

CURRICULUM VITAE

David B. Shmoys

231 Rhodes Hall
Cornell University
Ithaca, NY 14853
(607)-255-9146

312 Comstock Road
Ithaca, NY 14850
(607)-257-7404
shmoys@cs.cornell.edu

Education

Ph.D., Computer Science, University of California, Berkeley, June 1984.

Thesis: *Approximation Algorithms for Problems in Scheduling, Sequencing & Network Design*

Thesis Committee: Eugene L. Lawler (chair), Dorit S. Hochbaum, Richard M. Karp.

B.S.E., Electrical Engineering and Computer Science, Princeton University, June 1981.

Graduation with Highest Honors, Phi Beta Kappa, Tau Beta Pi.

Thesis: *Perfect Graphs & the Strong Perfect Graph Conjecture*

Research Advisors: H. W. Kuhn, K. Steiglitz and D. B. West

Awards

Sonny Yau Award for Excellence in Teaching, Cornell College of Engineering, 2003.

ACM Fellow, 2002.

Sonny Yau Award for Excellence in Teaching, Cornell College of Engineering, 1998.

Sonny Yau Award for Excellence in Teaching, Cornell College of Engineering, 1995.

Cornell AIIE Teaching Award, 1991.

MIT Graduate Student Council Teaching Award, Department of Mathematics, 1988.

National Science Foundation Presidential Young Investigator, 1987–1994.

National Science Foundation Graduate Fellow, 1981–1984.

Eugene C. and Mona Fay Gee Scholarship; University of California, Berkeley, 1981-1982.

Phi Beta Kappa Prize, Princeton University, 1981.

James Hayes-Edgar Palmer Prize, School of Engineering, Princeton University, 1981.

Charles Ira Young Memorial Tablet and Medal, EECS Dept., Princeton University, 1981.

Professional Employment

Professor of Operations Research & Information Engineering and of Computer Science, Cornell University, 2007–present.

Professor of Operations Research & Industrial Engineering and of Computer Science, Cornell University, 1997–2006.

Visiting Research Scientist, Computer Science Division, EECS, University of California, Berkeley, 1999–2000.

Associate Professor of Operations Research & Industrial Engineering and of Computer Science, Cornell University, 1996–1997.

Associate Professor of Operations Research & Industrial Engineering, Cornell University, 1992–1996.

Visiting Research Scientist, Department of Computer Science, Eötvös University, Fall 1993.

Visiting Research Scientist, Department of Computer Science, Princeton University, Spring 1993.

Assistant Professor of Operations Research and Industrial Engineering, Cornell University, 1989–1992.

Associate Professor of Applied Mathematics, Massachusetts Institute of Technology, 1989–1990.

Assistant Professor of Applied Mathematics, Massachusetts Institute of Technology, 1985–1989.

Summer Visitor, IBM Almaden Research Center, Summer 1986.

Postdoctoral Fellow, Mathematical Sciences Research Institute, Berkeley, 1986.

Postdoctoral Fellow, Harvard University, 1984–1985.

Mathematician, Operations Research Division, National Bureau of Standards, Gaithersburg, Maryland, Summer 1980.

Editorial/Professional Service Positions

Editor-in-Chief, *SIAM Journal on Discrete Mathematics*, 1997–2002,
Editorial Board Member, 1987–2008.

Associate Editor, *Mathematical Programming A*, 1997–2007.

Editorial Board Member, *SIAM Journal on Computing*, 1993–2005.

Co-Editor for Discrete Optimization, *SIAM/MPS Series on Optimization*, 1999–2002.

Associate Editor, *Mathematics of Operations Research*, 1992–2003.

Associate Editor, *Journal of Scheduling*, 1998–2003.

Editorial Board Member, *Communications of the ACM*, 1987–1991.

Associate Editor, *ORSA Journal on Computing*, 1987–1997.

Associate Editor, *Operations Research*, 1987–1996.

Editorial Board Member, *Discrete Applied Mathematics*, 1987–1992.

Editor, Special Issue of *Mathematical Programming* on Applications of Computer Science Techniques to Combinatorial Optimization (in memory of Eugene L. Lawler)

Editor, Special Issue of *Journal of Algorithms* devoted to select papers from the 11th Annual ACM-SIAM Symposium on Discrete Algorithms, 2000.

ACM-SIAM Symposium on Discrete Algorithms (SODA), Program Committee Chair, 2000.

ACM Symposium on Theory of Computing (STOC), Program Committee Member, 2008.

IEEE Conference on Foundations of Computing (FOCS), Program Committee Member, 2002.

IEEE Conference on Foundations of Computing (FOCS), Program Committee Member, 1999.

Mathematical Programming Society Conference on Integer Programming and Combinatorial Optimization (IPCO), Program Committee Member, 1999.

ACM-SIAM Symposium on Discrete Algorithms (SODA), Program Committee Member, 1998.

Mathematical Programming Society Conference on Integer Programming and Combinatorial Optimization (IPCO), Program Committee Member, 1998.

ACM Symposium on Theory of Computing (STOC), Program Committee Member, 1991.

International Workshop on Approximation Algorithms (APPROX), Program Committee Member, 1998.

IEEE Technical Committee on Mathematical Foundations of Computing, Vice-Chair, 2008–present.

Mathematical Programming Society, IPCO Steering Committee, Chair, 2002–2004.

Mathematical Programming Society, Council Member-at-large, 1997–2000.

Mathematical Programming Society, Council Member for Publications, 2005–present.

SIGACT, Council Member Coordinator for Prizes, 2004–present.

Nature Source Genetics, Scientific Advisory Committee, 2006–present.

Eugene L. Lawler Graduate School of Computing, Waterford Institute of Technology, Scientific Advisory Committee, 2007–present.

FOCS/STOC Site Coordinator, Executive Committee Member, SIGACT, 1989–1991.

Co-Organizer, Oberwolfach Workshop on Combinatorial Optimization, November, 2005.

Co-Organizer, Fields Institute Workshop on Approximation Algorithms, September, 1999.

Co-Organizer, Schloss Dagstuhl Workshop on Approximation Algorithms, August, 1997.

Cornell University Service Positions

Institute for Computational Sustainability, Associate Director, 2008–present.

Information Science, Systems, & Technology, Founding co-Director Undergraduate Program, 2004–2007.

School of Operations Research & Industrial Engineering, Publicity Committee Chair, 2006–2007.

Center for Applied Mathematics, Admissions Committee, 2004–2007.

College of Engineering, CIS Building Feasibility Study Committee, 2004–2006.

School of Operations Research & Industrial Engineering, Curriculum Committee, 2005–2006.

Center for Applied Mathematics, Colloquium Committee, 2004–2005.

School of Operations Research & Industrial Engineering, Director Search Committee Co-Chair, 2004–2005.

School of Operations Research & Industrial Engineering, Curriculum Committee Chair, 2003–2004.

School of Operations Research & Industrial Engineering, Associate Director for Graduate Studies, 2000–2003.

Center for Applied Mathematics, Colloquium Committee, 2000–2001.

Search Committee for Dean of Graduate School, 2000–2002.

School of Operations Research & Industrial Engineering, Acting Associate Director for Undergraduate Studies, 1998–1999.

College of Engineering, Search Committee for Associate Dean for Professional Development, 1998.

College of Engineering, Search Committee for Associate Dean for Undergraduate Studies, 1999.

College of Engineering, Common Curriculum Governing Board, 1998–1999.

School of Operations Research & Industrial Engineering, Curriculum Committee, Chair, 1996–1998.

Center for Applied Mathematics, Colloquium Committee, 1997–1998.

Center for Applied Mathematics, Computing Committee, Chair, 1996–1997.

College of Engineering, Committee on Academic Standards, Petitions, and Credits (ASPAC), 1994–1999.

Center for Applied Mathematics, Computing Committee, 1995–1996.

Graduate College, Sage Fellowship Committee, 1994–1995.

College of Engineering, Computing Policy Committee, 1994–1996.

School of Operations Research & Industrial Engineering, Computing Committee, Chair, 1991–1992, 1994–1996.

School of Operations Research & Industrial Engineering, Computing Committee, 1990–1991.

School of Operations Research & Industrial Engineering, Ph.D. Qualifying Examination Coordinator, 1989–1990, 1992–1993.

Graduate Student Advising

M.S. Advising

Philip Klein, June 1986, *An Efficient Parallel Algorithm for Planarity Testing* (MIT-CS).

Margaret Tuttle, August 1989, *Observations on the Mixed Postman Problem* (MIT-CS).

Cliff Stein, August 1989, *Using Cycles and Scaling in Parallel Algorithms* (MIT-CS).

David Williamson, June 1990, *Analysis of the Held-Karp Heuristic for the Traveling Salesman Problem* (MIT-CS).

Volker Lucks, December 1991, *Large-Step Local Optimization for the Graph Partitioning Problem* (Cornell-OR).

Ph.D. Advising

Philip Klein, August 1988, *Efficient Parallel Algorithms for Planar, Chordal and Interval Graphs* (MIT-CS). [Currently on the faculty at Brown University]

Leslie Hall, August 1989, *Topics in Combinatorial Optimization* (MIT-OR). [Currently adjunct faculty at The Johns Hopkins University]

Joel Wein, June 1991, *Algorithms for Scheduling and Network Problems* (MIT-Applied Math). [Currently on the faculty at Polytechnic University of NY]

Clifford Stein, August 1992, *Approximation Algorithms for Multicommodity Flow and Shop Scheduling Problems* (MIT-CS). [Currently on the faculty of Columbia University]

Alessandro Panconesi, June 1993, *Locality in Distributed Computing* (Cornell-CS). [Currently on the faculty at La Sapienza, Rome]

Aravind Srinivasan, August 1993, *Techniques for Probabilistic Analysis and Randomness-Efficient Computation* (Cornell-CS). [Currently on the faculty at the University of Maryland, College Park]

Helena Lourenco, August 1993, *Algorithms and Computational Experiments for the Job-shop Scheduling Problem* (Cornell-OR). [Currently on the faculty at the Universitat Pompeu Fabra, Barcelona]

Paul Martin, August 1996, *A Time-Oriented Approach to Solving Job-shop Scheduling Problems* (Cornell-OR).

Fabian Chudak, August 1998, *Approximation Algorithms for the Uncapacitated Facility Location Problem* (Cornell-OR). [Currently at D-Wave Systems]

Mark Huber, June 1999, *Efficient Algorithms for Exact Sampling* (Cornell-OR). [Currently on the faculty at Duke University]

Dan Brown, August 2000, *New Algorithms for Genetic Linkage Mapping Projects* (Cornell-CS). [Currently on the faculty of the University of Waterloo]

Nathan Edwards, January 2001, *Computing Near-optimal Solutions for Network Design Problems* (Cornell-OR). [Currently on the faculty of Georgetown University]

Chaitanya Swamy, June 2004, *Approximation Algorithms for Clustering Problems* (Cornell-CS). [Currently on the faculty of the University of Waterloo]

Retsef Levi, August 2005, *Computing Provably Near-Optimal Policies for Stochastic Inventory Control Models* (Cornell-OR). [Currently on the faculty of MIT]

Ranjith Rajogopalan, August 2005, *Algorithms for Some Clustering Problems* (Cornell-OR). [Currently at a video game startup]

Davina Kunvipusilkul, December 2006, *Integer Programming Methods for Scheduling with Chain Constraints with Bounded Lags* (Cornell-OR). [Currently at the Bank of Thailand]

Frans Schalekamp, June 2007, *Algorithms for Universal and A Priori Optimization Problems*. [Currently at Institute for Theoretical Computer Science, Tsinghua University]

Tim Carnes, expected June 2010.

Thesis committee member for other students' Ph.D.: Paul Feldman, Andrew Boyd, Seth Malitz, Mark Newman, Richard Koch, Cindy Phillips, Joe Kilian, Lance Fortnow, Hershel Safer, Yale Herer, Robert Koca, Suresh Chari, Theresa Wise, Wee-Liang Heng, Wei Chen, Pan Chen, Nikolay Mateev, Michael Wagner, Tim Roughgarden, Amit Kumar, Aaron Archer, Soumyadip Ghosh, Martin Pí, Tom Wexler, Elliot Anshelevich, Millie Chu, Ara Hayrapetyan, Sumit Kunnunkal, Zoya Svitkina, Nikolai Blizniouk, Vivek Vishnamurthy, Sigmund Cherem, Megan Owen, Hui Qu, and Anke van Zuylen.

Publications in Refereed Journals

- 1984 “Recognizing graphs with fixed interval number is *NP*-complete, with D.B. West, *Discrete Applied Mathematics* 8, 295-305.
- 1985 “A best possible heuristic for the *k*-center problem”, with D.S. Hochbaum, *Mathematics of Operations Research* 10, 180-184.
- “An $O(|V|^2)$ algorithm for the planar 3-cut problem”, with D.S. Hochbaum, *SIAM J. Alg. and Disc. Methods* 6, 707-712.
- 1986 “Best possible heuristics for the bottleneck wandering salesman and bottleneck vehicle routing problems”, with D.S. Hochbaum, *European Journal of Operations Research*, 380-384.
- “A better than ‘best possible’ algorithm to edge color multigraphs”, with D.S. Hochbaum and T. Nishizeki, *J. of Algorithms* 7, 79-104.
- “A packing problem you can almost solve by sitting on your suitcase”, with D.S. Hochbaum, *SIAM J. Alg. and Disc. Methods* 7, 247-257.
- “A unified approach to approximation algorithms for bottleneck problems”, with D.S. Hochbaum, *J. Assoc. Comput. Mach.* 33, 533-550. [A preliminary version appeared in *Proc. of the 16th Annual ACM Symposium on Theory of Computing*, 1984, 274-284.]
- 1987 “Using dual approximation algorithms for scheduling problems: theoretical and practical results”, with D.S. Hochbaum, *J. Assoc. Comput. Mach.* 34, 144-162. [A preliminary version appeared in *Proc. of the 26th Annual IEEE Symposium on Foundations of Computer Science*, 1985, 79-89.]

- “Efficient parallel algorithms for edge coloring problems”, with H.J. Karloff, *J. of Algorithms* 8, 39-52.
- 1988 “A polynomial approximation scheme for scheduling uniform processors: using the dual approach”, with D.S. Hochbaum, *SIAM J. Computing* 17, 539-551. [A preliminary version appeared in *Proc. of Foundations of Software Technology and Theoretical Computer Science '86*, Lecture Notes in Computer Science 231, Springer-Verlag, 1987, 382-393.]
- 1989 “The parallel complexity of the TSP”, with G. Kindervater and J.K. Lenstra, *J. of Algorithms* 10, 249-270.
- “Simple constant-time consensus protocols in realistic failure models”, with B. Chor and M. Merritt, *J. Assoc. Comput. Mach.* 36, 591-614. [A preliminary version appeared in *Proc. of the 4th Annual ACM Symposium on Principals of Distributed Computing*, 1985, 152-162.]
- 1990 “Approximation algorithms for scheduling unrelated parallel machines”, with J.K. Lenstra and É. Tardos, *Mathematical Programming* 46, 259-271. [A preliminary version appeared in *Proc. of the 28th Annual IEEE Symposium on Foundations of Computer Science*, 1987, 217-224.]
- “Flipping persuasively in constant expected time”, with C. Dwork and L. Stockmeyer, *SIAM J. Computing* 19, 472-499. [A preliminary version appeared in *Proc. of the 27th Annual IEEE Symposium on Foundations of Computer Science*, 1986, 222-232.]
- “Analyzing the Held-Karp TSP bound: A monotonicity property with application”, with D.P. Williamson, *Information Processing Letters* 35, 281-285.
- 1991 “Permutation vs. non-permutation flow shop schedules”, with C.N. Potts and D.P. Williamson, *Operations Research Letters* 10, 281-284.
- 1992 “Jackson’s rule for single-machine scheduling: making a good heuristic better”, with L.A. Hall, *Mathematics of Operations Research* 17, 22-35.
- “Using interior point methods for fast parallel algorithms for bipartite matching and related problems”, with A.V. Goldberg, S.A. Plotkin, and É. Tardos, *SIAM J. Computing* 21, 140-150. [A preliminary version appeared in *Proc. of the 30th Annual IEEE Symposium on Foundations of Computer Science*, 1989, 350-355.]
- 1993 “An approximation algorithm for the generalized assignment problem”, with É. Tardos, *Math. Programming* 62, 461-474. [A preliminary version appeared in *Proc. of the 4th Annual ACM-SIAM Symposium on Discrete Algorithms*, 1993, 448-454.]
- 1994 “Improved approximation algorithms for shop scheduling problems”, with C. Stein and J. Wein, *SIAM J. Computing* 23, 617-632. [A preliminary version appeared in *Proc. of the 2nd Annual ACM-SIAM Symposium on Discrete Algorithms*, 1991, 148-157.]
- 1995 “Scheduling parallel machines on-line”, with J. Wein and D.P. Williamson, *SIAM J. Computing* 24, 1313-1331. [A preliminary version appeared in *Proc. of the 32nd Annual IEEE Symposium on Foundations of Computer Science*, 1991, 131-140.]
- “Approximation algorithms for fractional packing and covering problems”, with S.A. Plotkin and É. Tardos, *Math. Oper. Res.* 20, 257-301. [A preliminary version appeared in *Proc. of the 32nd Annual IEEE Symposium on Foundations of Computer Science*, 1991, 495-504.]

- 1996 “Strategic directions in research in theory of computing”, with M. C. Loui, A. Condon, F. Fich, G. N. Frederickson, A. V. Goldberg, D. S. Johnson, S. Mahaney, P. Raghavan, J. Savage, and A. L. Selman, *ACM Computing Surveys* 28, 575–590.
- 1997 “Short shop schedules”, with D.P. Williamson, L.A. Hall, J.A. Hoogeveen, C.J. Hurkins, J.K. Lenstra, S.V. Sevast’janov, *Oper. Res.* 45, 288–294.
- “Scheduling to minimize the average completion time: on-line and off-line approximation algorithms”, with L. A. Hall, A. S. Schulz, and J. Wein, *Math. Oper. Res.* 22, 513–544. [A preliminary version appeared in *Proc. of the 7th Annual ACM-SIAM Symposium on Discrete Algorithms*, 1996, 142–151.]
- “Approximation algorithms”, with A.S. Schulz and D.P. Williamson, *Proceedings of the National Academy of Sciences*, November 25, 1997, 94, 12734–12735.
- 1998 “Improved bounds on relaxations of a parallel machine scheduling problem”, with C. A. Phillips, A. S. Schulz, C. Stein, and J. Wein, *J. Comb. Optimization* 1, 413 – 426.
- 1999 “Approximation algorithms for precedence-constrained scheduling problems constraints on parallel machines that run at different speeds”, with F.A. Chudak, *J. Algorithms* 30, 323–343. [Special issue dedicated to selected papers from SODA ’97. A preliminary version appeared in *Proc. of the 8th Annual ACM-SIAM Symposium on Discrete Algorithms*, 1997, 581–590.]
- “Improved approximation algorithms for the k-level facility location problem”, with K. Aardal and F. A. Chudak, *Info. Proc. Lett.* 72, 161–167.
- 2000 “Selective mapping: a strategy for optimizing the construction of high-density linkage maps”, with T. J. Vision, D. G. Brown, R. T. Durrett and S. D. Tanksley, *Genetics* 155, 407–420.
- 2002 “A constant-factor approximation algorithm for the k-median problem”, with M. Charikar, S. Guha, and É. Tardos, *J. Comput. System Sciences* 65, 129–149. [Invited paper for special issue for FOCS ’99. A preliminary version appeared in *Proceedings of the 31st Annual ACM Symposium on Theory of Computing*, 1–10].
- 2003 “Improved approximation algorithms for the uncapacitated facility location problem”, with F. Chudak, *SIAM J. on Computing* 33, 1–25.
- 2004 “An improved approximation algorithm for the partial latin square extension problem”, with C.P. Gomes, and R.G. Rommel. *Operations Research Letters* 32, 479–484. [A preliminary version appeared in *Proceedings of the 14th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2004, 832–833.]
- “Approximations and randomization to boost CSP techniques”, with Carla P. Gomes. *Annals of Operations Research* 130, 117–141. [A preliminary version appeared in *Proceedings of the 4th International Workshop on the Integration of AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems*, 291–305.]
- 2006 “Primal-dual algorithms for deterministic inventory problems”, with R. Levi and R. Roundy. *Mathematics of Operations Research* 31, 267–284. [A preliminary version appeared in *Proceedings of the 36th Annual Symposium on Theory of Computing*, 2004, 353–362.]

- “An approximation scheme for stochastic linear programming and its application to stochastic integer programs”, with C. Swamy. *Journal of the ACM* 53, 978–1012. [A preliminary version appeared in *Proceedings of the 45th Annual IEEE Symposium on Foundations of Computer Science*, 2004, 228–237.]
- 2007 “Approximation algorithms for stochastic inventory control models”, with R. Levi, M. Pál, and R. Roundy. *Mathematics of Operations Research* 32, 284–302. [A preliminary version appeared in *Proceedings of the 11th MPS Conference on Integer Programming and Combinatorial Optimization*, 2005, 306–320.]
- “Provably near-optimal sampling-based policies for stochastic inventory control models”, with R. Levi and R. Roundy. *Mathematics of Operations Research* 32, 821–839. [A preliminary version appeared in *Proceedings of the 38th Annual ACM Symposium on Theory of Computing*, 2006, 739–748.]
- 2008 “A constant approximation algorithm for the one-warehouse multi-retailer problem”, with R. Levi, R. Roundy, and M. Sviridenko. *Management Science* 54, 763–776. [A preliminary version appeared in *Proceedings of the 15th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2005, 365–374.]
- “Algorithms for the universal and a priori TSP”, with F. Schalekamp. *Operations Research Letters* 36, 1–3.
- “Fault-tolerant facility location”, with C. Swamy. *ACM Transactions on Algorithms* 4. [A preliminary version appeared in *Proceedings of the 14th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2004, 735–736.]
- “Approximation algorithms for capacitated stochastic inventory control problems”, with R. Levi, R. Roundy, and V.A. Truong. *Operations Research* 56, 1186–1199.
- “New policies for the stochastic inventory control problem: theoretical and computational results”, with G. Hurley, P. Jackson, R. Levi, and R. Roundy. Submitted for publication.
- “An adaptive algorithm for dynamic assortment optimization”, with P. Rusmevichientong and M. Shen. Submitted for publication.

Other Publications In Selective Conference Proceedings

- “A constant approximation algorithm for the a priori traveling salesman problem”, with K. Talwar. *Proceedings of the 13th MPS Conference on Integer Programming and Combinatorial Optimization*, 2008, 331–343.
- “Primal-dual schema for capacity-constrained covering problems”, with T. Carnes. *Proceedings of the 13th MPS Conference on Integer Programming and Combinatorial Optimization*, 2008, 288–302.
- “Approximation algorithms for 2-stage stochastic scheduling problems”, with M. Sozio, *Proceedings of the 12th MPS Conference on Integer Programming and Combinatorial Optimization*, 2007, 145–157.

- “Sampling-based approximation algorithms for multi-stage stochastic optimization”, with C. Swamy, *Proceedings of the 45th Annual IEEE Symposium on Foundations of Computer Science*, 2005, 357–366.
- “Inventory and facility-location models with market selection”, with R. Levi, J. Geunes, and E. Romeijn, in *Proceedings of the 11th MPS Conference on Integer Programming and Combinatorial Optimization*, 2005, 111–124.
- “LP-based approximation algorithms for capacitated facility location”, with R. Levi and C. Swamy. *Proceedings of the 10th MPS Conference on Integer Programming and Combinatorial Optimization*, 2004, 206–218.
- “Facility location with service installation costs”, with C. Swamy and R. Levi. *Proceedings of the 15th Annual ACM-SIAM Symposium on Discrete Algorithms*, 2004, 1081–1090.
- “Lagrangian relaxation for the k-median problem: new insights and continuity properties”, with A. Archer and R. Rajagopalan. *Proceedings of the 11th Annual European Symposium on Algorithms*, 2003, 31–42.
- “Improved approximation algorithms for capacitated facility location problems”, with F.A. Chudak, *Proceedings of the 10th Annual ACM-SIAM Symposium on Discrete Algorithms*, 1999, S875–S876.
- “Approximation algorithms for facility location problems”, with É. Tardos, and K. I. Aardal. *Proceedings of the 29th Annual ACM Symposium on Theory of Computing*, 1997, 265–274.
- “A new approach to computing optimal schedules for the job-shop scheduling problem”, with P. Martin, in: Cunningham, W.H., S.T. McCormick, M. Queyranne, eds. *Integer Programming and Combinatorial Optimization*, Proceedings of the 5th International IPCO Conference, *Lecture Notes in Computer Science 1084*, Springer, Berlin, 1996, 389-403.
- “Improved scheduling algorithms for minsum criteria” with S. Chakrabarti, C.A. Phillips, A.S. Schulz, C. Stein, and J. Wein, in: F. Meyer auf der Heide and B. Monien, eds. *International Colloquium on Automata, Languages and Processing*, Proceedings of the 23rd International Colloquium ICALP’96, *Lecture Notes in Computer Science 1099*, Springer, Berlin, 646-657.
- “Improved approximation algorithms for network design problems”, with M.X. Goemans, A.V. Goldberg, S. Plotkin, É. Tardos, and D.P. Williamson, *Proceedings of the 5th Annual ACM-SIAM Symposium on Discrete Algorithms*, 1994, 223–232.
- “Near-optimal solutions in precedence-constrained scheduling”, with L.A. Hall, *Proceedings of the 1st Mathematical Programming Conference on Integer Programming and Combinatorial Optimization*, 1990, 249-260.
- “Approximation schemes for constrained scheduling problems”, with L.A. Hall, *Proceedings of the 30th Annual IEEE Symposium on Foundations of Computer Science*, 1989, 134-139.
- “A best possible parallel approximation algorithm for a graph theoretic problem”, with D.S. Hochbaum, *Proceedings of IFORS ’87*, 933-938.

Invited Survey Articles

“Some well-solved cases of the traveling salesman problem”, with P.C. Gilmore and E.L. Lawler, in *The Traveling Salesman Problem*, edited by E.L. Lawler, J.K. Lenstra, A.H.G. Rinnooy Kan, and D.B. Shmoys, Wiley, 1985, 87-143.

“Computational complexity”, with É. Tardos, in *The Handbook of Combinatorics*, edited by R.L. Graham, M. Grötschel and L. Lovász, North-Holland, 1995, 1599–1645. (An extended version appears as Technical Report No. 918, School of Operations Research and Industrial Engineering, Cornell University, Ithaca, NY, 1990.)

“Combinatorics in computer science”, with L. Lovász and É. Tardos, in *The Handbook of Combinatorics*, edited by R.L. Graham, M. Grötschel and L. Lovász, North-Holland, 1995, 2003–2038.

“Sequencing and scheduling: algorithms and complexity”, with E.L. Lawler, J.K. Lenstra and A.H.G. Rinnooy Kan, *The Handbooks of Operations Research and Management Science, Volume IV: Logistics of Production and Inventory*, edited by S.C. Graves, A.H.G. Rinnooy Kan, P. Zipkin, North-Holland, 1993, 445-522.

“Computing near-optimal solutions to combinatorial optimization problems”, *Advances in Combinatorial Optimization*, edited by W. Cook, L. Lovász, P. Seymour, AMS, 1995, 355–397.

“Computing near-optimal schedules”, with J.K. Lenstra, *Scheduling Theory and its Applications*, edited by P. Chrétienne, E.G. Coffman, Jr., J.K. Lenstra, and Z. Liu, Wiley, 1995, 1–14.

“[Approximation algorithms for] Cut problems and their application to divide-and-conquer”, *Approximation Algorithms*, edited by D.S. Hochbaum, PWS, 1997, 192–235.

“Using linear programming in the design and analysis of approximation algorithms: two illustrative problems”, *Approximation Algorithms for Combinatorial Optimization, Lecture Notes in Computer Science 1444*, edited by K. Jansen and J. Rolim, Springer, Berlin, 1998, 15–32.

“Approximation algorithms for clustering problems”, *Proceedings of COLT '99*, 1999, 100-101.

“Approximation algorithms for facility location problems”, *Approximation Algorithms for Combinatorial Optimization, APPROX 2000, Lecture Notes in Computer Science 1913*, edited by K. Jansen and S. Khuller, Springer, Berlin, 2000, 27–33.

“The design and analysis of approximation algorithms: facility location as a case study.” *Trends in Optimization*, edited by S. Hosten, J. Lee, and R. Thomas. AMS Proceedings of Symposia in Applied Mathematics, Volume 61, 2004, 85-97.

“Approximation algorithms for 2-stage stochastic optimization problems.” *Proceedings of FSTTCS 2006, the 26th International Conference on Foundations of Software Technology and Theoretical Computer Science*, 2006, 5–19. [A preliminary version appeared in *ACM SIGACT News* 37, 2006, 33 - 46.]

Books

The Traveling Salesman Problem: A Guided Tour of Combinatorial Optimization, edited with E.L. Lawler, J.K. Lenstra, and A.H.G. Rinnooy Kan, John Wiley & Sons, Chichester, 1985.

Selected publications of Eugene L. Lawler, edited with K. Aardal, J.K. Lenstra, and F. Maffioli, CWI Tract 126, 1999.

Scheduling, edited with J.K. Lenstra, in preparation.

Approximation algorithm design, with D.P. Williamson, in preparation.

Selected Invited Lectures

Approximation algorithms for the a priori TSP

1. Summer School lecture, New Algorithmic Paradigms in Optimization, Ascona, June 2008
2. JKL60, Eindhoven, The Netherlands, December 2007
3. Dagstuhl Workshop on Randomization and Algorithms, September 2007
4. 13th MPS Conference on Integer Programming and Combinatorial Optimization, May 2008

Approximation algorithms for stochastic optimization problems

1. Summer School tutorial, New Algorithmic Paradigms in Optimization, ETH Zurich, June 2008
2. Tutte Seminar, Waterloo, April 2008
3. Microsoft Research Colloquium, January 2008
4. Columbia Distinguished IEOR-DRO Seminar, December 2007
5. 26th Conference on Foundations of Software Technology and Theoretical Computer Science, Invited Plenary Speaker, Kolkata, India, December 2006
6. MIT LCS Distinguished Theoretical Computer Science Colloquium, November 2006
7. Theory-Fest, IBM T.J. Watson Research Center, July 2006
8. Sixth Haifa Workshop on Interdisciplinary Applications of Graph Theory, Combinatorics, and Algorithms, May 2006
9. Tsinghua University, March 2006
10. Aussois Workshop on Combinatorial Optimization, January 2006
11. New Horizons in Computing, Recent Trends in Theoretical Computer Science, Invited Plenary Speaker, Kyoto, February 2005
12. Bertinoro Workshop on Combinatorial Optimization, May 2004

Approximation algorithms for stochastic inventory problems

1. INFORMS Annual Meeting, invited extended tutorial, November 2007
2. Cowles Workshop on Optimization, Yale, March 2007
3. Workshop on Recent Advances in Approximation Algorithms, Kolkata, December 2006
4. International Symposium on Mathematical Programming, Rio de Janeiro, August 2006

Approximation algorithms via linear programming

1. IBM Almaden Research Center, May 2000.
2. UC Berkeley, IEOR Colloquium, February 2000.
3. DIMACS Workshop on Large-Scale Discrete Optimization in Logistics, February 1999.
4. Oberwolfach Workshop on Combinatorial Optimization, January 1999.
5. INFORMS Fall '98, Seattle, Washington, October 1998 (Tutorial)
6. APPROX '98, Aalborg, Denmark, July 1998.
7. 3rd Annual German-American Frontiers of Science Symposium, sponsored by the German American Academic Council in conjunction with the U.S. National Academy of Sciences and the Max Planck Society, June 1997.
8. Summer School on Approximation Algorithms, Berlin, June 1996.

Approximation algorithms for facility location and clustering problems

1. ADFOCS '01, Saarbrücken, September 2001 (summer school series).
2. CONF 2000, Saarbrücken, September 2000 (invited plenary talk).
3. CO 2000, Greenwich, July 2000 (invited plenary talk).
4. University of Southern California, Department of Computer Science, Distinguished Lecturer Series, February 2000.
5. Dagstuhl Workshop on Semi-definite Programming, Linear Programming, and Randomization in Combinatorial Optimization, January 2000.
6. COLT '99, Santa Cruz, July 1999 (invited survey).
7. The Johns Hopkins University, Department of Mathematical Sciences,

Optimization methods in computing genetic linkage maps

1. IBM Watson Research Center, July 1999.
2. NIH Symposium: From Genes to Proteins to Biological Function, October 2000.
3. Computer Science Colloquium, La Sapienza, Rome, May 2004.

Approximation algorithms for scheduling problems

1. UC Berkeley, CS Theory Seminar, October, 1999 (marking the 5th anniversary of Gene Lawler's death).
2. IBM Watson/Hawthorne Research Center, July 1999 (extended tutorial).

Grant Support

“Computational Sustainability: computational methods for a sustainable environment, economy and society”, co-PI, NSF, 8/08–8/13.

“Approximation algorithms for discrete stochastic and deterministic optimization problems”, PI, NSF, 10/06–9/09.

“Collaborative Research: Algorithms for Near-Optimal Multistage Decision-Making under Uncertainty: Online Learning from Historical Samples”, co-PI, NSF, 9/07–8/10.

“Supply Chain Asset Configuration via Approximation Algorithms”, co-PI, NSF, 5/05–4/08.

“Approximation algorithms for scheduling, packing, and related logistics problems”, PI, NSF, 9/04–8/07.

“Supply chain asset configurations via approximation algorithms”, Co-PI, NSF, 5/05–4/07.

“The design, analysis, and application of approximation algorithms”, PI, NSF, 7/00–6/04.

“Computational and mathematical investigations in optimization”, Co-Investigator, NSF, 7/98–6/01.

“Approximation algorithms via linear programming”, PI, NSF, 7/97–6/00.

“Computational and mathematical investigations in optimization”, NSF, ONR, Co-Investigator, 9/95–8/98.

“Near-optimal solutions for combinatorial problems: algorithms and complexity”, PI, NSF, 4/94–3/97.

“Computational and mathematical investigations in optimization”, NSF, ONR, AFOSR, Co-Investigator, 8/90–1/94.

“Parallel algorithms and optimization”, United Parcel Service, PI, 9/89–8/92.

“The design and analysis of efficient algorithms”, NSF Presidential Young Investigator Award, with matching support from Procter & Gamble, DuPont, Sun Microsystems, IBM, and UPS, Principal Investigator, 9/87–8/94.