invited Speaker, GM India Science Lab. Workshop on *Next Generation Design and Verification Methodologies for Distributed Embedded Control Systems*, Bangalore, India, Jan 2007.
- Invited Speaker, IBM India Research Lab - TIFR Workshop on *Next Generation Programming Languages and Environments*, New Delhi, India, Nov. 2006.

- Invited Speaker, *CalcuIemus 2006 Symposium*, Genova, Italy, July 2006.
- Invited Speaker, *Mathematics, Algorithms and Proofs, 2006 (MAP 2006)*, Castro-Urdiales, Spain, Jan. 2006.
- Invited Keynote Speaker, *10th International IMACS Conference on Applications of Algebra (ACA 2004)*, Lamar, TX, July 2004.
- Invited Speaker, *6th Asian Symposium on Computer Mathematics (ASCM)*, Beijing, China, Oct. 2003.
- Invited Speaker, a special session on *Automated Reasoning in Mathematics and Logic*, American Mathematical Society and Mathematical Association of America Spring Southeastern Section Meeting, Georgia Tech University, Atlanta, March 2002.
- Invited Speaker, *Geometry Theorem Proving*, Eighth International IMACS Conference on Applications of Computer Algebra (ACA'2002), Volos, Greece, June 2002.
- Invited Speaker, *Fourth International Workshop on Frontiers of Combining Systems (FROCCOS 2002)*, Santa Margherita, Italy, April 2002.
- Invited Speaker, *International Workshop on First-order Theorem Proving (FTP 2000)*, St. Andrews, Scotland, July 2000.
- Invited Speaker, *Workshop on Mechanization of Partial Functions*, International Conference on Automated Deduction, Landau, Germany, July 1998.
- Invited Speaker, *Mini-symposium on Symbolic-Numeric Algorithms for Polynomials*, SIAM Annual Meeting, Toronto, Canada, July 1998.
- Invited Speaker, a special session on *Sparse Elimination Methods in Polynomial System Solving*, American Mathematical Society Spring Eastern Meeting, Temple University, Philadelphia, April 1998.
- Invited Speaker, *Foundations of Software Technology and Theoretical Computer Science (FSTTCS)*, Kharagpur, India, December 1997.
- Invited Speaker, *Theorem Provers in Higher Order Logics (TPHOL)*, Lucent Bell Laboratories, NJ, August 1997.
- Invited Speaker, *International Conference on Rewriting Techniques and Applications, RTA'96*, as a part of *Federated Logic Conference*, Rutgers University, New Brunswick, NJ, July 1996.
- Invited Speaker, *Workshop on Applied Formal Methods*, Hyderabad, India, December 1996.
- Invited Speaker, *Winter School on Logic and Computer Science*, Indian Statistical Institute, Calcutta, India, December 1996.
- Invited Speaker, *Workshop on 1st International Workshop on Automated Deduction in Geometry*, Toulouse, France, September 1996.

- Invited Speaker, *National Seminar on Theoretical Computer Science*, Bombay, India, August 1995.
- Invited Tutorial Speaker, *International Symposium on Symbolic and Algebraic Computation (ISSAC)* Montreal, Canada, July 1995.
- Invited Speaker, *Computer Algebra and Automated Theorem Proving*, First International IMACS Conference on Applications of Computer Algebra (ACA), Albuquerque, NM, May 1995.
- Invited Speaker, *Silver Jubilee Conference of School of Automation*, Indian Institute of Science, Bangalore, India, December 1993.
- Invited Speaker, Workshop on *Formal Methods in Software Engineering: Automated Reasoning*, University of Pennsylvania, May 1993.
- Invited Speaker, Workshop on *Mechanization of Mathematics*, Chinese Academy of Sciences, Beijing, China, July 1992.
- Invited Speaker, Workshop on *Formal Methods in Databases and Software Engineering*, Concordia University, Montreal, May 1992.
- Invited Speaker, *Term Rewriting Workshop*, the British Computer Society, Bristol, England, September 1988.
- Invited Speaker, Workshop on *Constraints*, New Hampshire, April 1988.
- Invited Speaker, *Summer Program on Robotics*, Institute for Mathematics and Applications, University of Minnesota, August 1987.
- Invited Speaker at the workshop on *Combinatorial Algorithms in Algebraic Structures*, Otzenhausen, Germany, October 1985.

