January 2026

Craig A. Tovey

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Craig A. Tovey

Professor

H. Milton School of Industrial and Systems Engineering

I. Earned Degrees

Degree	School	Field	Year	Thesis Advisor
A.B. *Magna Cum Laude*	Harvard College	Applied Mathematics	1977	Christos Papadimitriou

M.S.	Stanford University	Computer Science	1981	N.A.
Ph.D.	Stanford University	Operations Research	1981	George Dantzig

II. Employment History

Position	Organization	College/School	Dates
Professor	Georgia Institute of Technology	Industrial & Systems Engineering	2001-present
Principal Software Developer	ILOG, Inc.	N.A.	2000-2001
Professor, Joint Appointment	Georgia Institute of Technology	College of Computing and Industrial & Systems Engineering	1993-2001
Associate Professor, Joint Appointment	Georgia Institute of Technology	College of Computing and Industrial & Systems Engineering	1990-1993
Associate Professor, Joint Appointment	Georgia Institute of Technology	Information & Computer Science and Industrial & Systems Engineering	1987-1990
Associate Professor	Georgia Institute of Technology	Industrial & Systems Engineering	1986-1990
Assistant Professor	Georgia Institute of Technology	Industrial & Systems Engineering	1981-1986

III. Honors and Awards

A. International or National Awards

1. Second U.S. Math Olympiad
2. National Merit Scholar
3. Graduate from Harvard, *Magna Cum Laude*, 1977
4. Phi Eta Sigma (honorary)
5. Presidential Young Investigator, 1985
6. Omicron Delta Kappa
7. Visiting Scholar, AT&T Bell Laboratories, 1988
8. Jacob Wolfowitz Prize, 1989
9. National Research Council Senior Research Associateship, 1990-1991
10. ACM SigEcon Test of Time Award, 2016
11. Golden Goose Award, 2016
12. Sigma Xi full member nominee, 2018

B. Institute or School Awards

1. Georgia Tech Institute Fellow, 1994.
2. Class of 1934 Outstanding Interdisciplinary Activities Award, 2011.
3. David M. McKenney Family Professor, 2013-2015.
4. H. Milton Stewart Professor, 2016-2017

IV. Research, Scholarship, and Creative Activities

A. Published Books, Book Chapters, and Edited Volumes

A1. Books

1. Tovey, Craig A., Linear Optimization and Duality: A Modern Exposition, CRC Press, Boca Raton, Florida and Abingdon, Oxfordshire, ISBN 978-1-4398-8746-2 (hbk) and 978-1-315-11721-8 (ebk), 2021*.
2. Tovey, Craig A., Solutions Manual: Linear Optimization and Duality , CRC Press, on demand*.

A2. Refereed Book Chapters

1. Tovey, C. A., "Some Foundations for Empirical Study in the Spatial Model," in W. Barnett, M. Hinich and N. Schofield, editors, Political Economy: Institutions Information and Competition, Cambridge University Press, 1993.

2. Rardin, R., C. Tovey, and M. Pilcher, "Analysis of a Random Cut Test Instance Generator for the TSP," in P. Pardalos, editor, Complexity in Numerical Optimization, World Scientific Press, 1993. *
3. Tovey, C. A., "Dynamical Convergence to Epsilon Cores," Social Choice and Welfare, Cambridge University Press, H. Moulin and N. Schofield, Eds. 1995.*
4. **R. Borie**, R. Parker, C. Tovey, "Recursively Constructed Graphs," Chapter 2.4, pages 99-118 in CRC Handbook on Graph Theory, Jonathan Gross and Jay Yellen (eds.), 2004.*
5. **R. Borie**, R. Parker, C. Tovey, "Algorithms on Recursively Constructed Graphs," Chapter 10.4, pages 1046-1066 in CRC Handbook on Graph Theory, Jonathan Gross and Jay Yellen (eds.), 2004.*
6. S. Nakrani and C. Tovey, "Autonomic Server Allocation," 8th International Conference on Parallel Problem Solving from Nature,Workshop on Nature Inspired Approaches to Networks and Telecommunication,18—22 September, Birmingham, U.K., Springer-Verlacht, Lecture Notes in Computer Science, No. 3242, 2004.*

7. S. Koenig and C. Tovey, Robotics, Chapter 19 in: S. Edelkamp and S. Schroedl, Heuristic Search: Theory and Applications, Morgan Kaufmann, pages 773-792, 2011. *

