

Vita of Kirk Pruhs
Department of Computer Science
University of Pittsburgh
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EDUCATION

1989, Ph.D. in computer science from the University of Wisconsin-Madison

1984, B.S. in computer science and mathematics from Iowa State University

RESEARCH INTERESTS

Algorithmic problems in computer and communication systems, computer networks, scheduling, online algorithms.

APPOINTMENTS

2001 – : Professor of computer science, University of Pittsburgh

1995 – 2001: Associate professor of computer science, University of Pittsburgh

1989 – 1995: Assistant professor of computer science, University of Pittsburgh

JOURNAL PAPERS

- N. Bansal, K. Pruhs, and C. Stein, “Speed Scaling for Weighted Flow Time”, *SIAM Journal of Computing*, **39**(4), 1294-1308, 2009.
- N. Bansal, H.L. Chan, and K. Pruhs, “Speed scaling with a solar cell”, a special issue of *Theoretical Computer Science* devoted to selected papers from the 2008 International Conference on Algorithmic Aspects in Information and Management, **410**(45), 4580-4587, 2009.
- K. Pruhs, P. Uthaisombut, and G. Woeginger, “Getting the best response for your erg”, *ACM Transactions on Algorithms*, **4**(3), 2008.
- K. Pruhs, R. van Stee, and P. Uthaisombut, “Speed Scaling of Tasks with Precedence Constraints”, special issue of *Theory of Computing Systems* devoted to selected papers from the 2005 Workshop on Approximation and Online Algorithms, **43**(1), 67-80, 2008.
- M. Sharaf, P. Chrysanthis, A. Labrinidis, and K. Pruhs, “Algorithms and metrics for processing multiple heterogeneous continuous queries,” *ACM Transactions on Database Systems*, **33**(1), 1-44, 2008.
- J. Beaver, K. Pruhs, P. Chrysanthis, and V. Liberatore, “Improving the Hybrid Data Dissemination Model of Web Documents”, *World Wide Web*, **11**(3), 313-337, 2008.

- N. Bansal, T. Kimbrel, and K. Pruhs, “Speed scaling to manage energy and temperature”, *Journal of the ACM*, **54**(1), 2007.
- K. Pruhs, and G.J. Woeginger, “Approximation schemes for a class of subset selection problems”, A special issue of *Theoretical Computer Science* devoted to selected papers from 2004 Conference on Latin American Theoretical Informatics, **382**(2), 151-156, 2007.
- A. Al-Hammouri, W. Zhang, R. Buchheit, V. Liberatore, P. Chrysanthis, K.Pruhs, “Network awareness and application adaptability”, *Information Systems and E-Business Management*, **4**(4), 399-419, 2006.
- L. Becchetti, S. Leonardi, A. Marchetti-Spaccamela, K. Pruhs, “Online weighted flow time and deadline scheduling”, *Journal of Discrete Algorithms* **4**(3), 339-352, 2006.
- J. Edmonds, K Pruhs, “A maiden analysis of longest wait first”, *ACM Transactions on Algorithms*, **1**(1), 14-32, 2005.
- K. Pruhs, P. Uthaisombut, “A comparison of multicast pull models”, A special issue of *Algorithmica* devoted to selected papers from the 2002 European Symposium on Algorithms, **42**(3-4), 289-307, 2005.
- B. Kalyanasundaram, and K. Pruhs, “Fault-tolerant scheduling”, *SIAM Journal of Computing*. **34**(3), 697-719, 2005.
- L. Becchetti, S. Leonardi, A. Marchetti-Spaccamela, K. Pruhs, “Semi-clairvoyant scheduling”, *Theoretical Computer Science*, Special issue on online algorithms, in memory of Steve Seiden, **324**(2-3), 325-335, 2004.
- J. Edmonds, and K. Pruhs, “Multicast pull scheduling: when fairness is fine”, special issue of *Algorithmica* devoted to online algorithms, **36**(3), 315 – 330, 2003.
- B. Kalyanasundaram, and K. Pruhs, “Minimizing flow time nonclairvoyantly”, *Journal of the ACM*, **50**(4), 551 – 567, 2003.
- B. Kalyanasundaram, and K. Pruhs, “Maximizing job completions online”, special issue of *Journal of Algorithms* devoted to selected papers from the 1998 European Symposium on Algorithms, **49**(1), 63-85, 2003.
- B. Kalyanasundaram, J. Noga, K. Pruhs and G. Woeginger, “Caching for web searching”, special issue of *Algorithmica* devoted to Internet algorithmics, **33**(3), 353–370, 2002.
- B. Kalyanasundaram, K. Pruhs, and M. Velauthapillai, “Scheduling broadcasts in wireless networks”, special issue of *Journal of Scheduling* devoted to selected papers from the 2000 European Symposium on Algorithms, **4**(6), 339 – 354, 2001.
- B. Kalyanasundaram, and K. Pruhs, “Eliminating migration in multi-processor scheduling”, special issue of *Journal of Algorithms* devoted to selected papers from the 1999 ACM/SIAM Symposium on Discrete Algorithms (SODA), **38**(1), 2 – 24, 2001.
- B. Kalyanasundaram, and K. Pruhs, “Dynamic spectrum allocation: the impotency of duration notification”, special issue of *Journal of Scheduling* devoted to approximation algorithms, **3**(5), 289 – 296, 2000.

- B. Kalyanasundaram, K. Pruhs, and E. Torng, “Errata: A new algorithm for scheduling periodic, real-time tasks”, *Algorithmica*, **28**(3), 269 – 270, 2000.
- B. Kalyanasundaram, and K. Pruhs, “Fault-tolerant real-time scheduling”, special issue of *Algorithmica* devoted to selected papers from the 1997 European Symposium on Algorithms (ESA), **28**(1), 125 – 144, 2000.
- B. Kalyanasundaram, and K. Pruhs, “An optimal deterministic algorithm for online b-matching”, *Theoretical Computer Science*, **233**(1), 319 – 325, 2000.
- B. Kalyanasundaram, and K. Pruhs, “Speed is as powerful as clairvoyance”, *Journal of the ACM*, **47**(4), 617 – 643, 2000.
- B. Kalyanasundaram, and K. Pruhs, “The online transportation problem”, *SIAM Journal of Discrete Mathematics*, **13**(3), 370 – 383, 2000.
- Y. Azar, B.Kalyanasundaram, S. Plotkin, K. Pruhs, and O. Waarts, “Online load balancing of temporary tasks”, *Journal of Algorithms*, **22**(1), 93 – 110, 1997.
- K. Pruhs, “On the number of local adaptations to transform a spanning tree”, *Discrete Applied Mathematics*, **57**(1), 67 – 74, 1995.
- K. Pruhs, “Average case scalable on-line algorithms for fault replacement”, *Information Processing Letters*, **52**(3), 131 – 136, 1995.
- B. Kalyanasundaram, and K. Pruhs, “Not all insertion methods yield constant approximate tours in the plane”, *Theoretical Computer Science*, **125**(2), 345 – 353, 1994.
- B. Kalyanasundaram, and K. Pruhs, “Constructing competitive tours from local information”, special issue of *Theoretical Computer Science* on dynamic and on-line algorithms, **130**(1), 125 – 138, 1994.
- B. Kalyanasundaram, and K. Pruhs, “A competitive analysis of algorithms for searching unknown scenes”, *Computational Geometry: Theory and Applications*, **3**, 139 – 155, 1993.
- B. Kalyanasundaram, and K. Pruhs, “Online weighted matching”, *Journal of Algorithms*, **14**(3), 478 – 488, 1993.
- K. Pruhs, and U. Manber, “The complexity of controlled selection,” *Information and Computation*, **91**(1), 103 – 127, 1991.

CONFERENCE PAPERS

- A. Gupta, R. Krishnaswamy and K. Pruhs, Nonclairvoyantly Scheduling Power-Heterogeneous Processors, IEEE International Green Computing Conference, 2010.
- A. Gupta, R. Krishnaswamy and K. Pruhs, “Scalably Scheduling Power-Heterogeneous Processors”, International Colloquium on Automata Languages and Programming, Track A (ICALP), 2010.
- A. Gupta, S. Im, R. Krishnaswamy, B. Moseley, and K. Pruhs, “Scheduling Jobs with Varying Parallelizability to Reduce Variance”, Symposium on Parallel Algorithms and Architectures (SPAA), 2010.

- L. Al Moakar, P. Chrysanthis, C. Chung, S. Guirguis, A. Labrinidis, P. Neophytou, and K. Pruhs, “Admission control mechanisms for continuous queries in the cloud”, International Conference on Data Engineering (ICDE), 409-412, 2010.
- C. Chung, K. Ligett, K. Pruhs, and A. Roth, “The Power of Fair Pricing Mechanisms”, Latin American Symposium on Theoretical Informatics (LATIN), 554-564, 2010. Invited to special issue of *Algorithmica* devoted to selected papers from the conference.
- N. Bansal, H.L. Chan, D. Katz, and K. Pruhs, “Improved Bounds for Speed Scaling in Devices Obeying the Cube-Root Rule”, International Colloquium on Automata Languages and Programming, Track A (ICALP), 144-155, 2009.
- S. Guirguis, M. Sharaf, P. Chrysanthis, A. Labrinidis, and K. Pruhs, “Adaptive Scheduling of Web Transactions”, International Conference on Data Engineering (ICDE), 357-368, 2009.
- J. Edmonds, and K. Pruhs, “Scalably scheduling processes with arbitrary speedup curves”, ACM-SIAM Symposium on Discrete Algorithms (SODA), 685-692, 2009.
- N. Bansal, H.L. Chan, and K. Pruhs, “Speed scaling with an arbitrary power function”, ACM-SIAM Symposium on Discrete Algorithms (SODA), 693-701, 2009.
- H.L. Chan, J. Edmonds, and K. Pruhs, “Speed scaling of processes with arbitrary speedup curves on a multiprocessor”, Symposium on Algorithms and Architecture (SPAA), 1-10, 2009.
- H.L. Chan, J. Edmonds, T.W. Lam, L.K. Lee, A. Marchetti-Spaccamela, and K. Pruhs, “Nonclairvoyant Speed Scaling for Flow and Energy”, Symposium on Theoretical Aspects of Computer Science (STACS), 255-264, 2009.
- N. Bansal, H. Chan, and K. Pruhs, “Speed Scaling with a Solar Cell”, Conference on Algorithmic Aspects in Information and Management (AAIM), 2008.
- J. Edmonds, K. Pruhs, and J. Solanki, “Confidently Cutting a Cake into Approximately Fair Pieces”, Conference on Algorithmic Aspects in Information and Management (AAIM), 2008.
- C. Chung, K. Ligett, K. Pruhs, and A. Roth, “The Price of Stochastic Anarchy”, Symposium on Algorithmic Game Theory (SAGT), 303-314, 2008.
- N. Bansal, D. Bunde, H. Chan and K. Pruhs, “Average Rate Speed Scaling”, Latin American Theoretical Informatics Symposium (LATIN), 2008.
- C. Chung, K. Pruhs, and P. Uthaisombut, “The Online Transportation Problem: On the Exponential Boost of One Extra Server”, Latin American Theoretical Informatics Symposium (LATIN), 2008.
- W. Zhang, V. Liberatore, J. Beaver, P. Chrysanthis, and K. Pruhs, “Scalable data dissemination using hybrid methods”, IEEE International Symposium on Parallel and Distributed Processing, 1-12, 2008.
- M. Sharaf, S. Guirguis, A. Labrinidis, K. Pruhs, and P. Chrysanthis, “ASETS: A self-managing transaction scheduler”, International Conference on Data Engineering Workshops, 56-62, 2008.

- N. Bansal, H. Chan, R. Khandekar, K. Pruhs, B. Schieber and C. Stein, “Non-Preemptive Min-Sum Scheduling with Resource Augmentation”, IEEE Symposium on Foundations of Computer Science (FOCS), 2007.
- N. Bansal, H. Chan, and K. Pruhs, “Competitive Algorithms for Due Date Scheduling”, International Conference on Automata, Language and Programming (ICALP), 2007.
- N. Bansal, C. Stein, K. Pruhs, “Speed Scaling for Weighted Flow Time”, ACM/SIAM Symposium on Discrete Algorithms (SODA), 2007.
- M. Aly, K. Pruhs, P. Chrysanthis, “KDDCS: a load-balanced in-network data-centric storage scheme for sensor networks”, ACM International Conference on Information and Knowledge Management (CIKM), 317-326, 2006.
- D. Mosse, L. Comfort, A. Amer, J. Brustoloni, P. Chrysanthis, M. Hauskrecht, A. Labrinidis, R. Melhem, K. Pruhs, “Secure-CITI Critical Information-Technology Infrastructure”, International Conference on Digital Government Research (DG.O), 253-254, 2006,
- J. Edmonds, K. Pruhs, “Balanced Allocations of Cake”, IEEE Symposium on Foundations of Computer Science (FOCS), 623-634, 2006.
- J. Beaver, P. Chrysanthis, K. Pruhs, V. Liberatore, “To Broadcast Push or Not and What?” International Conference on Mobile Data Management (MDM), 2006.
- M. Sharaf, P. Chrysanthis, A. Labrinidis, K. Pruhs, “Efficient Scheduling of Heterogeneous Continuous Queries”, International Conference on Very Large Data Bases (VLDB), 511-522, 2006.
- M. Aly, P. Chrysanthis, K. Pruhs, “Decomposing Data-Centric Storage Query Hot-spots in Sensor Networks”, International Conference on Mobile and Ubiquitous Systems: Networks and Services (MOBIQUITOUS), 2006.
- J. Edmonds and K. Pruhs “Cake cutting isn’t a piece of cake”, ACM/SIAM Symposium on Discrete Algorithms (SODA), 2006.
- N. Bansal, and K. Pruhs, “Speed scaling to manage temperature”, Symposium on Theoretical Aspects of Computer Science (STACS), 460-471, 2005.
- M. Sharaf, A. Labrinidis, P. Chrysanthis, K.Pruhs, “Freshness-aware scheduling of continuous queries in the dynamic web”, Workshop on the Web and Databases (WebDB), 73-78, 2005.
- K. Pruhs, R. van Stee, P. Uthaisombut, “Speed Scaling of Tasks with Precedence Constraints”, Workshop on Approximation and Online Algorithms (WAOA), 307-319, 2005. Invited to special issue of *Theory of Computing Systems* of selected papers from the conference.
- M. Aly, Kirk Pruhs, T. Znati, B. Hunsaker, “On the Coverage Problem for Myopic Sensors” IEEE International Conference on Wireless Networks, Communications, and Mobile Computing (WIRELESSCOM), 2005.
- M. Aly, N. Morsillo, P. Chrysanthis, and K. Pruhs, “Zone Sharing: A Hot-Spots Decomposition Scheme for Data-Centric Storage in Sensor Networks”, International VLDB Workshop on Data Management for Sensor Networks (DMSN), 2005.

- N. Bansal, T. Kimbrel, and K. Pruhs, “Dynamic speed scaling to manage energy and temperature”, IEEE Symposium on Foundations of Computer Science (FOCS), 520-529, 2004.
- J. Beaver, K. Pruhs, P. Chrysanthis, and V. Liberatore, “The multicast pull advantage in dissemination-based data delivery”, Hellenic Symposium on Data Management, 2004.
- K. Pruhs, P. Uthaisombut, G. Woeginger, “Getting the best response for your erg”, Scandinavian Workshop on Algorithm Theory (SWAT), 14-25, 2004.
- J. Kohrt, and K. Pruhs, “A constant approximation algorithm for sorting buffers”, Latin American Theoretical Informatics (LATIN), 2004.
- K. Pruhs, and G. Woeginger, “Approximation schemes for a class of subset selection problems”, Latin American Theoretical Informatics (LATIN), 2004. Invited to a special issue of *Theoretical Computer Science* of selected papers from the conference.
- N. Bansal, and K. Pruhs, “Server scheduling in the weighted l_p norm”, Latin American Theoretical Informatics (LATIN), 2004.
- J. Edmonds, and K. Pruhs, “A maiden analysis of Longest Wait First”, ACM/SIAM Symposium on Discrete Algorithms (SODA), 2004.
- J. Beaver, N. Morsillo, K. Pruhs, P. Chrysanthis, and V. Liberatore, “Scalable dissemination: What’s hot and what’s not”, Workshop on the Web and Databases (WebDB), 2004.
- N. Bansal and K. Pruhs, “Server scheduling in the L_p norm: A rising tide lifts all boats”, ACM Symposium on Theory of Computing (STOC), 2003.
- J. Beaver, W. Li, V. Penkrot, S. Roychowdhury, M. Sharaf, W. Zhang, P. Chrysanthis, K. Pruhs, and V. Liberatore, “An optimized multicast based data dissemination middleware: a demonstration”, IEEE International Conference on Data Engineering (ICDE) 2003.
- P. Chrysanthis, K. Pruhs, and V. Liberatore, “Middleware support for multicast-based data dissemination: a working reality”, IEEE Workshop on Reliable Dependable Systems (WORDS), 2003.
- L. Becchetti, S. Leonardi, A. Marchetti-Spaccamella, and K. Pruhs, “Semi-Clairvoyant Scheduling”, European Symposium on Algorithms (ESA), 2003.
- K. Pruhs and P. Uthaisombut “A comparison of multicast pull models”, European Symposium on Algorithms (ESA), 2002.
- E. Wiewiora and K. Pruhs “Evaluating the Local Ratio Algorithm for Dynamic Storage Allocation”, Workshop on Algorithms Engineering and Experiments (ALENEX), 2002.
- J. Edmonds, and K. Pruhs “Broadcast scheduling: when fairness is fine”, *ACM/SIAM Symposium on Discrete Algorithms* (SODA), 2002.
- A. Berfield, B. Simmons, P. Chrysanthis, and K. Pruhs “Better client OFF time predictions using machine learning techniques”, International Workshop on Web and Data Management (WIDM), 2001.

- Luca Becchetti, Stefano Leonardi, Alberto Marchetti–Spaccamela, Kirk Pruhs, “Online weighted flow time and deadline scheduling”, Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX), 2001.
- B. Kalyanasundaram, K. Pruhs, and M. Velauthapillai, “Scheduling broadcasts in wireless networks”, *European Symposium on Algorithms (ESA)*, 2000. Invited to submit to a special issue of *Journal of Scheduling* devoted to selected papers from ESA 2000.
- B. Kalyanasundaram, J. Noga, K. Pruhs and G. Woeginger, “Caching for web searching”, *Scandinavian Workshop on Algorithms and Theory (SWAT)*, 2000. Invited to submit to a special issue of *Nordic Journal of Computing* devoted to selected papers from SWAT 2000.
- B. Kalyanasundaram, and K. Pruhs, “Dynamic spectrum allocation: the impotency of duration notification”, *Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS)*, 2000.
- B. Kalyanasundaram, and K. Pruhs, “Eliminating migration in multi-processor scheduling”, *ACM/SIAM Symposium on Discrete Algorithms (SODA)*, 1999. Invited to appear in a special issue of *Journal of Algorithms* devoted to selected papers from the 1999 SODA.
- B. Kalyanasundaram, and K. Pruhs, “Maximizing job completions online”, *European Symposium on Algorithms (ESA)*, 1998. Invited to appear in a special issue of *Journal of Algorithms* devoted to selected papers from the 1998 ESA.
- B. Kalyanasundaram, and K. Pruhs, “Minimizing flow time nonclairvoyantly”, *IEEE Symposium on Foundations of Computer Science (FOCS)*, 1997.
- B. Kalyanasundaram, and K. Pruhs, “Fault-tolerant real-time scheduling”, *European Symposium on Algorithms (ESA)*, 1997. Invited to appear in a special issue of *Algorithmica* devoted to selected papers from the 1997 ESA.
- B. Kalyanasundaram, and K. Pruhs, “An optimal deterministic algorithm for online b-matching”, *Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS)*, 1996.
- B. Kalyanasundaram, and K. Pruhs, “Speed is as powerful as clairvoyance”, *IEEE Symposium on Foundations of Computer Science (FOCS)*, 1995.
- B. Kalyanasundaram, and K. Pruhs, “The online transportation problem”, *European Symposium on Algorithms (ESA)*, 1995.
- B. Kalyanasundaram, and K. Pruhs, “Fault-tolerant scheduling”, *ACM Symposium on Theory of Computing (STOC)*, 1994.
- Y. Azar, B. Kalyanasundaram, S. Plotkin, K. Pruhs, and O. Waarts, “Online load balancing of temporary tasks”, *Workshop on Algorithms and Data Structures (WADS)*, 1993.
- B. Kalyanasundaram, and K. Pruhs, “Constructing competitive tours from local information”, *EATCS International Colloquium on Automata, Languages, and Programming (ICALP)*, 1993. Invited to submit to a special issue of the *Nordic Journal of Computing* devoted to selected papers from ICALP 1993.

- B. Kalyanasundaram, and K. Pruhs, “A competitive analysis of algorithms for searching unknown scenes”, *Symposium on Theoretical Aspects of Computer Science (STACS)*, 1992.
- B. Kalyanasundaram, and K. Pruhs, “Online weighted matching”, *ACM/SIAM Symposium on Discrete Algorithms (SODA)*, 1991.
- R. Melhem, K. Pruhs, and T. Znati, “Using spanning trees for balancing dynamic load on multiprocessors”, *Distributed Memory Computing Conference*, 1991.
- T. Znati, R. Melhem, and K. Pruhs “Dilation based bidding schemes for dynamic load balancing on distributed processing systems”, *Distributed Memory Computing Conference*, 1991.
- K. Pruhs, and U. Manber, “The complexity of controlled selection,” *EATCS International Colloquium on Automata Languages and Programming (ICALP)*, 1989.
- K. Pruhs, “The computational complexity of some rounding and survey overlap problems,” *Meeting of the Survey Research Methods Section of the American Statistical Association*, 1989.

OTHER PUBLICATIONS

- K. Pruhs, “Competitive online scheduling for server systems”, *SIGMETRICS Performance Evaluation Review*, **34**(4), 52-58, 2007.
- K. Pruhs, J. Sgall, and E. Torng, “Online Scheduling”, in *Handbook of Scheduling: Algorithms, Models and Performance Analysis*, editor J. Leung, 2004.
- P. Chrysanthis, V. Liberatore, and K. Pruhs, “Middleware for scalable data dissemination”, in *Middleware for Communications*, editor Q. H. Mahmoud, 2004.
- K. Pruhs and B. Kalyanasundaram, “Online network optimization problems”, in *Online Algorithms: The State of the Art*, Editors: Amos Fiat and Gerhard Woeginger, Springer-Verlag, 1998.
- K. Pruhs, T. Znati, and R. Melhem, “Dynamic mapping of adaptive computations onto linear arrays”, in *Unstructured Scientific Computations on Scalable Multiprocessors*, Editors: P. Mehrotra, J. Saltz, and R. Voigt, MIT Press, 1991.
- B. Kalyanasundaram, and K. Pruhs, “On-line weighted matching”, in *On-Line Algorithms*, Editors: L. McGeoch, and D. Sleator, ACM/AMS, 1991.
- B. Kalyanasundaram and K. Pruhs, “Visual searching and mapping”, in *On-Line Algorithms*, Editors: L. McGeoch, and D. Sleator, ACM/AMS, 1991.
- K. Pruhs, “How to design dynamic programming algorithms sans recursion”, *SIGACT News*, **29**(1), 32 - 35, March 1998.
- K. Pruhs, “The SPIN-OUT Puzzle”, *Bulletin of the ACM Special Interest Group on Computer Science Education*, **25**(3), 36 – 38, 1993.

RESEARCH GRANTS

- “Science of Power Management”, National Science Foundation award CNS-0936386 from Computer and Network Systems division, April 2009 to March 2011.
- “Algorithms and Metrics for New Generation Data Stream Management Systems”, (with P. Chrysanthis and A. Labrinidis), National Science Foundation award IIS-0534531 from Data Management Systems Program, September 2006 to September 2009.
- “Algorithmic support for power aware computing and communication”, National Science Foundation award CCF-0514058 from the Computer and Communication Foundations Program. July 2005 to July 2008.
- “Algorithmic support for temperature aware computing and networking”, National Science Foundation award CCF-0448196 from the Computer and Communication Foundations Program. August 2004 to August 2005.
- “ITR: Secure CITI: A Secure Critical Information Technology Infrastructure for Disaster Management” (with 8 others), National Science Foundation award CNS- 0325353 from the ITR medium program, September 2003 to September 2007.
- “Middleware support for multicast data dissemination”, (with P. Chrysanthis), National Science Foundation award ANIR-0123705 from the Network Centric Middleware Services Program, October 2001 to October 2004.
- “Dynamic spectrum allocation algorithms”, United States Air Force, October 2001 to October 2002.
- “Algorithmic problems in next generation networks”, National Science Foundation award CCR-0098752 from the Theory of Computing Program, July 2001 to July 2004.
- “Dynamic storage allocation”, (with B. Kalyanasundaram), United States Air Force, December 1999 to December 2000.
- “Scheduling protocols for networked multi-media applications”, (with B. Kalyanasundaram), National Science Foundation award CCR-9734927 from the Theory of Computing Program, June 1998 to June 2001.
- “Online network optimization”, National Science Foundation Research Initiation Award CCR-9209283 from the Theory of Computing Program, June 1992 to June 1995.

EDUCATIONAL GRANTS AND AWARDS

- NSF Research Experiences for Undergraduates Supplement, (with P. Chrysanthis), June 2002 to June 2003.
- Innovation in Teaching Award from the University of Pittsburgh Advisory Council on Instructional Excellence, 2000.
- NSF Research Experiences for Undergraduates Supplement, (with B. Kalyanasundaram), June 1999 to June 2000.
- NSF Research Experiences for Undergraduates Supplement, June 1994 to June 1995.

Ph.D. STUDENTS SUPERVISED

- Jonathan Beaver, graduated 2005.
- Christine Chung, graduated 2009. First position: Jean C. Tempel Assistant Professor of Computer Science at Connecticut College.
- Mohamed Aly, graduated 2009. First position: Yahoo Research.
- Daniel Cole, current.

PROFESSIONAL ACTIVITIES

- Associate Editor:
 - *ACM Transactions on Algorithms*
 - *INFORMS Journal of Computing*
 - *Journal of Scheduling*
 - *Encyclopedia of Algorithms*
- Program Committee Member
 - 2001 ACM/SIAM Symposium on Discrete Algorithms (SODA)
 - 2001 ACM International Workshop on Data Engineering for Wireless and Mobile Access (MobiDE)
 - 2001 International Workshop on Mobility and Databases and Distributed Systems (MDDS)
 - 2002 International Workshop on Mobility and Databases and Distributed Systems (MDDS)
 - 2003 Workshop on Models and Algorithms for Planning and Scheduling Problems (MAPSP)
 - 2003 Multidisciplinary International Conference on Scheduling : Theory and Applications (MISTA)
 - 2005 ACM/SIAM Symposium on Discrete Algorithms (SODA)
 - 2005 Multidisciplinary International Conference on Scheduling : Theory and Applications (MISTA)
 - 2005 Conference on Algorithm Engineering and Experience (ALENEX)
 - 2005 European Symposium on Algorithms (ESA)
 - 2005 Workshop on Models and Algorithms for Planning and Scheduling Problems (MAPSP)
 - 2005 Workshop on Approximation and Online Algorithms (WAOA)
 - 2006 Colloquium on Structural Information and Communication Complexity (SIROCCO)
 - 2006 Conference on Algorithmic Aspects of Information and Management (AAIM)
 - 2007 Conference on Algorithmic Aspects of Information and Management (AAIM)
 - 2007 European Symposium on Algorithms (ESA)
 - 2009 Symposium on Parallelism in Algorithms and Architectures (SPAA)
 - 2010 ACM/SIAM Symposium on Discrete Algorithms (SODA)
 - 2010 IEEE Parallel and Distributed Processing Symposium

- 2010 Track on Power Aware Design and Optimization (PADO) of the ACM Symposium on Applied Computing (SAC)
- 2010 First IEEE International Conference on Green Computing
- Panel Member: NSF Panels in Networking and Theory of Computing
- Guest Editor:
 - Special issue of *Journal of Scheduling* devoted to selected papers from the 2001 Phillips Workshop on Scheduling and Resource Management (SCHARM)
 - Special issue of *Journal of Scheduling* devoted to selected papers from the 2002 ACM/SIAM Symposium on Discrete Algorithms (SODA)
 - Two special issues of *Journal of Scheduling* devoted to online scheduling
 - Special issue of *Journal of Algorithms* devoted selected papers from the 2001 ACM/SIAM Symposium on Discrete Algorithms (SODA)
 - Special issue of *Journal of Scheduling* devoted to papers from the 1999 Phillips Workshop on Scheduling and Resource Management (SCHARM)
- Program Committee Chair: 2007 Workshop on Models and Algorithms for Planning and Scheduling Problems (MAPSP)
- Organizer:
 - 2004 Bertinoro Workshop on Models and Algorithms for Information Networks
 - 2006 Cluster on Online Optimization at International Symposium on Mathematical Programming (ISMP)
 - 2007 Dagstuhl Workshop on Fair Division
 - 2008 Dagstuhl Workshop on Scheduling
 - 2009 NSF Workshop on the Science of Power Management
 - 2010 Dagstuhl Seminar on Scheduling
 - 2010 Second NSF Workshop on the Science of Power Management
- Invite Speaker Gigs:
 - 2004 Conference on the Mathematics of Operations Research
 - 2006 NHC Autumn School on Discrete Algorithms
 - 2009 Inaugural Workshop for the Microsoft-CNRS Chair on Optimization and Sustainable Development at Ecole Polytechnique
- Referee: Many journals and conferences