Professional Activities

Editorships

- Member of the Editorial Board, *LIPICs: Leibniz International Proceedings in Informatics*, 2010 onwards.
- Editor-in-Chief, *Journal of Automated Reasoning* (the premier journal in automated theorem proving), 1993–2007.
- Member, Editorial Board, *Journal of Symbolic Computation* (the premier journal in symbolic computation), 2008 onwards.
- Member, Editorial Board, *Journal of Automated Reasoning* (the premier journal in automated theorem proving), 2007 onwards.

- Editor, *Applicable Algebra in Engineering, Communication and Computer Science*.
- Editor, *Constraints*, 1996-2008.
- Editor, *Journal of Systems Science and Complexity*.
- Editor, *Sadhana*, Academy Proceedings in Engineering Sciences, Indian Academy of Sciences, 2005-2008.
- Member, Editorial Advisory Board, *Journal of Theory and Practice of Logic Programming*, 2001–2006.
- Member, Editorial Board, *Journal of Logic Programming*, 1993-2000.
- Guest Editor, *Logic, Mathematics and Computer Science: Interactions*, In Honor of Bruno Buchberge (60th Birthday), *Journal of Symbolic Computation*, Vol. 41(3-4), March-April 2006.
- Editor, *Advances in Mathematics Mechanization*, *Journal of Symbolic Computation*, Vol. 47(6), June 2012.
- Member, Editorial Board, *Book Series on Automated Reasoning*, Kluwer, 1988–2005.

Professional Service

- Board Member, *United Nations University – International Institute for Software Technology (UNU-IIST)*, Macau.
- Executive Board Member, *Computer Science Research Institute (CSRI)*, Sandia National Laboratories, Albuquerque, NM.
- Executive Board Member, *Los Alamos Computer Science Institute (LACSI)*, Rice University, Houston, TX.
- Member, External Advisory Board, Department of Computer Science, New Mexico State University.
- External Reviewer, Computation, Computer, Information and Mathematics (CCIM), Sandia National Labs., 2001, 2002, 2003, 2004.
- Site Reviewer, Science Foundation, Ireland, 2006.
- Board Member, *International Federation of Computational Logic*.

Conference Organization

- Organized (with Podelski and Voronkov) *Dagstuhl International Seminar on Deduction and Infinite State Model Checking*, Germany, 2003.

- Organized (with Furbach, Ganzinger, and Hasegawa) *Dagstuhl International Seminar on Deduction*, Germany, March 1999 and March 2001.
- Member, Organizing Committee, *Annual Symposium on Logic in Computer Science*, until 1998.
- Trustee, CADE, Inc., until 1998.
- Member, Organizing Committee, *Foundations of Software Technology and Theoretical Computer Science*, until 1997.
- Member, Organizing Committee, *International Conference on Rewriting Techniques and Applications*, until 1994.
- Organized (with Boyer, Bundy and Walther) *Dagstuhl Induction Workshop*, Germany, July 1995.
- Organized (with Mundy and Donald) an NSF and AFOSR sponsored workshop on *Integration of Numerical and Symbolic Computing Methods*, Saratoga Springs, July 1990.
- Organized (with Guttag and Musser) an NSF-sponsored workshop on a *Rewrite Rule Laboratory and Term Rewriting Methods*, Rensselaerville, NY, September 1983.

Conference Program Committees

- Co-Chair, *International Joint Conference on Automated Reasoning (IJCAR)*, Federated Logic Conference, 2014, Vienna.
- Chair, *Ninth Asian Symposium on Computer Mathematics (ASCM)*, Singapore, Dec. 2007.
- Chair, *Logic, Mathematics, and Computer Science: Interactions*, Symposium in honor of Bruno Buchberger's 60th Birthday, RISC-Linz, Hagenberg, Austria, Oct. 22-24, 2002.
- Chair, *Eleventh International Conference on Automated Deduction*, June 1992.
- Member, Program Committee of the *5th International Joint Conference on Automated Reasoning (IJCAR)*, Manchester, August, 2012.
- Member, Program Committee of the *23th International Conference on Rewriting Techniques and Applications (RTA)*, Nagoya, 2012.
- Member, Program Committee, *18th International Conference on Logic for Programming, AI and Reasoning (LPAR)*, Venezuela, March 2012.
- Member, Program Committee of the *22th International Conference on Automated Deduction (CADE)*, 2011.
- Member, Program Committee of the *CICM, 2011*.
- Member, Program Committee, *17th International Conference on Logic for Programming, AI and Reasoning (LPAR)*, Indonesia, 2010.
- Member, Program Committee of the *5th International Joint Conference on Automated Reasoning (IJCAR)*, Edinburgh, August, 2010; a part of **FLOC 2010**.
- Member, Program Committee, *8th International Workshop on Automated Deduction in Geometry*, Munich, July 2010.
- Member, Program Committee, *Verification Workshop (Verify'10)*, Edinburgh, 2010.
- Member, Program Committee of the *22th International Conference on Automated Deduction (CADE)*, Montreal, August 2009.
- Member, Program Committee of the, *Tenth Asian Symposium on Computer Mathematics (ASCM)*, Japan, Dec. 2009.
- Member, Program Committee, *7th International Workshop on Automated Deduction in Geometry*, Shanghai, September 2008.
- Member, Program Committee of the *4th International Joint Conference on Automated Reasoning (IJCAR)*, Australia, August, 2008.
- Member, Program Committee, *CalcuIemus 2008 Symposium*, Birmingham, UK, August 2008.

- Member, Program Committee of the *IJCAR'08 Workshop on Practical Aspects of Automated Reasoning (PAAR-2008)*, Australia, August, 2008.
- Member, Program Committee of the *Foundations of Software Technology and Theoretical Computer Science (FSTTCS)*, New Delhi, India, Dec. 2007
- Member, Program Committee of the *18th International Conference on Rewriting Techniques and Applications (RTA)*, Paris, 2007.
- Member, Program Committee, *6th International Workshops on Frontiers of Combining Systems (FROCOS 2007)*, 2007, Liverpool, UK.
- Member, Program Committee, *Verification Workshop (Verify'07)*, Bremen, Germany, 2007.
- Member, Program Committee, *14th International Conference on Logic for Programming, AI and Reasoning (LPAR)*, Armenia, 2007.
- Member. Program Committee of the 7th International Workshop on *the ACL2 Theorem Prover and its Applications*, Austin, Nov. 2007.
- Member, Program Committee, *Calcuemus 2007 Symposium*, Hagenberg, Austria, June 2007.
- Member, Program Committee, *8th International Conference on Artificial Intelligence and Symbolic Computation (AISC)*, Beijing, China, September, 2006.
- Member, Program Committee of the *3rd International Joint Conference on Automated Reasoning (IJCAR)*, part of **FLOC**, Seattle, August 2006.
- Member, Program Committee of the *17th International Conference on Rewriting Techniques and Applications (RTA)*, Seattle, August 2006.
- Member, Program Committee of the *Disproving Workshop*, Seattle, August 2006.
- Member, Program Committee, 4th IFIP Intl. Conf. on Theoretical Computer Science, WCC 2006, Santiago, Chile, August 2006.
- Member, Program Committee, *Verification Workshop (Verify'06)*, FLOC 06, Seattle, 2006.
- Member. Program Committee of the 6th International Workshop on *the ACL2 Theorem Prover and its Applications*, Seattle, August 2006
- Member, Program Committee, *6th International Workshop on Automated Deduction in Geometry*, Vigo, Spain, September 2006.
- Member, Program Committee, *Calcuemus 2006 Symposium*, Genova, Italy, July 2006.
- Member, Program Committee, *Geometric Computing and Reasoning: ACM Conference on SAC 2006*, Dijon, France, April 2006.
- Member, Program Committee of the *20th International Conference on Automated Deduction (CADE)*, Estonia, July 2005.

- Member, Program Committee, *11th International Conference on Logic for Programming, AI and Reasoning (LPAR)*, Uruguay, March 2005.
- Member, Program Committee, *5th International Workshops on Frontiers of Combining Systems (FROCOS)*, 2005.
- Member, Program Committee of the *Foundations of Software Technology and Theoretical Computer Science*, 2004.
- Member, Program Committee, *5th International Workshop on Automated Deduction in Geometry*, Florida, September 2004.
- Member, Program Committee of the *2nd International Joint Conference on Automated Reasoning (IJCAR)*, Cork, Ireland, July 2004.
- Member, Program Committee of the *19th International Conference on Automated Deduction (CADE)*, Miami, July 2003.
- Member, Program Committee, *4th International Workshops on Frontiers of Combining Systems (FROCOS 2002)*, 2002.
- Member, Program Committee, *AISC 2002 Conference on Artificial Intelligence and Symbolic Computation: Theory, Implementation and Applications*, Marseille, France, July 2002.
- Member, Program Committee of the *18th International Conferences on Automated Deduction*, 2002, held as a part of *Federated Logic in Computer Science Conference (FLOC)*, Denmark.
- Member, Program Committee, *Verification Workshop (Verify'02)*, FLOC 02, Copenhagen, Denmark, 2002.
- Member, Program Committee, *4th International Workshop on Automated Deduction in Geometry*, RISC-Linz, Austria, September 2002.
- Member, Program Committee of the *1st International Joint Conference on Automated Reasoning (IJCAR)*, Siena, Italy, June 2001.
- Member, Program Committee, *8th International Conference on Logic for Programming, AI and Reasoning*, Cuba, December 2001.
- Member, Program Committee, *5th Asian Symposium on Computer Mathematics (ASCM)*, Japan, 2001.
- Member, Program Committee, *Verification Workshop (Verify'01)*, IJCAR 01, Siena, Italy, 2001.
- Member, Program Committee of the *17th International Conference on Automated Deduction (CADE)*, Pittsburgh, 2000.
- Member, Program Committee, *4th Asian Symposium on Computer Mathematics (ASCM)*, Thailand, 2000.
- Member, Program Committee, *Calcuemus 2000 Symposium*, St. Andrews, Scotland, August 2000.

- Member, Scientific Committee, *Applied Computer Algebra*, 2000.
- Member, Program Committee, *3rd International Workshop on Automated Deduction in Geometry*, ETH, Zurich, Switzerland, September 2000.
- Member, Program Committee, *5th International Conference on Artificial Intelligence and Symbolic Computation*, Madrid, Spain, July 2000.
- Member, *International Symposium on Applications of Computer Algebra*, Goa, India, October 2000.
- Member, Program Committee of the *16th International Conferences on Automated Deduction*, 1999 held as a part of *Federated Logic in Computer Science Conference (FLOC)*, Italy.
- Member, Scientific Committee, Conference on *Applications of Computer Algebra*, Euroforum, El Escorial (near Madrid), Spain, June 24-27, 1999.
- Member, Program Committee of the *15th International Conference on Automated Deduction (CADE)*, Germany, 1998.
- Member, Program Committee of the *9th International Conference on Rewriting Techniques and Applications*, 1998.
- Member, Program Committees of the workshops on *Formal Methods in Software Practice*, 1998.
- Member, Program Committee of the *Asian Conference on Computer Science*, Manila, Philippines, December 1998.
- Member, Program Committee of the *14th International Conference on Automated Deduction (CADE)*, Australia, 1997.
- Member, Program Committee of the *ASIAN'97 Conference*.
- Member, Program Committee of the *Foundations of Software Technology and Theoretical Computer Science (FSTTCS)*, 1996.
- Member, Program Committees of the workshops on *Formal Methods in Software Practice*, 1996.
- Member, Program Committee, *3rd International Conference on Artificial Intelligence and Symbolic Mathematical Computing (AISMC-3)*, Steyr, Austria, September 1996.
- Member, Program Committee of the *Foundations of Software Technology and Theoretical Computer Science*, 1995.
- Member, Program Committee of the *6th International Conference on Rewriting Techniques and Applications*, 1995.
- Member, Program Committee, *International Logic Programming Symposia*, 1995.
- Member, Program Committee, *International Logic Programming Symposia*, 1994.

- Member, Program Committee, *International Workshop on Principles and Practices of Constraint Programming*, 1994.
- Member, Program Committee, *Third International Symposia of AI and Math.*, 1994.
- Member, Program Committee, *International Workshop on Principles and Practices of Constraint Programming*, 1993.
- Member, Program Committee, *4th International Conference on Logic Programming and Automated Reasoning*, 1993.
- Member, Program Committee, *International Conference on Theorem Provers in Circuit Design: Theory, Practice and Experience*, 1992.
- Member, Program Committee, *Second International Symposia of AI and Math.*, 1992.
- Member, Program Committee, *International Logic Programming Symposia*, 1991.
- Member, Program Committee of the *11th International Conference on Automated Deduction (CADE)*, Germany, 1990.
- Member, Program Committee, *International Symposium on Symbolic and Algebraic Computation (ISSAC-90)*, Japan, 1990.
- Member, Program Committee, *4th Annual Symposium on Logic in Computer Science*, 1989.
- Member, Program Committee of the *3rd International Conference on Rewriting Techniques and Applications*, 1989.
- Member, Program Committee of the *9th International Conference on Automated Deduction (CADE)*, Argonne, 1988.
- Member, Program Committee of the *2nd International Conference on Rewriting Techniques and Applications*, 1987.

Consultancy

- The University at Albany, State University of New York, on *Cryptographic Protocol Analysis*, 2008-2010.
- Sandia National Laboratories on *High Integrity Software* Group, 1999–2001.
- H A L Systems, a division of Fujitsu, on *Design of Cache Coherence Protocols*, 2000–2001.
- General Electric Corporate Research and Development on a number of DARPA projects on the *Use of Geometric Reasoning in Image Understanding*, 1988-1999.
- Rensselaer Polytechnic Institute on SRI, *Proof Visualization*, 1993-1995.

Contracts and Awards

- National Science Foundation (NSF), *Algorithms for Parametric (Comprehensive) Groebner Computations*, \$299,481, 2012-2015.
- National Science Foundation (NSF), *Generating Octagonal Invariants using Quantifier Elimination Heuristics*, \$83,166, 2012-2013.
- National Science Foundation (NSF), *Unification Laboratory: Increasing the Power of Cryptographic Protocol Analysis Tools*, \$240,000, 2009-2012.
- National Science Foundation (NSF), *Unification Laboratory for Cryptographic Protocol Analysis*, \$50,000, 2008-2009.
- National Science Foundation (NSF), *Analyzing Polynomial Systems using Cayley-Dixon Resultant Matrices based on Support Hull*, \$210,000, 2008-2011.
- National Science Foundation (NSF), *SAIL: An Integration of SAT Solver and Inductive Prover*, \$145,000, 2006-2008.
- Computer Science Research Institute, Sandia National Laboratories, *Solving Nonlinear Polynomial Equations*, \$25000, 2006-2007.
- Los Alamos Computer Science Research Institute (LACSI), Rice University, \$183,000, 2005-2006.
- Computer Science Research Institute, Sandia National Laboratories, *Solving Nonlinear Polynomial Equations*, \$35000, 2005-2006.
- REU Supplement to National Science Foundation (NSF), *Polynomial Manipulation using Dixon Resultants*, \$12,000. 2004-2005.
- Computer Science Research Institute, Sandia National Laboratories, *Solving Nonlinear Polynomial Equations*, \$79000, 2004-2005.
- Los Alamos Computer Science Research Institute (LACSI), Rice University, \$200,000, 2004-2005.
- Computer Science Research Institute, Sandia National Laboratories, *Solving Nonlinear Polynomial Equations*, \$75000, 2003-2004.
- National Science Foundation (NSF), Travel Support for *Dagstuhl Deduction Seminar, 2003* \$16,500, 2003.
- Los Alamos Computer Science Research Institute (LACSI), Rice University, \$225,000, 2003-2004.
- National Science Foundation (NSF), *Cross-Ethnic Differences in Undergraduate Women's Preference for IT Education*, \$245,328, 2003-2005 (Principal Investigator: Roli Varma).

- REU Supplement to National Science Foundation (NSF), *Polynomial Manipulation using Dixon Resultants*, \$12,000. 2003-2004.
- Computer Science Research Institute, Sandia National Laboratories, *Solving Nonlinear Polynomial Equations*, \$75000, 2002-2003.
- Los Alamos Computer Science Research Institute (LACSI), Rice University, \$228,225, 2002-2003.
- National Science Foundation (NSF), *Polynomial Manipulation using Dixon Resultants*, \$209,865, 2002-2006.
- National Science Foundation (NSF), *Why so Few Women in Information Technology?: A Comparative Study*, \$457,233, 2001-2003 (Principal Investigator: Roli Varma).
- Computer Science Research Institute, Sandia National Laboratories, *Solving Nonlinear Polynomial Equations*, \$103500, 2001-2002.
- Los Alamos Computer Science Research Institute (LACSI), Rice University, \$54000, 2001.
- REU Supplement to ITR Program, National Science Foundation (NSF), *Integrating Induction into Decision Procedures*, \$12,000. 2002-2003.
- ITR Program, National Science Foundation (NSF), *Integrating Induction into Decision Procedures*, \$401,523, 2001-2004.
- National Science Foundation (NSF), *Semantic Unification and its Applications*, \$360,000, 2001-2005 (Co-principal investigators: Chris Lynch and P. Narendran) (UNM portion: \$137082).
- Office of Naval Research (ONR) Award, *Equational Unification for Cryptographic Protocol Analysis*, \$76,745, 2001.
- National Science Foundation (NSF), *Lemma Generation and Failure Heuristics for an Induction Theorem Prover*, RRL, \$240,050, 1997-2001.
- National Science Foundation (NSF), Travel Support for *Dagstuhl Deduction Seminar, 2001* \$15,000, 2001.
- Computer Science Research Institute, Sandia National Laboratories, *Solving Nonlinear Polynomial Equations*, \$102,450, 2000-2001.
- National Science Foundation (NSF), *Investigations of the Dixon resultants*, \$123,573, 1996-2000.
- National Science Foundation (NSF), *Equality Reasoning: Word and Unification Problems* \$161,887, 1997-2000. (Co-principal investigator: P. Narendran).
- National Science Foundation (NSF), Travel Support for *Dagstuhl Deduction Seminar, 1999*, \$9,500, 1999.
- SUN Microsystems Research Lab., *A Design of ADL/C++*, \$30,000, 1996.

- National Research Council Travel Award, \$3,000, 1998. (Co-principal Investigator: P. Narendran).
- Gift from SUN Microsystems Research Lab., \$31,000, 1995.
- National Science Foundation (NSF), US-Indo Collaborative Research Award, *Logic Programming: Analysis, Transformation, and Principles*, \$6,850 and Indian Rs. 390,600, 1995-2000.
- National Science Foundation (NSF), *Research on Unification and Related Problems*, \$61,853, 1994-1996. (Co-principal investigator: P. Narendran).
- National Science Foundation (NSF), US-Germany Cooperative Research Award, *Word and Unification Problems and Automated Reasoning*, \$22,743, 1994-1997. (Co-principal investigator: P. Narendran).
- National Science Foundation (NSF), *A Framework for Specifying and Verifying Generic System Components*, \$211,679 1994-1996. (Co-principal investigator: D.R. Musser).
- National Science Foundation (NSF), *Induction, Proof Management and Related Topics in Automated Deduction*, \$149,392, 1993-1996.
- SRI International, *Verified Theory Development and Rewrite/Induction Proof Methods*, \$44,593, 1993-1995.
- Air Force Office of Scientific Research (AFOSR), *Integrated Symbolic and Numerical Methods for Advanced Computer Vision*, \$505,023, 1991-95.
- National Science Foundation (NSF), *Extensions to the Rewrite Rule Laboratory and Research in Automated Deduction based on Rewriting Techniques and Completion*, \$310,332, 1989-1992. (Co-principal investigator: D.R. Musser).
- General Electric Corporate Research and Development, *Image Interpretation*, \$74,900, 1992.
- General Electric Corporate Research and Development, *Geometric Modeling*, 1988-89, \$21,500; 1990-1991: \$50,000.
- Joint National Science Foundation (NSF) and Air Force Office of Scientific Research (AFOSR), *Workshop on Integration of Numerical and Symbolic Computing Methods*, \$28,000, 1990. (Co-principal investigators: J. Mundy and B. Donald).
- National Science Foundation (NSF) Travel Award, *Logic Programming, Development of a Proposal*, \$2,800, 1990.
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