8. **R. Borie**, S. Koenig and C. Tovey, Section 9.5: Pursuit-Evasion Problems, Handbook of Graph Theory (2nd edition), J. Gross, J. Yellen, P. Zhang (editors), Chapman and Hall/CRC, pages 1145-1165, 2013. *
9. **Eric Tollefson**, David Goldsman, Anton Kleywegt, and Craig Tovey, "A Comparative Study of Multinomial Selection Problem Procedures", Uzsoy, R. and Sarin, S. and Pulat, S., (eds.) Essays in Planning, Scheduling and Optimization: A Festschrift in Honor of Salah E. Elmaghraby. Springer, New York, 2013.
10. Jeannette Yen, Michael Helms, Craig Tovey, Marc Weissburg, and Ashok Goel, "Adaptive Evolution of Teaching Practices in Biologically Inspired Design", Biologically Inspired Design: Computational Methods and Tools, Ashok Goel, Daniel McAdams & Robert Stone, editors, pp. 153-199, London, 2014. *

11. Craig A. Tovey, ``Nature-Inspired Heuristics: Overview and Critique,'' Chapter 8 in *TutORials in Operations Research*, Esma Gel, Lewis Ntaimo and Douglas Shier (editors), Institute for Operations Research and the Management Sciences, 2018, pp. 158—192. *

A3. Edited Volumes

1. Modeling in Industrial Engineering, Pearson Custom Publishing, 1999, 2000. (Textbook for IE 2030). Also contributed ~10% of the material to 2nd edition*

A4. Other Parts of Books

1. Tovey, C. A., "Local Improvement on Discrete Structures" in Aarts and Lenstra, editors, Local Search in Combinatorial Optimization, Wiley, 1997. *

B. Refereed Publications and Submitted Articles

B1. Published and Accepted Journal Articles

1. West, D. and C. Tovey, "Semiantichains and Unichain Coverings in Partial Orders and Their Products," SIAM J. Alg. Disc. Meth., Vol. 2, No. 3, pp. 295-305, September 1981.

2. Tovey, C. A., "On the Number of Iterations of Local Improvement Algorithms," Operations Research Letters, Vol. 2, No. 5, pp. 231-238, 1983. *

3. Tovey, C. A., "A Simplified NP-Complete Satisfiability Problem," Discrete Applied Mathematics, Vol. 8, No. 1, pp. 85-90, 1984. *

4. Tovey, C. A., "Hill Climbing with Multiple Local Optima," SIAM J. Alg. Disc. Meth., Vol. 6, No. 3, pp. 384-393, 1985. *

5. Tovey, C. A. and D. West, "Networks and Chain Coverings in Partial Orders and Their Products," ORDER, Vol. 2, pp. 49-60, 1985. *

6. Tovey, C. A., "Multiple Occurrences of Binomial Coefficients," The Fibonacci Quarterly, Vol. 23, pp. 356-358, October 1985. *
7. Tovey, C. A., "Low Order Polynomial Bounds on the Expected Performance of Local Improvement Algorithms," Mathematical Programming, Vol. 35, No. 2, pp. 193-224, 1986. *

8. Tardos, E., C. Tovey, and M. Trick, "Layered Augmenting Path Algorithms," Mathematics of Operations Research, Vol. 11, No. 2, pp. 362-370, 1986. *

9. Fathi, Y. and C. Tovey, "Affirmative Action Algorithms," Mathematical Programming, Vol. 34, No. 3, pp. 292-301, 1986. *

10. Tovey, C. A., "Rescheduling to Minimize Makespan on a Changing Number of Processors," Naval Research Logistics Quarterly, Vol. 33, pp. 717-724, 1986. *

11. Rodl, V. and C. Tovey, "Multiple Local Optima in Neighborhood Search," Journal of Algorithms, Vol. 8, pp. 250-259, 1987. *

12. Tovey, C. A., G. Weiss, and **J. Wilson**, "Minimum Spillage Sequencing," Management Science, Vol. 34, pp. 306-330, 1988. *

13. Llewellyn, D. C., C. Tovey, and M. Trick, "Finding Saddlepoints of Two-Person Zero-Sum Games," The American Mathematical Monthly, Vol. 95, pp. 912-918, 1988. *

14. Tovey, C. A., "Simulated Simulated Annealing," Journal of Mathematics and Management Sciences, Vol. 8, pp. 389-407, 1988. *

15. Bartholdi, J. J., C. Tovey, and M. Trick, "The Computational Difficulty of Manipulating an Election," Social Choice and Welfare, Vol. 6, pp. 227-241, 1989. *

16. Bartholdi, J. J., C. Tovey, and M. Trick, "Voting Schemes for Which It Can be Difficult to Tell Who Won the Election," Social Choice and Welfare, Vol. 6, pp. 157-165, 1989. *

17. Llewellyn, D. C., C. Tovey, and M. Trick, "Local Optimization on Graphs," Discrete Applied Mathematics, Vol. 3, pp. 157-178, 1989. *

18. Tovey, C. A., "A Simplified Anomaly and Reduction for Multiprocessor Scheduling," SIAM Journal of Discrete Mathematics, Vol. 3, pp. 582-584, 1990. *
19. Tovey, C. A., "Asymmetric Probabilistic Prospects of Stackelberg Players," Journal of Optimization Theory and Applications., Vol. 68, pp. 139-159, 1991. *
20. **Borie, R**. B., R.G. Parker, and C.A. Tovey, "Algorithms for Recognition of Regular Properties and Decomposition of Recursive Graph Families," Annals of Operations Research, Vol. 33, pp. 127-149, 1991. (Also in Proc. NATO Symposium on Networks). *

21. Stone, R. and C. Tovey, "The Simplex and Projective Scaling Algorithms as Iteratively Reweighted Least Squares Methods," SIAM Review, Vol. 33, pp. 220-237, 1991.*

22. Lofgren, C., L. McGinnis, and C. Tovey, "Routing Printed Circuit Cards Through an Assembly Cell," Operations Research, Vol. 39, pp. 992-1004, 1991. *
23. Bartholdi, J., L. Narasimhan, and C. Tovey, "Recognizing Majority-rule Equilibrium in Spatial Voting Models," Social Choice and Welfare, Vol. 8, pp. 183-197, 1991. *

24. **Borie, R**. B., R.G. Parker, and C.A. Tovey, "Automatic Generation of Linear Algorithms on Recursive Graphs From a Predicate Calculus," Algorithmica, Vol. 7, pp. 555-581, 1992. *

25. Carter, M. and C. Tovey, "When Is the Classroom Assignment Problem Hard?" Operations Research, Vol. 40, pp. 528-539, 1992. *

26. Bartholdi, J., C.A. Tovey, and M. Trick, "How Hard Is It To Control an Election?" Mathematical and Computer Modelling, 1992. *

27. Stone, R. and C. Tovey, "Limiting Median Lines Do Not Suffice to Determine the Yolk," Social Choice and Welfare, Vol. 9, pp. 33-35, 1992. *

28. Castanets, Carlitos (pseud.), "Towards a Drug-Free Civilization," Journal of Irreproducible Results, 1992. *

29. **Borie, R.** B., R.G. Parker, and C.A. Tovey, "Deterministic Decomposition of Recursive Graph Classes," SIAM Journal of Discrete Mathematics, Vol. 4, pp. 481-501, 1991. *

30. Tovey, C. A., "A Polynomial Time Algorithm for Computing the Yolk in Fixed Dimension," Mathematical Programming, Vol. 57, pp. 259-277, 1992. *

31. Tovey, C. A., "The Probability of an Undominated Central Voter in 2-dimensional Spatial Majority Voting," Social Choice and Welfare, Vol. 9, pp. 43-48, 1992. *

32. Schofield, N. and C. Tovey, "Probability and Convergence for Supra-Majority Rule with Euclidean Preferences," Mathematical and Computer Modelling, Vol. 16, pp. 41-58, 1992. *

33. McGinnis, L. F., J. C. Ammons, M. Carlyle, L. Cranmer, G. W. DePuy, K. P. Ellis, C. A. Tovey, and **H. Xu**, "Automated Process Planning for Printed Circuit Card Assembly," IIE Transactions on Scheduling and Logistics, Vol. 24, No. 4, pp. 18-30, September 1992. *

34. Seeley, T. and C. Tovey, "Why Search Time is a Reliable Indicator of Nectar Influx in Honey Bee Colonies," Animal Behavior, Vol. 47, pp. 311-316, 1993. *

35. Bartholdi, J., T. Seeley, C. Tovey, and J. Vande Vate, "The Pattern and Effectiveness of Forager Allocation Among Food Sources in Honey Bee Colonies," Journal of Theoretical Biology, Vol. 160, pp. 23-40, 1993. *

36. Llewellyn, D. C. and C.A. Tovey, "Dividing and Conquering the Square," Discrete Applied Mathematics, Vol. 42, 1993. *

37. Ammons, J. C., M. Carlyle, G. W. DePuy, K. P. Ellis, L. G. McGinnis, C. A. Tovey, and **H. Xu**, "Computer Aided Process Planning in Printed Circuit Card Assembly," IEEE-CHMT Transactions, Vol. 16, No. 4, June 1993. *

38. Steinberg, R. and C. Tovey, "Planar Ramsey Numbers," Journal of Combinatorial Theory, Series B, Vol. 59, pp. 288-296, 1993. *

39. **Eben-Chaime, M**., J. C. Ammons, and C. A. Tovey, "Circuit Partitioning via Set Partitioning and Column Generation," Operations Research, 1996. *

40. Baxter, L., F. Harche, and C. Tovey, "A Simple Forecasting Heuristic to Balance Processes with Unequal Capacities," Operations and Quantitative Management, 1996.

41. Ammons, J. C., M. Carlyle, L. Crammer, G. W. DePuy, K. P. Ellis, L. G. McGinnis, C. A. Tovey, and **H. Xu**, "Component Allocation to Balance Workload in Printed Circuit Card Assembly Systems," IIE Transactions, Vol. 29, pp. 265-275, 1997. *

42. Tovey, C. A., "Probabilities of Transitivity with Super Majority Voting," Journal of Economic Theory, 1997. *

43. N. Calkin, P. Erdös and C. Tovey, "Improved Bounds on Ramsey Numbers from Cyclic Graphs of Prime Order," SIAM Discrete Math., Vol. 10, #3, 1997. *

44. Klabjan, O., G. L. Nemhauser, and C. Tovey, "The Complexity of Cover Inequality Separation," Operations Research Letters, Vol. 23, pp. 35-40, 1998. *

45. Pendurkar, R., C. Tovey, and A. Chatterjee, "Single-Probe Traversal Optimization for Testing of MCM Substrate Interconnections," IEEE Transactions on CADICS, 1999 Vol. 18, pp. 1178-1191. *

46. Chandra, B., H. Karloff, and C. Tovey, "New Results on the old K-opt Algorithm for the TSP," SIAM Journal on Computing, Vol. 28, pp. 1998-2029, 1999. *
47. Glockner, G., G. Nemhauser, and C. Tovey, "Dynamic Network Flow with Uncertain Arc Capacities: Decomposition Algorithm and Computational Results," Computational Optimization and Applications, Vol. 18, pp. 233-250, 2001. *

48. Tovey, C.A., "Tutorial on Computational Complexity," Interfaces, Vol. 32, No. 3, pp. 30-61, 2002. *

49. Chase, I., C. Tovey, D. Spangler, and M. Manfredonia, "Individual Differences versus Social Dynamics in the Formation of Animal Dominance Hierarchies," Proceedings National Academy of Science., Volume 99, No. 8, pp. 5744-5749, 2002. *

50. Kwok, K., B. Driessen, C. Phillips, and C. Tovey, "Analyzing the Multiple Target-Multiple-Agent Scenario using Optimal Assignment Algorithms," Journal of Intelligent and Robotic Systems, Volume 35, pp. 111-122, September 2002. *
51. Koenig, S., Y. Smirnov, and C. Tovey, "Performance Bounds for Planning in Unknown Terrain," Artificial Intelligence, Vol. 147, pp. 253-279, 2003. *

52. Hunsaker, B., A. Kleywegt, M. Savelsbergh, and C. Tovey, "Optimal Online Algorithms for Minimax Resource Scheduling," SIAM Discrete Mathematics,Vol 16, pp. 555-590, 2003. *

53. Chase, I., C. Tovey, P. Murch, "Two's Company, Three's a Crowd: Differences in Dominance Relationships in Isolated Versus Socially Embedded Pairs of Fish," Behaviour, Vol. 140, pp. 1193-1217, 2003. *

54. **Regnier, E**., G. Sharp, and C. Tovey, "Replacement Under Ongoing Technological Progress," IIE Transactions, Volume 36, No. 6, pages 497-508, June 2004. *

55. Tovey, C.A. "Non-Approximability of Precedence-Constrained Scheduling to Minimize Setups," Discrete Applied Math, Vol. 134, pp. 351-360, 2004. *

56. S. Nakrani and C.Tovey, On Honey Bees and Dynamic Server Allocation in Internet Hosting Centers, Adaptive Behavior, Vol. 12, No. 3-4, pp. 223-240, December 2004. *
57. **B. Hunsaker**, C.Tovey, Simple Lifted Cover Inequalities and Hard Knapsack Problems, Discrete Optimization, Vol. 2(3): 219-228, 2005. *

58. **A. Mudgal**, S. Greenberg, C. Tovey, S. Koenig, "Bounds on the performance of the Mars Rover prototype," SIAM Journal on Discrete Mathematics 2005, Volume 19 Issue 2 pages 431–447. *

59. Ery Arias-Castro, David Donoho, Xiaoming Huo, and Craig Tovey, "Connect-The-Dots: How many random points can a smooth curve pass through?", Advances in Applied Probability, 2005, volume 37, pp. 571—603. *

60. **E. Regnier**, C. Tovey, "Time Horizons of Environmental Versus Non-Environmental Costs: Evidence from US Tort Lawsuits," Business Strategy and the Environment, **16** (4), 2006, pages 249-265. *
61. Sunil Nakrani and Craig Tovey, "From honeybees to Internet servers: biomimicry for distributed management of Internet hosting centers" ,2007, Bioinspiration and Biomimetics **2** S182-197, doi:10.1088/1748-3182/2/4/S07. *
62. Bhadury, J. and C. Tovey, "An Improved Algorithm and Analysis of the Diaz and O'Rourke Algorithm for finding the Simpson Point of a Convex Polygon," International Journal of Computer Mathematics, July, 2008, available online at UR - http://www.informaworld.com/10.1080/00207160801965180. *

63. **Braden Hunsaker**, Ellis Johnson, Craig Tovey, "Polarity and the Complexity of the Shooting Experiment," Discrete Optimization, Special Issue in Memory of George Dantzig, 2008, Vol. 5, #2, pages 541-549. *
64. **R. Borie**, R. G. Parker, C. Tovey, "Solving Problems on Recursively Constructed Graphs", ACM Computing Surveys, Vol 41, December 2008. *

65. S. Koenig, Joe Mitchell**, Apurva Mudgal**, Craig Tovey, "A near-tight approximation algorithm for robot localization", SIAM Journal on Computing, Vol. 39, pp. 461-490, 2009. *

66. B.Shepardson, **D. Shepardson**, F. Shepardson, S. Chui, M. Graves, C. Tovey, "Re-Examining the Evidence for Late Colonization on Easter Island", Rapa Nui Journal, Volume 22, #2, October 2008, *erratum* April 2009. *

67. **D. Shepardson**, C. Tovey, "Smallest tournaments not realizable by ⅔- majority voting", Social Choice and Welfare, Vol. 33, pp. 495-503. 2009 . *

68. C. Tovey, A Critique of Distributional Analysis, Mathematical Social Sciences, Volume 59, Issue 1, January 2010, pp. 88-101.

69. C. Tovey, "The Almost Surely Shrinking Yolk", Mathematical Social Sciences Volume 59, Issue 1, January 2010, pp. 74-87, previously released as Center in Political Economy Technical Report 150, Washington University, St. Louis, Mo. *

70. Richard McKelvey and Craig Tovey, "Approximating The Yolk By The LP Yolk", Mathematical Social Sciences, Volume 59, Issue 1, pages 102-109, 2010. *

71. C. Tovey, "The Instability of Instability of Centered Distributions", Mathematical Social

Sciences, Volume 59, Issue 1, pages 53-73, 2010 [16], previously released as NPS Technical Report 1991.

72. C. Tovey, The Probability of Instability in The 2-D Spatial Model for an Even Number of Voters, Social Choice and Welfare, 35(4), pp. 705-709, 2010. *

73. C. Tovey, A Finite Exact Algorithm for Epsilon-Core Membership, Mathematical Social Sciences, Vol. 60 Issue 3, pp. 178-180, 2010. *

74. C. Tovey, The Finagle Point and the Epsilon-Core: A Comment on Bräuninger's Proof, J. Theoretical Political Science, Vol. 23, pp. 135-139, 2011. *

75. S. Koenig and C. Tovey, Localization: Approximation and Performance Bounds to Minimize Travel Distance, IEEE Transactions on Robotics, 26 (2), pp. 320-330, 2010. *

76. Marc Weissburg, Craig Tovey, Jeannette Yen, "Enhancing Innovation Through Biologically Inspired Design," Advances in Natural Science, