

**VITA**  
**Mikhail (Mike) J. Atallah**

**GENERAL INFORMATION**

**Contact Information**

Mail: Purdue University, Department of Computer Science,  
305 N. University Street, West Lafayette, IN 47907-2107  
Office phone: (765) 494-6017  
Home phone: (765) 463-7310  
Fax: 765-494-0739  
Email: [mja@cs.purdue.edu](mailto:mja@cs.purdue.edu)  
Home Page: <http://www.cs.purdue.edu/people/mja>

**Personal Data**

Married, two children  
U.S. Citizen (naturalized in 1984)

**Academic (post-graduate) Career**

2004–	Distinguished Professor	Computer Science, Purdue Univ.
2003–	Professor (courtesy)	Electr. and Comp. Eng., Purdue Univ.
1989–04	Professor	Computer Science, Purdue Univ.
1986–89	Associate Professor	Computer Science, Purdue Univ.
1982–86	Assistant Professor	Computer Science, Purdue Univ.
1982	Ph.D.	Electr. Eng. and Comp. Sci., Johns Hopkins Univ. Advisor: S. Rao Kosaraju
1980	M.S.	Electr. Eng. and Comp. Sci., Johns Hopkins Univ.
1979–82	Grad student (TA then RA)	Electr. Eng. and Comp. Sci., Johns Hopkins Univ. (Completed M.S. in 2 semesters, Ph.D. in 4 more semesters, all with GPA = 4.0)

**Other Background and Experience (administrative/industrial/pre-graduate)**

2007–	Associate Head	Computer Science, Purdue Univ.
2007–9	Chief Technology Officer	Arxan Technologies Inc.
2001–	Technical Advisory Board	Arxan Technologies Inc.
2001	Co-Founder	Arxan Technologies Inc.
2001–	Assistant Director	CERIAS, Purdue Univ. (Center for Education and Research in Information Assurance and Security)
1994–96	Associate Head	Computer Science, Purdue Univ.
1988 (1 month)	Visiting Scientist	NASA Ames Research Center (RIACS Institute, Center for Advanced Architectures)
1975–78	Engineer	Siemens, Wang
1976–77	Instructor	American Univ. in Beirut
1971–75	Undergrad (B.E. 1975)	American Univ. in Beirut

## Research Interests

Main current interest: Information security (protocols, watermarking, software security)

Other interests: Algorithms, parallel computation, computational geometry

## PROFESSIONAL RECOGNITION

### Awards, Honors

- Fellow of the ACM (2006)
- Fellow of the IEEE (1997)
- NSF Presidential Young Investigator Award (1985)
- Selected (in 1999) as one of the best teachers in the history of Purdue University and included in Purdue's Book of Great Teachers, a permanent wall display of 200 Purdue teachers past and present – see <http://www.purdue.edu/provost/GreatTeachers/>
- Selected (in 2004) as Fellow of the Purdue Teaching Academy. Approximately 6% of Purdue faculty have the rank of Fellow in the Teaching Academy. For more details see <http://www.teachingacademy.purdue.edu/>
- Selected as the Outstanding Teacher of the College of Science for 2004. Selected among the Top Ten Outstanding Teachers for the College of Science in 1994, 1995, 2006, 2007. (The College of Science has 300+ faculty.)
- Purdue ACM Outstanding CS Instructor Award (3 times)
- Distinguished Alumnus Award, Faculty of Engineering, American University in Beirut (2007)

## **Talks Given in Distinguished Lecture Series at Universities**

- 2008 Univ. of Minnesota  
(Distinguished Lecture Series)
- 2006 Northwestern Univ.  
(Distinguished Lecture Series)
- 2006 Colorado State Univ.  
(ISTeC Distinguished Lecture Series)
- 2003 Iowa State Univ.  
(Distinguished Lecture Series)
- 2001 Ohio State Univ.  
(Distinguished Lecture Series)
- 2001 Northwestern Univ.  
(Distinguished Lecture Series)
- 1995 Univ. of Florida  
(Barr Systems Distinguished Lecture Series)
- 1992 Johns Hopkins Univ.  
(IBM Distinguished Lecture Series)
- 1988 Univ. of Virginia  
(Distinguished Lecture Series)

## **Conference Talks Given as Keynote or Invited Speaker**

- 2008 First International Workshop on Remote Entrusting (RE-TRUST '08), Trento, Italy  
(Keynote Speaker)
- 2008 Workshop on Computer Privacy in Electronic Commerce, Montreal, Canada  
(Invited Speaker)
- 2006 12th Annual International Computing and Combinatorics Conference (COCOON '06),  
Taipei, Taiwan  
(Keynote Speaker)
- 2005 12th Annual IEEE/ACM International Conference on High Performance Computing  
(HiPC '05), Goa, India  
(Keynote Speaker)
- 2005 Privacy Place Spring Workshop, Raleigh, NC  
(Keynote Speaker)
- 2005 3rd Australasian Information Security Workshop (AISW '05), Newcastle, Australia  
(Invited Speaker)
- 2005 10th Panhellenic Conference on Informatics (PCI '05), Volos, Greece  
(Invited Speaker)
- 2004 2d International Conference on Advanced Technologies for Homeland Security, Storrs, CT  
(Invited Speaker)
- 2002 National Cybercrime Conference, Chicago  
(Invited Panelist)

- 2002 Indiana Venture Club, Indianapolis  
(Keynote Speaker)
- 2002 Indiana Executive Forum, Indianapolis  
(Invited Speaker)
- 2001 Workshop on Algorithms and Data Structures (WADS '01), Providence  
(One of three Plenary Speakers)
- 1996 7th Workshop on Parallel Algorithms, Philadelphia  
(Invited Speaker)
- 1996 7th International Symposium on Algorithms and Computation (ISAAC '96), Osaka, Japan  
(One of two Invited Speakers)
- 1996 Summer Institute on Computational Geometry, Academia Sinica, Taiwan  
(One of five Main Lecturers)
- 1996 IBM Tokyo Research Laboratory Workshop, Tokyo  
(One of six Invited Speakers)
- 1994 TIMS XXXII International Meeting, Anchorage  
(Invited Speaker)
- 1994 Algorithm Theory Day, Carleton Univ., Ottawa  
(Invited Speaker)
- 1994 7th Int. Conference on Parallel and Distributed Computing Systems, Las Vegas  
(Keynote Speaker)
- 1993 Workshop on Algorithms and Data Structures (WADS '93), Montreal  
(Invited Speaker)
- 1993 DIMACS Workshop on Parallel Algorithms: From Solving Combinatorial Problems to Solving  
Grand Challenge Problems, Piscataway, NJ  
(Invited Speaker)
- 1992 Leonardo Fibonacci Institute for Foundations of Computer Sci., Italy  
(One of three Main Lecturers)
- 1992 4th Symp. on the Frontiers of Massively Parallel Computation (FRONTIERS '02), McLean  
(Invited Panelist)
- 1991 2d Workshop on Parallel Algorithms, New Orleans  
(Invited Speaker)
- 1989 Workshop on Algorithms and Data Structures (WADS '89), Ottawa  
(Invited Speaker)
- 1987 IMA Workshop on Applications of Combinatorics and Graph Theory to VLSI  
(Invited Speaker)
- 1987 Computational Geometry Day at Courant Institute / New York Univ.  
(Invited Speaker)

### **Journal Editorial Boards**

- *Int. J. of Cyber Crimes and Criminal Justice* (2006–)

- *IEEE Trans. on Computers* (2003–07)
- *SIAM J. on Computing* (1988–98)
- *J. of Parallel and Distributed Computing* (1993–)
- *Information Processing Letters* (1989–95)
- *Parallel Processing Letters* (1991–97)
- *Computational Geometry: Theory & Applications* (1990–2000)
- *Int. J. on Computational Geometry & Applications* (1990–2008)
- *Int. J. of Foundations of Computer Science* (1999–2006)
- *Methods of Logic in Computer Science* (1990–96)
- *Algorithmica* Guest Editor for a Special Issue on Computational Geometry (1990–91)

### Journal Advisory Boards

- *Int. J. on Computational Geometry & Applications* (2008–)

### Conference Committees

- Member of Program Committee, *36th International Conference on Very Large Databases* (2010, Singapore)
- Member of Program Committee, *29th ACM Symposium on Principles of Database Systems (PODS)* (2010, Indianapolis, Indiana)
- Member of Program Committee, *30th International Conference on Distributed Computing Systems (ICDCS)* (2010, Genoa, Italy)
- Co-Chair of Program Committee, *10th Privacy Enhancing Technologies Symposium (PETS)* (2010, Berlin, Germany)
- Member of Program Committee, *15th ACM Symposium on Access Control Models and Technologies (SACMAT)* (2010, Pittsburgh)
- Member of Program Committee, *17th String Processing and Information Retrieval Symposium (SPIRE)* (2010, Los Cabos, Mexico)
- Member of Program Committee, *16th Annual International Computing and Combinatorics Conference (COCOON)* (2010, Nha Trang, Vietnam)
- Member of Program Committee, *14th European Symposium on Research in Computer Security (ESORICS)* (2009, Saint Malo, France)

- Co-Chair of Program Committee, *9th Privacy Enhancing Technologies Symposium (PETS)* (2009, Seattle, Washington)
- Member of Program Committee, *29th International Conference on Distributed Computing Systems (ICDCS)* (2009, Montreal, Quebec)
- Member of Program Committee, *4th ACM Symposium on Information, Computer and Communication Security (AsiaCCS)* (2009, Sydney, Australia)
- Member of Program Committee, *16th Annual Workshop on Selected Areas in Cryptography (SAC)* (2009, Calgary, Canada)
- Member of Program Committee, *14th ACM Symposium on Access Control Models and Technologies (SACMAT)* (2009, Stresa, Italy)
- Member of Program Committee, *16th Annual IEEE/ACM International Conference on High Performance Computing (HiPC)* (2009, Cochin, India)
- Member of Program Committee, *3d International Frontiers of Algorithmics Workshop (FAW)* (2009, Hefei, China)
- Member of Program Committee, *15th Annual International Computing and Combinatorics Conference (COCOON)* (2009, Niagara Falls)
- Member of Program Committee, *5th International Workshop on Security and Trust Management (STM)* (2009, Saint Malo, France)
- Member of Program Committee, *2d International Workshop on Remote Entrusting (Re-Trust)* (2009, Riva del Garda, Italy)
- Member of Program Committee, *11th International Conference on Information and Communications Security (ICICS)* (2009, Beijing, China)
- Member of Program Committee, *7th Annual Conference on Privacy, Security and Trust (PST)* (2009, Saint John, New Brunswick, Canada)
- Member of Program Committee, *15th ACM Conference on Computer and Communications Security (CCS)* (2008, Alexandria, Virginia)
- Member of Program Committee, *8th Privacy Enhancing Technologies Symposium (PETS)* (2008, Leuven, Belgium)
- Member of Program Committee, *13th ACM Symposium on Access Control Models and Technologies (SACMAT)* (2008, Estes Park, Colorado)
- Member of Program Committee, *15th Symposium on String Processing and Information Retrieval (SPIRE)* (2008, Melbourne, Australia)
- Member of Program Committee, *11th Annual Information Security Conference (ISC)* (2008, Taipei, Taiwan)

- Member of Program Committee, *10th International Conference on Information and Communications Security (ICICS)* (2008, Birmingham, United Kingdom)
- Member of Program Committee, *6th Annual Conference on Privacy, Security and Trust (PST)* (2008, Delta Fredericton Fredericton, New Brunswick, Canada)
- Member of Program Committee, *2d International Frontiers of Algorithmics Workshop (FAW)* (2008, Changsha, China)
- Member of Program Committee, *3d International Workshop on Dependability Aspects on Data Warehousing and Mining Applications (DAWAM)* (2008, Barcelona, Spain)
- Member of Program Committee, *6th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA)* (2008, Doha, Qatar)
- Member of Program Committee, *14th ACM Conference on Computer and Communications Security (CCS)* (2007, Alexandria, Virginia)
- Member of Program Committee, *27th International Conference on Distributed Computing Systems (ICDCS)* (2007, Toronto, Canada)
- Member of Program Committee, *7th ACM Digital Rights Management Workshop (ACM-DRM)* (2007, Alexandria, Virginia)
- Member of Program Committee, *7th Privacy Enhancing Technologies Workshop (PET)* (2007, Ottawa, Canada)
- Member of Program Committee, *10th Information Security Conference (ISC)* (2007, Valparaiso, Chile)
- Member of Program Committee, *21st Annual International Parallel and Distributed Processing Symposium (IPDPS)* (2007, Long Beach, California)
- Member of Program Committee, *10th Workshop on Algorithms and Data Structures (WADS)* (2007, Halifax, Canada)
- Member of Program Committee, *9th International Conference on Information and Communications Security (ICICS)* (2007, ZhengZhou, China)
- Member of Program Committee, *2d International Workshop on Dependability Aspects on Data Warehousing and Mining Applications (DAWAM)* (2007, Vienna, Austria)
- Member of Program Committee, *25th ACM Symposium on Principles of Database Systems (PODS)* (2006, Chicago, Illinois)
- Member of Program Committee, *5th ACM Workshop on Privacy in the Electronic Society (WPES)* (2006, Washington, DC)
- Member of Program Committee, *6th Privacy Enhancing Technologies Workshop (PET)* (2006, Cambridge, U.K.)

- Member of Program Committee, *11th ACM Symposium on Access Control Models and Technologies (SACMAT)* (2006, Lake tahoe, California)
- Vice-Chair of Program Committee, *20th Annual International Parallel and Distributed Processing Symposium (IPDPS)* (2006, Rhodes, Greece)
- Member of Program Committee, *17th Annual International Symposium on Algorithms and Computation (ISAAC)* (2006, Kolkata, India)
- Member of Program Committee, *13th Annual IEEE/ACM International Conference on High Performance Computing (HiPC)* (2006, Bangalore, India)
- Member of Program Committee, *8th International Conference on Information and Communications Security (ICICS)* (2006, Raleigh, NC)
- Member of Program Committee, *1st ACM Workshop on Multimedia Content Protection and Security (MCPS)* (2006, Santa Barbara, CA)
- Chair of Algorithms and Bioinformatics Track Program Committee, *4th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA)* (2006, Dubai, U.A.E.)
- Member of Program Committee, *25th Foundations of Software Technology and Theoretical Computer Science (FSTTCS)* (2005, Hyderabad, India)
- Member of Program Committee, *10th ACM Symposium on Access Control Models and Technologies (SACMAT)* (2005, Stockholm, Sweden)
- Member of Program Committee, *14th International World Wide Web Conference (WWW)* (2005, Chiba, Japan)
- Member of Program Committee, *3rd Australasian Information Security Workshop (AISW)* (2005, Newcastle, Australia)
- Member of Program Committee, *3rd IEEE Conference on E-Commerce Technology (CEC)* (2005, Munich, Germany)
- Member of Program Committee, *IEEE International Conference on Information Technology: Coding and Compression Track (ITCC)* (2005, Las Vegas, Nevada)
- Member of Program Committee, *10th Panhellenic Conference on Informatics (PCI)* (2005, Volos, Greece)
- Member of Program Committee, *4th ACM Workshop on Digital Rights Management (DRM)* (2004, Washington, DC)
- Member of Program Committee, *9th ACM Symposium on Access Control Models and Technologies (SACMAT)* (2004, Yorktown Heights, New York)

- Member of Program Committee, *2d IEEE Conference on E-Commerce Technology (CEC)* (2004, San Diego, California)
- Member of Program Committee, *11th Annual IEEE/ACM International Conference on High Performance Computing (HiPC)* (2004, Bangalore, India)
- Vice-Chair for Network Security, *International Conference on Parallel Processing (ICPP)* (2003, Kaohsiung, Taiwan)
- Member of Program Committee, *10th Annual IEEE/ACM International Conference on High Performance Computing (HiPC)* (2003, Bangalore, India)
- Member of Program Committee, *3rd IEEE/IPSJ Symposium on Applications and the Internet* (2003, Orlando, Florida)
- Member of Program Committee, *8th Annual International Computing and Combinatorics Conference (COCOON)* (2002, Singapore)
- Member of Program Committee, *Watermarking '2002* (2002, Paris, France)
- Program Chair, *13th IEEE International Parallel Processing Symposium (IPPS)* (1999, San Juan, Puerto Rico)
- Member of Program Committee, *12th Annual International Conference on Parallel and Distributed Computing and Systems (IPDCS)* (1999, Fort Lauderdale)
- Vice-Chair of Program Committee, *5th Annual IEEE/ACM International Conference on High Performance Computing (HiPC)* (1998, India)
- Member of Program Committee, *11th Annual IEEE International Parallel Processing Symposium (IPPS)* (1997, Geneva, Switzerland)
- Member of Program Committee, *4th Annual International Workshop on Parallel Algorithms for Irregularly Structured Problems* (1997, Paderborn, Germany)
- Member of Program Committee, *4th Annual IEEE/ACM International Conference on High Performance Computing (HiPC)* (1997, Bangalore, India)
- Vice-Chair of Program Committee, *10th Annual IEEE International Parallel Processing Symposium (IPPS)* (1996, Hawaii)
- Member of Program Committee, *8th Annual IEEE Symp. on Parallel and Distributed Processing (SPDP)* (1996, New Orleans)
- Member of Program Committee, *3rd Annual IEEE/ACM International Conference on High Performance Computing (HiPC)* (1996, Trivandrum, India)
- Member of Program Committee, *6th Annual ACM-SIAM Symp. on Discrete Algorithms (SODA)* (1995, San Francisco)

- Member of Program Committee, *9th Annual IEEE International Parallel Processing Symposium (IPPS)* (1995, Santa Barbara)
- Member of Program Committee, *6th Annual International Symposium on Algorithms and Computation (ISAAC)* (1995, Cairns, Australia)
- Member of Program Committee, *2d Annual IEEE/ACM International Conference on High Performance Computing (HiPC)* (1995, Delhi, India)
- Vice-Chair of Program Committee, *8th Annual IEEE International Parallel Processing Symposium (IPPS)* (1994, Cancun)
- General Co-Chair, *7th Annual International Conference on Parallel and Distributed Computing and Systems (PDCS)* (1994, Las Vegas)
- Member of Program Committee, *7th Annual IEEE International Parallel Processing Symposium (IPPS)* (1993, Newport Beach)
- Member of Steering Committee, *5th Annual IEEE Symp. on Parallel and Distributed Processing (SPDP)* (1993, Dallas)
- Co-Chair of Program Committee, *4th Annual IEEE Symp. on Parallel and Distributed Processing (SPDP)* (1992, Dallas)
- Member of Program Committee, *2d Workshop on Algorithms and Data Structures (WADS)* (1991, Ottawa)
- Member of Program Committee, *6th Annual ACM Symp. on Computational Geometry (SoCG)* (1990, Berkeley)

### Other Editorial Activities

- *Handbook of Algorithms and Theory of Computation*, CRC Press (1st Edition: 1995–98; 2d Edition: 2006–).
- *Handbook of Parallel and Distributed Computing*, McGraw-Hill (1993–97).
- *Handbook of Computer Science and Engineering*, CRC Press (1994–97).
- *Computational Mathematics Series Editor* for Chapman & Hall / CRC (1999–2002).

### PUBLICATIONS

**Note on journal versions of conference papers:** My recent conference papers were submitted to journals only in cases where the conference’s page limitations constrained the presentation. In the areas of computer science where I publish, quality conferences are more timely and at least as selective as journals.

#### In Refereed Conferences

[Conference papers marked by \* have not appeared in journal version.]

1. \* Data Structures for Range Minimum Queries in Multidimensional Arrays (with Hao Yuan). Accepted for publication in *Proc. 21st ACM-SIAM Symp. on Discrete Algorithms (SODA 10)*, Austin, Texas, January 2010. Acceptance rate: 30% (136/445)
2. \* Efficient and Secure Distribution of Massive Geo-Spatial Data (with Hao Yuan). Accepted for publication in *Proc. 17th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (GIS 2009)*, Seattle, Washington, November 2009.
3. \* Robust Authentication Using Physically Unclonable Functions (with Marina V. Blanton and Keith B. Frikken). Accepted for publication in *Proc. 12th Information Security Conference (ISC 2009)*, Pisa, Italy, September 2009. Acceptance rate for full papers: 28% (29/105)
4. \* Computing All Skyline Probabilities for Uncertain Data (with Yinian Qi). Accepted for publication in *Proc. 28th ACM SIGMOD-SIGACT-SIGART Symposium on Principles of Database Systems (PODS 09)*, Providence, Rhode Island, July 2009.
5. \* Genuinity Signatures: Designing Signatures for Verifying 3D Object Genuinity (with Daniel Aliaga). Accepted for publication in *Proc. 30th Annual Conference of the European Association for Computer Graphics (Eurographics 09)*, Munich, Germany. Acceptance rate: 23% (56/243)
6. \* Efficient Data Structures for Range-Aggregate Queries on Trees (with Hao Yuan). Accepted for publication in *Proc. of 12th International Conference on Database Theory (ICDT 09)*, Saint-Petersburg, Russia. Acceptance rate: 32% (25/77).
7. \* Incentives and Perceptions of Information Security Risks (with Fariborz Farahmand and Benn Konsynski). Accepted for publication in *Proc. International Conference on Information Systems (ICIS 08)*, Paris, France, December 2008.
8. \* Efficient Private Record Linkage (with Mohamed Yakout and Ahmed Elmagarmid). Accepted for publication in *Proc. 25th International Conference on Data Engineering (ICDE 09)*, Shanghai, China, April 2009.
9. \* Private and Cheating-Free Outsourcing of Algebraic Computations (with David Benjamin). Accepted for publication in *Proc. of 6th Annual Conference on Privacy, Security and Trust (PST 08)*, Fredericton, New Brunswick, Canada, October 2008. Acceptance rate: 28% (25/71).
10. \* Binding Software to Specific Native Hardware in a VM Environment: The PUF Challenge and Opportunity, (with Eric D. Bryant, John T. Korb, and John R. Rice). *Proc. of 1st Workshop on Virtual Machine Security (VMSec 08)*, Fairfax, Virginia, October 2008, pp. 45–48. Acceptance rate: 35% (7/20).
11. \* Efficient Privacy-Preserving  $k$ -Nearest Neighbor Search (with Yinian Qi). *Proc. of 28th International Conference on Distributed Computing Systems (ICDCS 08)*, Beijing, China, June 2008. Acceptance rate: 16% (102/638).

12. \* Efficient Distributed Third-Party Data Authentication for Tree Hierarchies (with Hao Yuan). *Proc. of 28th International Conference on Distributed Computing Systems (ICDCS 08)*, Beijing, China, June 2008. Acceptance rate: 16% (102/638).
13. \* Private Combinatorial Group Testing (with Keith B. Frikken, Marina V. Blanton and YounSun Cho). *Proc. of 3d ACM Symposium on Information, Computer and Communications Security (AsiaCCS 08)*, Tokyo, March 2008, pp. 312–320. Acceptance rate: 18% (32/182 for regular papers).
14. \* Efficient Data Authentication in an Environment of Untrusted Third-Party Distributors (with YounSun Cho and Ashish Kundu). *Proc. 24th International Conference on Data Engineering (ICDE 08)*, Cancun, Mexico, April 2008, pp. 696–704.
15. \* Private Discovery of Shared Interests (with YounSun Cho). *Proc. 9th International Conference on Information and Communications Security (ICICS 07)*, Zhengzhou, China, December 2007.
16. \* Incorporating Temporal Capabilities in Existing Key Management Schemes (with Marina V. Blanton and Keith B. Frikken). *Proc. 12th European Symposium on Research in Computer Security (ESORICS 07)*, Dresden, Germany, September 2007, pp. 515–530.
17. \* Discrepancy-Sensitive Dynamic Fractional Cascading, Dominated Maxima Searching, and 2-d Nearest Neighbors in Any Minkowski Metric (with Marina V. Blanton, Michael T. Goodrich, and Stanislas Polu). *Proc. 2007 Workshop on Algorithms and Data Structures (WADS 07)*, Halifax, Nova Scotia, August 2007, pp. 114–126. Acceptance rate: 26% (40/150).
18. \* Passwords for Everyone: Secure Mnemonic-based Accessible Authentication (with Mercan Topkara and Umut Topkara). *Proc. 2007 USENIX Annual Technical Conference (USENIX 07)*, Santa Clara, California, June 2007, pp. 369–374.
19. \* Efficient Techniques for Realizing Geo-Spatial Access Control (with Marina V. Blanton and Keith B. Frikken). *Proc. of 2d ACM Symposium on Information, Computer and Communications Security (AsiaCCS 07)*, Singapore, March 2007, pp. 82–92. Acceptance rate: 18%.
20. \* Passwords Decay, Words Endure: Secure and Re-usable Multiple Password Mnemonics (with Mercan Topkara and Umut Topkara). *Proc. 22d Annual ACM Symposium on Applied Computing (SAC 07)*, Seoul, Korea, March 2007, pp. 292–299.
21. \* Secure and Private Collaborative Linear Programming (with Jiangtao Li). *Proc. 2nd International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom 06)*, Atlanta, Georgia, November 2006, pp. 1–8.
22. Point-Based Trust: Define How Much Privacy Is Worth (with Danfeng Yao, Keith Frikken, and Roberto Tamassia). *Proc. 8th International Conference on Information and Communications Security (ICICS 06)*, Raleigh, North Carolina, December 2006, pp. 190–209. [Best Student Paper Award]

23. \* Words Are Not Enough: Sentence Level Natural Language Watermarking (with Mercan Topkara and Umut Topkara). *Proc. 1st ACM Workshop on Multimedia Content Protection and Security (MCPS 06)*, Santa Barbara, California, October 2006, pp. 37–46.
24. \* The Hiding Virtues of Ambiguity: Quantifiably Resilient Watermarking of Natural Language Text through Synonym Substitutions (with Mercan Topkara and Umut Topkara). *Proc. ACM Multimedia and Security Workshop (MMSEC 06)*, Geneva, Switzerland, September 2006, pp. 164–174.
25. An Empirical Study of Automatic Event Reconstruction Systems (with Sundararaman Jeyaraman). *Proc. 6th Annual Digital Forensics Research Workshop (DFRWS 06)*, Lafayette, Indiana, August 2006.
26. \* Key Management for Non-Tree Access Hierarchies (with Marina V. Blanton and Keith B. Frikken). *Proc. 11th ACM Symposium on Access Control Models and Technologies (SACMAT 06)*, Lake Tahoe, California, June 2006, pp. 11–18. Acceptance rate: 30% (25/82).
27. \* Efficient Correlated Action Selection (with Marina V. Blanton, Keith B. Frikken, and Jiangtao Li). *Proc. 10th Financial Cryptography and Data Security Conference (FC 06)*, Anguilla, British West Indies, February 2006, pp. 296–310. Acceptance rate: 30% (19/64 for regular papers).
28. \* Lost in Just the Translation (with Christian Grothoff, Krista Grothoff, and Ryan Stutsman). *Proc. 21st Annual ACM Symposium on Applied Computing (SAC 06)*, Dijon, France, April 2006, pp. 338–345. Acceptance rate: 32% (300/927).
29. \* Trust Negotiation with Hidden Credentials, Hidden Policies, and Policy Cycles (with Keith B. Frikken and Jiangtao Li). *Proc. of the 13th Annual Network and Distributed System Security Symposium (NDSS 06)*, San Diego, California, February 2006, pp. 157–172. Acceptance rate: 13% (17/127).
30. \* Natural Language Watermarking: Research Challenges and Applications (with Mercan Topkara, Giuseppe Riccardi, and Dilek Hakkani-Tur). *Proc. of the SPIE International Conference on Security, Steganography, and Watermarking of Multimedia Contents VI*, January 2006, San Jose, California.
31. \* Dynamic and Efficient Key Management for Access Hierarchies (with Marina V. Blanton and Keith B. Frikken). *Proc. of the 12th ACM Conference on Computer and Communications Security (CCS 05)*, Alexandria, Virginia, November 2005, pp. 190–202. Acceptance rate: 15% (38/249).
32. \* ViWiD: Visible Watermarking-Based Defense Against Phishing (with Mercan Topkara, Ashish Kamra, and Cristina Nita-Rotaru). *Proc. of the Workshop on Digital Watermarking (IWDW 05)*, Lecture Notes in Computer Sciences, Springer Verlag, Siena, Italy, September 2005, pp. 470–482..

33. \* Indexing Information for Data Forensics (with Michael T. Goodrich and Roberto Tamassia). *Proc. 3rd Conference on Applied Cryptography and Network Security (ACNS 05)*, New York, June 2005, pp. 206–221. Acceptance rate: 22% (35/156).
34. Translation-Based Steganography (with Christian Grothoff, Krista Grothoff, Ludmila Alkhutova, and Ryan Stutsman). *Proc. 7th International Information Hiding Workshop (IHW 05)*, Barcelona, Spain, June 2005, pp. 219–233.
35. \* Provable Bounds for Portable and Flexible Privacy-Preserving Access Rights (with Marina V. Blanton). *Proc. 10th ACM Symposium on Access Control Models and Technologies (SACMAT 05)*, Stockholm, Sweden, June 2005, pp. 95–101. Acceptance rate: 21% (19/90).
36. \* Privacy-Preserving Credit Checking (with Keith Frikken and Chen Zhang). *Proc. 6th ACM Conference on Electronic Commerce (EC 05)*, Vancouver, Canada, June 2005, pp. 147–154. Acceptance rate: 29% (33/113).
37. \* Secure Collaborative Planning, Forecasting, and Replenishment (SCPFR) (with Marina Blanton, Vinayak Deshpande, Keith Frikken, Jiangtao Li, and Leroy Schwarz). *Multi-Echelon / Public Applications of Supply Chain Management Conference*, Atlanta, June 2006.
38. \* Markov Models for Identification of Significant Episodes (with Robert Gwadera and Wojciech Szpankowski). *Proc. 5th SIAM International Conference on Data Mining (SDM 05)*, Newport Beach, California, April 2005, pp. 404–414. Acceptance rate: 18% (40/218).
39. \* Secure Biometric Authentication for Weak Computational Devices (with Keith B. Frikken, Michael T. Goodrich, and Roberto Tamassia). *Proc. 9th International Conference on Financial Cryptography and Data Security (FC 05)*, Lecture Notes in Computer Sciences, Springer Verlag (LNCS 3570), Roseau, Dominica, February 2005, pp. 357–370. Acceptance rate: 24% (22/92).
40. \* Achieving Fairness in Private Contract Negotiation (with Keith B. Frikken). *Proc. 9th International Conference on Financial Cryptography and Data Security (FC 05)*, Lecture Notes in Computer Sciences, Springer Verlag (LNCS 3570), Roseau, Dominica, February 2005, pp. 270–284. Acceptance rate: 24% (22/92).
41. \* Remote Revocation of Smart Cards in a Private DRM system (with Keith B. Frikken and Marina V. Bykova). *Proc. Australasian Information Security Workshop (AISW 05)*, Newcastle, Australia, January 2005, pp. 169–177. Acceptance rate: 37% (13/35).
42. Verifying Data Integrity in Peer-to-Peer Media Streaming (with Ahsan Habib, Dongyan Xu, Bharat Bhargava, and John Chuang). *Proc. 12th Annual Multimedia Computing and Networking Workshop (MMCN 05)*, San Jose, California, January 2005, pp. 1–12. Acceptance rate: 16% (16/100 for regular papers).

43. \* Detection of Significant Sets of Episodes in Event Sequences (with Robert Gwadera and Wojciech Szpankowski). *Proc. 4th IEEE International Conference on Data Mining (ICDM 04)*, Brighton, United Kingdom, November 2004, pp. 3–10. Acceptance rate: 9% (39/451).
44. \* Private Collaborative Forecasting and Benchmarking (with Marina Bykova, Jiangtao Li, Keith B. Frikken, and Mercan Karahan). *Proc. 3rd ACM Workshop on Privacy in the Electronic Society (WPES 04)*, Washington, DC, October 2004, pp. 103–114. Acceptance rate: 22% (10/45 for regular papers).
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165. Parallel Algorithms for Longest Increasing Chains in the Plane and Related Problems, (with Danny Z. Chen and K.S. Klenk). *Parallel Processing Letters*, 9 (1999), pp. 511–520.
166. \* An Improved Hypercube Bound for Multi-searching and its Applications. *Int. J. on Computational Geometry & Applications*, 9 (1999), pp. 29–38.
167. Pattern Matching Image Compression: Algorithmic and Empirical Results, (with Yann Genin and Wojciech Szpankowski). *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 21 (1999), pp. 614–627.
168. \* Algorithms for Variable Length Subnet Address Assignment, (with Douglas E. Comer). *IEEE Trans. on Computers*, C-47 (1998), pp. 693–699.
169. On the Multisearching Problem for Hypercubes, (with Andreas Fabri). *Computational Geometry: Theory and Applications*, 5 (1996), pp. 293–302.
170. Computing the All-Pairs Longest Chains in the Plane, (with Danny Z. Chen). *Int. J. on Computational Geometry & Applications*, 5 (1995), pp. 257–271.
171. Optimal Parallel Hypercube Algorithms for Polygon Problems, (with Danny Z. Chen). *IEEE Trans. on Computers*, C-44 (1995), pp. 914–922.

172. An Optimal Algorithm for Shortest Paths on Interval and Circular-Arc Graphs, with Applications, (with Danny Z. Chen and D.T. Lee). *Algorithmica*, 14 (1995), pp. 429–441.
173. On the Parallel Complexity of Evaluating Some Sequences of Set Manipulation Operations, (with Michael T. Goodrich and S. Rao Kosaraju). *J. of the ACM*, 41 (1994), pp. 1049–1088.
174. \* A Block-Based Mode Selection Model for SIMD/SPMD Heterogeneous Parallel Environments, (with Dan W. Watson, H.J. Siegel, John K. Antonio, Mark A. Nichols). *J. of Parallel and Distributed Computing*, 21 (1994), pp. 271–288.
175. \* New Clique and Independent Set Algorithms for Circle Graphs, (with Alberto Apostolico and Susanne E. Hambrusch). *Discrete Appl. Math.* 36 (1992), pp. 1–24. An Erratum by the same authors, correcting a proof, appeared in *Discrete Applied Mathematics*, 41 (1993), pp. 179–180.
176. A Faster Parallel Algorithm for a Matrix Searching Problem. *Algorithmica*, 9 (1993), pp. 156–167.
177. Output-Sensitive Hidden Surface Elimination for Rectangles, (with Michael T. Goodrich and Mark H. Overmars). *Info. and Computation*, 107 (1993), pp. 1–24.
178. Multisearch Techniques: Parallel Data Structures on Mesh-Connected Computers, (with Frank Dehne, Russ Miller, Andrew Rau-Chaplin, Jyh-Jong Tsay). *J. of Parallel and Distributed Computing*, 19 (1993), pp. 1–13.
179. \* A Probabilistic Analysis of a Pattern Matching Problem, (with Philippe Jacquet and Wojciech Szpankowski). *Random Structures and Algorithms*, 4 (1993), pp. 191–213.
180. P-Complete Geometric Problems, (with Paul Callahan and Michael T. Goodrich). *Int. J. on Computational Geometry & Applications*, 3 (1993), pp. 443–462.
181. On Parallel Rectilinear Obstacle-Avoiding Paths, (with Danny Z. Chen). *Computational Geometry: Theory and Applications*, 3 (1993), pp. 307–313.
182. An Efficient Parallel Algorithm for the Row Minima of a Totally Monotone Matrix, (with S. Rao Kosaraju). *J. of Algorithms*, 13 (1992), pp. 394–413.
183. \* Fast Detection and Display of Symmetry in Outerplanar Graphs, (with Joseph B. Manning). *Discrete Appl. Math.*, 39 (1992), pp. 13–35.
184. On the Parallel-Decomposibility of Geometric Problems, (with Jyh-Jong Tsay). *Algorithmica*, 8 (1992), pp. 209–231.
185. \* Parallel Techniques for Computational Geometry. *Proc. of the IEEE*, 80 (1992), pp. 1425–1448. (Invited Paper.)

186. Models and Algorithms for Co-Scheduling Compute-Intensive Tasks on a Network of Workstations, (with Christina Black, Dan C. Marinescu, H.J. Siegel, and Thomas L. Casavant). *J. of Parallel and Distributed Computing*, 16 (1992), pp. 319–327. (Special Issue on Scheduling and Load-Balancing.)
187. Parallel Topological Sorting of Features in a Binary Image, (with Susanne E. Hambrusch and Lynn E. TeWinkel). *Algorithmica*, 6 (1991), pp. 762–769. (Special Issue on Parallel Algorithms for Geometric Problems on Digitized Pictures.)
188. An Optimal Parallel Algorithm for the Visibility of a Simple Polygon from a Point, (with Danny Z. Chen and Hubert Wagener). *J. of the ACM*, 38 (1991), pp. 516–533.
189. \* Sequence Comparison on the Connection Machine, (with H. Scott McFaddin). *Concurrency: Practice and Experience*, 3 (1991), pp. 89–107.
190. \* A Linear Time Algorithm for the Computation of Some Distance Functions between Convex Polygons, (with Celso Ribeiro and Sergio Lifschitz). *RAIRO J. Oper. Res.*, 25 (1991), pp. 413–424.
191. \* Computing Some Distance Functions Between Polygons, (with Celso Ribeiro and Sergio Lifschitz). *Pattern Recognition*, 24 (1991), pp. 775–781.
192. Parallel Rectilinear Shortest Paths with Rectangular Obstacles, (with Danny Z. Chen). *Computational Geometry: Theory and Applications*, 1 (1991), pp. 79–113.
193. \* On Performing Robust Order Statistics on Tree-Structured Dictionary Machines, (with Michael T. Goodrich). *J. of Parallel and Distributed Computing*, 9 (1990), pp. 69–76.
194. Efficient Parallel Algorithms for String Editing and Related Problems, (with A. Apostolico, L. Larmore, and H.S. McFaddin). *SIAM J. on Computing*, 19 (1990), pp. 968–988.
195. An Efficient Algorithm for Maxdominance, With Applications, (with S. Rao Kosaraju). *Algorithmica*, 4 (1989), pp. 221–236.
196. Cascading Divide-and-Conquer: A Technique for Designing Parallel Algorithms, (with R. Cole and Michael T. Goodrich). *SIAM J. on Computing*, 18 (1989), pp. 499–532.
197. \* An Optimal Parallel Algorithm for the Minimum Circle-Cover Problem, (with Danny Z. Chen). *Info. Processing Letters*, 32 (1989), pp. 159–165.
198. Optimal Simulations Between Mesh-Connected Arrays of Processors, (with S. Rao Kosaraju). *J. of the ACM*, 35 (1988), pp. 635–650.
199. On Multidimensional Arrays of Processors. *IEEE Trans. on Computers*, C-37 (1988), pp. 1306–1309. Reprinted in 1994 in *Interconnection Networks for High-Performance Parallel Computers*, I.D. Scherson and A.S. Youssef (Ed.), IEEE Computer Society Press.

200. \* Finding a Minimum Independent Dominating Set in a Permutation Graph, (with G.K. Manacher and J. Urrutia). *Discrete Appl. Math.*, 21 (1988), pp. 177–183.
201. Fast Detection and Display of Symmetry in Trees, (with J.B. Manning). *Congressus Numerantium*, 64 (1988), pp. 159–169.
202. Parallel Algorithms for Some Functions of Two Convex Polygons, (with Michael T. Goodrich). *Algorithmica*, 3 (1988), pp. 535–548.
203. Efficient Solutions to Some Transportation Problems, With Applications to Minimizing Robot Arm Travel, (with S. Rao Kosaraju). *SIAM J. on Computing*, 17 (1988), pp. 849–869.
204. Sorting With Efficient Use of Special-Purpose Sorters, (with Greg N. Frederickson and S. Rao Kosaraju). *Info. Processing Letters*, 27 (1988), pp. 13–15.
205. Efficient Algorithms for Common Transversals, (with C. Bajaj). *Info. Processing Letters*, 25 (1987), pp. 87–91.
206. On Bipartite Matchings of Minimum Density, (with Susanne E. Hambrusch). *J. of Algorithms*, 8 (1987), pp. 480–502.
207. A Note on Finding a Maximum Empty Rectangle, (with Greg N. Frederickson). *Discrete Appl. Math.*, 13 (1986), pp. 87–91.
208. Solving Tree Problems on a Mesh-Connected Processor Array, (with Susanne E. Hambrusch). *Info. and Control*, 69 (1986), pp. 168–187.
209. Computing the Convex Hull of Line Intersections. *J. of Algorithms*, 7 (1986), pp. 285–288.
210. Optimal Rotation Problems in Channel Routing, (with Susanne E. Hambrusch). *IEEE Trans. on Computers*, C-35 (1986), pp. 843–847.
211. Efficient Parallel Solutions to Some Geometric Problems, (with M.T. Goodrich). *J. of Parallel and Distributed Computing*, 3 (1986), pp. 492–507.
212. An Assignment Algorithm With Applications to Integrated Circuit Layout, (with Susanne E. Hambrusch). *Discrete Appl. Math.*, 13 (1986), pp. 9–22.
213. A Generalized Dictionary Machine for VLSI, (with S. Rao Kosaraju). *IEEE Trans. on Computers*, C-34 (1985), pp. 151–155.
214. Some Dynamic Computational Geometry Problems. *Computers and Math. w. Appl.*, 11 (1985), pp. 1171–1181.
215. A Matching Problem in the Plane. *J. of Computer and System Sciences*, 31 (1985), pp. 63–70.
216. On Symmetry Detection. *IEEE Trans. on Computers*, C-34 (1985), pp. 663–666.

217. Graph Problems on a Mesh-Connected Processor Array, (with S. Rao Kosaraju). *J. of the ACM*, 31 (1984), pp. 649–667.
218. Checking Similarity of Planar Figures. *Int. J. of Computer and Info. Sciences*, 13 (1984), pp. 279–290.
219. Finding Euler Tours in Parallel, (with Uzi Vishkin). *J. of Computer and System Sciences*, 29 (1984), pp. 330–337.
220. Parallel Strong Orientation of an Undirected Graph. *Info. Proc. Letters*, 18 (1984), pp. 37–39.
221. A Linear Time Algorithm for the Hausdorff Distance Between Convex Polygons. *Info. Processing Letters*, 17 (1983), pp. 207–209.
222. Finding the Cyclic index of an Irreducible, Nonnegative Matrix. *SIAM J. on Computing*, 11 (1982), pp. 567–570.
223. An Adversary-Based Lower Bound for Sorting, (with S. Rao Kosaraju). *Info. Processing Letters*, 13 (1981), pp. 55–57.

**Books, Book Chapters:**

224. Privacy-Preserving Cryptographic Protocols (with Keith B. Frikken). *Digital Privacy Theories, Technologies, and Practices*, Alessandro Acquisti, Stefanos Gritzalis, Costas Lambrinoudakis, and Sabrina e Capitani di Vimercati (eds), Auerbach, 2008.
225. Digital Rights Management, (with Keith Frikken, Carrie Black, Susan Overstreet, Pooja Bhatia). *Practical Handbook of Internet Computing*, Munindar P. Singh (Ed.), CRC Press, 2004.
226. Protocols for Secure Remote Database Access with Approximate Matching, (with Kevin Du). *Recent Advances in Secure and Private E-Commerce*, Kluwer Academic Publishers, 2001.
227. Deterministic Parallel Computational Geometry, (with Danny Z. Chen). *Computational Geometry*, Joerg-Rudiger Sack and Jorge Urrutia (Eds.), 1999.
228. Handbook of Algorithms and Theory of Computation (Ed.), CRC Press, 1999, 1296 pages.
229. Parallel Computations of Levenshtein Distances, (with Alberto Apostolico). *Pattern Matching Algorithms and Applications*, Alberto Apostolico and Zvi Galil (Eds.), Oxford University Press, 1997, pp. 143–184.
230. Parallel Computational Geometry. *Handbook of Parallel and Distributed Computing*, Albert Zomaya (Ed.), McGraw-Hill, 1996, pp. 404–428.

- 231. Mixed-mode System Heterogeneous Computing, (with H. J. Siegel, Muthucumaru Maheswaran, Dan Watson, John Antonio). *Heterogeneous Computing*. Mary M. Es-haghian (Ed.), Artech House, 1996, pp. 19–66.
- 232. Parallel Computational Geometry, (with Danny Z. Chen). *Parallel Computing: Paradigms and Applications*, Albert Zomaya (Ed.), International Thomson, 1996, pp. 162–197.
- 233. Deterministic Parallel Computational Geometry, (with Michael T. Goodrich). *Synthe-sis of Parallel Algorithms*, John H. Reif (Ed.), Morgan Kaufmann, 1993, pp. 497–536.

### Other Publications

- 234. Security Issues in Collaborative Computing (abstract of keynote talk). *Lecture Notes in Computer Science, Vol. 4112*, Springer Verlag, *Proc. of the 12th Annual International Computing and Combinatorics Conference (COCOON 06)*, Taipei, Taiwan, August 2006, p. 2.
- 235. A Survey of Watermarking Techniques for Non-Media Digital Objects (abstract of keynote talk). *Proc. Australasian Information Security Workshop (AISW 05)*, New-castle, Australia, January 2005, p. 73.
- 236. Extreme Events Involving Computer Systems and Networks, *Report of the Workshop on Extreme Events*, National Center for Atmospheric Research, Boulder, Colorado, 2000, pp. 27–28.
- 237. Program Chair’s Message. *Proc. Second Merged IPPS/SPDP Symposium*, San Juan, Puerto Rico, 1999, p. xvii.
- 238. Section Advisor’s Introduction. *Handbook of Computer Science and Engineering*, CRC Press, 1997, pp. 29–31.
- 239. Issues on the Algorithm-Software Continuum (position statement as panel member). *Proc. 4th Symposium on the Frontiers of Massively Parallel Computation*, McLean, Virginia, 1992, p. 212.
- 240. Editor’s Foreword. *Algorithmica* Special Issue on Computational Geometry, **8** (1992), pp. 343–344.
- 241. La Multiplication en Parallele des Matrices Concaves et ses Applications, *Actes des Journees du Laboratoire d’Informatique de Paris-Nord*, Villetaneuse, France, 1989, pp. 179–198.

### Patents Issued

- 242. U.S. Patent 7,539,872, issued on May 26, 2009; titled: Method and System for Rights Assessment over Digital Data through Watermarking (with Radu Sion and Sunil Prab-hakar)

243. U.S. Patent 7,287,166, issued on October 23, 2007; titled: Guards for Application in Software Tamperproofing (with Hoi Chang and John R. Rice)
244. U.S. Patent 6,941,463, issued on September 9, 2005; titled: Secure Computational Outsourcing Techniques (with John R. Rice, Eugene H. Spafford, and Kostas N. Pantazopoulos)
245. U.S. Patent 6,957,341, issued on October 18, 2005; titled: Method and System for Secure Computational Outsourcing and Disguise (with John R. Rice)

## RESEARCH CONTRACTS AND GRANTS RECEIVED

2009–12	\$499,883	National Science Foundation, Grant CNS-0913875 Title: A Computational Framework for Marking Physical Objects against Counterfeiting and Tampering (with Daniel Aliaga)
2009–12	\$267,816	National Science Foundation, Grant CNS-0915436 Title: Privacy Constrained Searching (with Keith B. Frikken)
2009–12	\$377,000	Air Force Office of Scientific Research, Contract FA9550-09-1-0223 Title: Techniques for Secure and Reliable Computational Outsourcing
2006–09	\$400,000	National Science Foundation, CyberTrust Grant CNS-0627488 Title: Improving the Privacy and Security of Online Survey Data Collection, Storage, and Processing (with J. Mills)
2003–07	\$800,000	National Science Foundation, ITR Grant 0325345-IIS Title: Secure Supply-Chain Protocols (with V. Deshpande and L. Schwarz)
2003–06	\$276,274	National Science Foundation, ITR Grant 0312357-IIS Title: Distributed Data Mining to Protect Information Privacy (with C. Clifton)
2003–05	\$150,000	National Science Foundation, ITR Grant 0242421-IIS Title: Watermarking Relational Databases (with S. Prabhakar)
2002–05	\$273,791	Office of Naval Research, Contract N00014-02-1-0364 Title: General Paradigms for Watermarking and Tamperproofing Multi-Type/Media Documents
2004–	\$20,000	Motorola Title: Secure Supply-Chain Collaborations (with V. Deshpande and L. Schwarz)
2002–03	\$29,500	Discovery Park e-Enterprise Center Title: Secure Supply-Chain Collaboration (with L. Schwarz and V. Deshpande)

2002-05	\$55,423	National Science Foundation, Grant 0219560-IIS Title: Private Prediction Using Selective Models
2001-02	\$100,000	Trask Trust Fund Title: Software Tamperproofing (with J.T. Korb and J.R. Rice)
2001-02	\$40,118	Lilly Endowment Inc. Title: Watermarking Semi-Structured Content: XML and DBMS (with S.K. Prabhakar)
2001-02	\$36,688	Lilly Endowment Inc. Title: Natural Language Watermarking: Watermarking Text-Meaning Representation Trees (with V. Raskin)
2001-02	\$119,860	Hewlett Packard Title: Curriculum in Mobile Communications Projects (with J.O. Allebach-PI, C.A. Bouman, G.T.C. Chiu, E.J. Coyle, E.J. Delp, L. Jamieson, J. Krogmeier, C. Rosenberg)
2000-01	\$25,623	Lilly Endowment Inc. Title: Protocols for Secure Remote Database Access
2000-01	\$21,113	Lilly Endowment Inc. Title: Randomness in Computer Security (with S.S. Wagstaff)
2000-01	\$24,507	Lilly Endowment Inc. Title: Natural Language Watermarking: Enhancing Resilience and Implementation (with V. Raskin)
2000-01	\$36,702	Lilly Endowment Inc. Title: Privacy-Enhancing Audit and Intrusion Detection (with S.K. Prabhakar)
1999-00	\$21,685	Lilly Endowment Inc. Title: A New Approach for Tamperproofing Software
1999-00	\$36,685	Lilly Endowment Inc. Title: Watermarking and Quadratic Residues (with S.S. Wagstaff)
1999-00	\$39,000	Lilly Endowment Inc. Title: Database Support for Information Security (with S.K. Prabhakar)
1999-00	\$36,685	Lilly Endowment Inc. Title: Natural Language Processing Techniques for Information Security (with V. Raskin)
1999-03	\$360,844	National Science Foundation, Grant EIA-9903545 Title: Audit Trails: Content, Storage and Processing (with E.H. Spafford)

1999-02	\$5,000	National Science Foundation, REU supplement to Grant 9903545-EIA Title: Audit Trails: Content, Storage and Processing (with E.H. Spafford)
1997	\$5,000	Microsoft
1996-99	\$799,348	DARPA, Contract F30602-96-1-0334 Title: Software Tools for Enhanced Computer Security (with E.H. Spafford-PI, S.S. Wagstaff, A.L. Hosking, and C.E. Brodley)
1996-98	\$111,222	National Security Agency, Contract MDA904-96-1-0116 Title: Pattern Matching Techniques for Computer Misuse and Anomaly Detection (with E.H. Spafford)
1996-98	\$40,598	Office for Research and Development, Contract 96-F152200-000 Title: Audit Data Reduction and Misuse Detection: A Pattern Matching Approach (with E.H. Spafford)
1995-96	\$150,000	IBM Title: Project Purdue On-Line (with A. K. Elmagarmid, A. Joshi, E. N. Houstis, S. Weerawarana A. P. Mathur, J. R. Rice)
1992-96	\$212,457	National Science Foundation, Grant 9202807-CCR Title: Parallel Algorithms for Geometric Problems
1990-93	\$256,216	Air Force Office of Scientific Research, Contract AFOSR-90-0107 Title: Efficient Algorithmic Techniques for Combinatorial Problems (with A. Apostolico, W. Szpankowski)
1989-92	\$373,000	National Library of Medicine, Grant R01-LM05118 Title: Algorithms for Macromolecular Structure Analysis (with A. Apostolico, P.T. Gilham, W. Szpankowski, H.L. Weith)
1988-92	\$320,000	Office of Naval Research, Contract N00014-84-K-0502 Title: Parallel Algorithms: Design, Analysis, and Implementation (with Susanne E. Hambruch)
1986-88	\$67,763	National Science Foundation, Grant DCR-8602385 Title: High-Level Systems for Scientific Computing (with W.R. Dyksen)
1986-88	\$144,583	Office of Naval Research, Grant N00014-84-K-0502 Title: Parallel Algorithms: Design, Analysis, and Implementation (with Susanne E. Hambruch)
1986-88	\$14,700	Purdue Research Foundation XR Grant
1986-87	\$60,000	Sperry Title: Parallel Processing of Database Operations (with B. Bhargava)

1986	\$25,000	SUN Microsystems
1986–87	\$117,084	National Science Foundation, Grant DCR-8612590 Title: A Laboratory for Electronic Prototyping (with C. Bajaj and C. M. Hoffmann)
1986–91	\$4,246,350	Office of Naval Research, URI N00014-86-K-0689 Title: Computational Combinatorics (with T. Morin, S. Abhyankar, V. Chandru, C. Coullard, G. N. Frederickson, S. E. Hambruch, R. Rardin, D. Wagner, R. Wong)
1985	\$65,970	Tektronics
1985–90	\$312,500	National Science Foundation, Grant DCR-8451393 Title: Presidential Young Investigator
1985–90	\$187,500	AT&T Information Systems Title: Design and Analysis of Algorithms (matching funds for the above NSF PYI grant)
1985–86	\$60,000	Sperry Title: Parallel Processing of Database Operations (with B. Bhargava)
1984	\$3,500	Purdue Research Foundation XL Grant (I declined to accept the award because the above Sperry grant funded the project)
1984–86	\$100,573	Office of Naval Research, Grant N00014-84-K-0502 Title: Parallel Algorithms and VLSI Computation (with Susanne E. Hambruch)
1984–85	\$45,000	Sperry Title: Parallel Computation (with D.B. Gannon)

## OTHER PROFESSIONAL SERVICE / RECOGNITION

### Panels, Proposal Reviews

- Served on National Academies Panel on Digitization and Communications Science (2007–8)
- Served on External Review Committee for SUNY Buffalo's Department of Computer Science and Engineering (2008)
- Served on NSF Committee of Visitors for the oversight of the programs in the CISE Division of Computer and Computation Research (1993)
- Served on many NSF panels – both for proposal reviews and for direction-setting workshops

- Served New York State’s Education Dept. in a 3-member Site Visit Committee to SUNY Buffalo, in the framework of the State’s Statewide Doctoral Program Review (1990).
- Served as Consultant to the Ohio Board of Regents Investment Fund (1995)
- Served on a Canadian NSERC Expert Committee for a Site Visit to University of Ottawa (1996)
- Reviewed research proposals for
  - American Mathematical Society
  - Army Research Office
  - National Science Foundation
  - Natural Sciences and Engineering Research Council of Canada
  - National Security Agency Mathematical Sciences Program
  - Swedish Research Council for Engineering Sciences
  - Ohio Board of Regents
  - Idaho Board of Education

### **Other Colloquia**

[Does not include those listed earlier under “Distinguished Lecture Series at Universities”]

- 2009 Shandong Univ.
- 2009 Rose-Hulman Inst. of Tech.
- 2009 American Univ. of Beirut
- 2008 Northrop Grumman Corp.
- 2008 Univ. of Montreal
- 2008 Syracuse Univ.
- 2007 Lockheed Martin Corp.
- 2006 SUNY at Buffalo
- 2006 American Univ. of Beirut
- 2006 Notre Dame Univ., Lebanon
- 2006 Univ. of Sharjah, UAE
- 2006 IUPUI
- 2005 Ecole Polytechnique, France
- 2004 Univ. of Illinois at Urbana-Champaign
- 2003 Univ. of Arizona
- 2001 Univ. of Illinois at Urbana-Champaign
- 2001 Univ. of Notre Dame
- 2001 Johns Hopkins Univ.
- 2001 Univ. of New Mexico
- 2000 Case Western Reserve Univ.
- 2000 Johns Hopkins Univ.

2000 Univ. of Maryland at College Park  
2000 Computer Security Institute  
1999 American Univ. of Beirut  
1999 Computer Security Institute  
1998 Schlumberger  
1998 DARPA  
1998 NSA  
1998 MITRE  
1996 Institut National de Recherche en Informatique et en Automatique (INRIA), France  
1993 Georgia Inst. of Technology  
1993 National Chung Cheng Univ., Taiwan  
1992 Institut National de Recherche en Informatique et en Automatique (INRIA), France  
1992 Univ. of North Texas  
1991 Univ. of Maryland at College Park  
1990 Univ. of Paris VII Advanced School on Combinatorial Pattern Matching  
1989 Univ. of Paris XIII  
1988 Northwestern Univ.  
1988 SUNY at Stony Brook  
1988 Rensselaer Polytechnic Institute  
1988 Univ. of Pittsburgh  
1988 Univ. of California at Davis  
1988 Kestrel Institute  
1988 RIACS Institute, NASA Ames Research Center  
1988 Univ. of Tennessee  
1988 Johns Hopkins Univ.  
1988 SUNY at Buffalo  
1988 AT&T Bell Laboratories  
1986 Univ. of Maryland at College Park  
1986 Washington Univ. in St. Louis  
1984 Johns Hopkins Univ.  
1982 AT&T Bell Laboratories  
1982 Columbia Univ.  
1982 Ohio State Univ.  
1982 Purdue Univ.  
1982 Rensselaer Polytechnic Institute

### **Refereeing for Journals and Conferences**

ACM Trans. on Computer Systems  
ACM Symp. on Computational Geometry  
ACM-SIAM Symp. on Discrete Algorithms  
Acta Informatica  
Advances in Computing Research  
Advances in Engineering Software  
Algorithmica  
Combinatorica

Computational Geometry: Theory & Applications  
Discrete and Computational Geometry  
IEEE Computer  
IEEE Security and Privacy  
IEEE Trans. on Biomedical Engineering  
IEEE Trans. on Circuits and Systems  
IEEE Trans. on Computers  
IEEE Trans. on Pattern Analysis and Machine Intelligence  
IEEE Trans. on Software Engineering  
IEEE Trans. on Software Engineering and Methodology  
IEEE Distributed Computing Systems Conf.  
IEEE Int. Parallel Processing Symp.  
IEEE Symp. on Parallel and Distributed Processing  
Info. Processing Letters  
Int. Colloq. on Automata, Languages, and Programming  
Int. Conf. on Computing and Information  
Int. Conf. on Distributed Computing Systems  
Int. Conf. on Parallel Processing  
Int. Conf. on Supercomputing  
Int. J. on Computational Geometry & Applications  
Int. J. of Computer Aided VLSI Design  
Int. J. of Computer and Info. Sciences  
Int. J. of Modeling and Simulation  
Int. J. of Parallel Programming  
J. of Algorithms  
J. of the ACM  
J. of Computer and System Sciences  
J. of Intelligent and Fuzzy Systems  
J. of Parallel and Distributed Computing  
Mathematical Programming  
Operations Research Letters  
Parallel Processing Letters  
Proceedings of the IEEE  
SIAM J. on Computing  
SIAM J. on Discrete Mathematics  
Software Practice and Experience  
Supercomputing Conf.  
Symp. on Parallel Algorithms and Architectures  
Symp. on Theoretical Aspects of Computer Science  
Workshop on Algorithms and Data Structures  
... and all the journals/conferences I served as editor or PC member

### **Reviewing of Books and Proposals for**

Mathematics of Computation  
Morgan Kaufmann Publishers

M.I.T. Press  
Oxford University Press  
John Wiley & Sons  
Zentralblatt fuer Mathematik

## STUDENTS

Note: All Theses are Ph.D. unless it is explicitly specified that they are M.S.

### Ph.D. Student Thesis Supervision

- Michael T. Goodrich (1987). Currently Chancellor's Professor of Computer Science, University of California, Irvine.
- Jyh-Jong Tsay (1990). Currently Associate Professor at the Institute of Computer Science and Information Engineering, National Chung Cheng University, Chiayi, Taiwan.
- Joseph B. Manning (1990). Currently Permanent College Lecturer, Computer Science, University College, Cork, Ireland.
- Danny Z. Chen (1992). Currently Professor of Computer Science and Engineering, University of Notre Dame, South Bend, Indiana.
- Wenliang (Kevin) Du (2001). (Co-advisor: E.H. Spafford.) Currently Assistant Professor of Computer Science at Syracuse University.
- Hoi Chang (2003). Currently Chief Software Architect, Arxan Technologies Inc.
- Radu Sion (2004). (Co-advisor: S. Prabhakar.) Currently Assistant Professor of Computer Science at SUNY Stony Brook.
- Keith B. Frikken (2005). Currently Assistant Professor of Computer Science at Miami University in Ohio.
- Robert Gwadera (2005). (Co-advisor: W. Szpankowski). Currently Postdoc at the University of Lugano, Switzerland.
- Jiangtao Li (2006). (Co-advisor: N. Li.) Currently Security Architect at Intel.
- Marina Blanton (2007). Currently Assistant Professor of Computer Science and Engineering, University of Notre Dame, South Bend, Indiana.
- Mercan Topkara (2007). (Co-advisor: Cristina Nita-Rotaru.) Currently Postoc at IBM Research, Yorktown Heights.
- Umut Topkara (2007). Currently Postdoc at Carnegie-Mellon University.
- Sundararaman Jeyaraman. Expected graduation date: May 2008.
- Hao Yuan. Expected graduation date: May 2009.

- YounSun Cho. Expected graduation date: May 2010.

### **Other Student Thesis Committees:**

In Computer Science:

Andre Bondi, David Mount, Teemu Kerola, Bhasker Parthasarathy, Shuhshen Pan, Ravi Janardan, Y-Huei Wang, Stefan Bechtolsheim, Ko-Yang Wang, Susan Rodger, John Riedl, Ajay Gupta, Lynn TeWinkel, Tamal Dey, Bonita Rais, Yungho Leu, Malcom C. Fields, Brian L. Stuart, Carl R. Gritter, Hyung-Yi T. Tu, Hiram Hunt, Po Ting Wu, Kuei Yu Wang, Fausto Bernardini, Hong Wang, Houzhi Xu, Praerit Garg, Evaggelia Pitoura, Mihai G. Sirbu, Ioana M. Boier Martin, Constantine C. Pantazopoulos, Bozhidar D. Dimitrov, Katherine E. Price (M.S. thesis), Jincheng Chen, Reuben Pasquini, Diego Zamboni, Tom Daniels, Stefano Lonardi, Young Jun Kim, Dow-Yung Yang, Chuan-Ming Liu, Joao Cangussu, Tian Zhao, Vanessa Cangussu (MS Thesis), Stephanie Miller (MS Thesis), Ravishankar Ithal (MS Thesis), Kyungkoo Jun, Benjamin Kuperman, Murat Kantarcioglu, Baskar Sridharan, Jaideep Vaidya, Weichao Wang, Ioannis Ioannidis, Mohamed Hefeeda, Wei Jiang, Yang Yu, Reynold Cheng, Paul Williams, Yuni Xia, Yuhui Zhong, Ossama Younis, Florian Buchholtz, James Early, Paul Ruth, Mahesh Tripunitara, Rajeev Gopalakrishna, Ji-Won Byun, Xuxian Jiang, Ethan Blanton, Tomek Czajka, Mummoorthy Murugesan Maleq Khan, Barry Wittman, Yongwook Choi, Jing Dong, Omar Alrawi (MS Thesis) Zhen Zhu

In Industrial Engr:

Chin-Wen Lin, Widodo Sulistyono

In Electrical and Computer Engr:

Hyun S. Yang, Robert J. Safranek, Pradeep K. Dubey, Daniel W. Watson, Dennis M. Hawver, Ray A. Kamin III, Chao-Chun Wang, Allan D. Knies, Min Tan, Muthucumar Maheswaran, Mitch Theys, Tracy Braun Richard Kennell, Hilmi Ozdoganoglu (MS Thesis), Issa Khalil

In Linguistics:

Craig J. McDonough, Dina Mohamed (M.A. Thesis)  
Christian F. Hempelmann, Katrina Triezenberg

Outside Purdue:

Andreas Fabri, Ecole Nationale Superieure des Mines de Paris  
Katrin Dobrindt, Ecole Nationale Superieure des Mines de Paris  
Nou Dadoun, Univ. of British-Columbia  
Weifa Liang, Australian National Univ.  
Paulina Wegrowicz, McGill Univ. (MS thesis)  
Nathan Evans, Univ. of Denver

### **Courses Taught**

[All at Purdue University]

Regular courses:

- CS 158 Programming
- CS 251 Data Structures
- CS 440 Intro. to File and Database Systems
- CS 381 Intro. to the Analysis of Algorithms
- CS 426 Computer Security
- CS 555 Cryptography and Data Security
- CS 572 Heuristic Problem Solving
- CS 580 Algorithm Design, Analysis and Implementation
- CS 650 Computational Aspects of Parallel Processing

Independent study courses (1 or 2 students per course):

- CS 490 Image Template Matching
- CS 590 Parallel Algorithms
- CS 590 Expert System Building
- CS 590 Computer Vision
- CS 590 Parallel Computation I
- CS 590 Parallel Computation II
- CS 590 Security Techniques for Electronic Commerce
- CS 590 Outsourcing Data Storage Securely
- CS 590 Topics in Computer Security
- CS 590 Watermarking Multimedia
- CS 590 Audit Trail Data Compression
- CS 590 Intrusion Detection
- CS 590 Database Support for Audit Trails and Intrusion Detection
- CS 590 Issues in Browser Security
- CS 590 Internet Platform Architectures
- CS 590 Watermarking Natural Language Text
- CS 590 Stepping Stone Detection
- CS 590 Code Obfuscation Techniques
- CS 590 Secure P2P Networking
- CS 590 Secure Multi-party Computing

Note: Excellent teaching evaluations. Selected among Top Ten Outstanding Teachers for the College of Science in 1994, 1995, and the Outstanding Teacher for 2004 and 2006. Advisor to Purdue UPE student organization (2003–04), Purdue ACM student organization (1995–97) and to WICS (Women in Computer Science) student organization (1982–84).

### **Purdue Continuing-Education Short-Course Lectures on Information Security**

- Risk Analysis
- Detecting Computer Crime

- Legislation and Standards
- Threats from Malicious Software

## UNIVERSITY COMMITTEE DUTIES

[All at Purdue University]

### *Computer Science Department Committees:*

Undergraduate (1982–83, 83–84, 86–99)  
 Colloquia (1984–85)  
 Industrial Relations (1984–85, 85–86)  
 5-Year Plan (1985–86)  
 Faculty Recruiting (1987–88, 90–95 as Chair, 97–99, 02–03, 03–05 as Chair)  
 Graduate (1988–90, 95–96 as Chair, 96–97, 98–00, 05–06)  
 Promotions (1989–)  
 Upsilon Pi Epsilon Membership committee (many times)  
 690S Coordinator (many times)  
 Halstead Award selection committee (many times)  
 Purdue Research Foundation grants selection committee (many times)  
 ECE Liaison (many times)  
 Departmental Advisory Committee (00–01)  
 Head Search Committee (01–02)  
 CS Dept. Executive Committee (2002–05)

### *College of Science Committees:*

International Travel Ranking  
 XR Grants  
 XL Grants  
 Representative of Computer Science Dept on Faculty Council (1990–96)  
 Faculty Affairs Committee (1990–93)  
 Promotions (1991–93, 03–05)  
 Distinguished Professor Ad-Hoc Committee (as Chair: 1994–95; as member: 96–97, 99–00, 06)  
 Educational Policy and Curriculum Committee (1994–95)  
 University Faculty Scholar Committee (2000–01)  
 Grade appeals (2005–6)  
 Co-chair of Engagement group in strategic planning committee  
 Strategic Plan Oversight Committee (2009–)

### *University Committees:*

Agriculture and Artificial Intelligence (1984–85)  
 Library Committee (1998)  
 Computing Research Institute Director Search Committee (1999–00)  
 Research Computing and Communications Advisory Committee (1999–00)  
 Trask Venture Fund Committee (2001–2003)

Homeland Security Institute Executive Committee (2003–)  
Distinguished Professor Nomination Committee (1994)  
Committee on Research Integrity (2009–)  
Co-Chair of Task Force on Retirement Benefits (2008–)

*Other Duties:*

Member of Internal Advisory Board of Center for Education and Research  
in Information Assurance and Security (1998-)  
Member of Executive Committee of Discovery Park's e-Enterprise Center (2002-)  
Member of Discovery Park Strategic Plan Task Force (2002)  
Member of Internal Advisory Board for Purdue's Homeland Security Institute (2002)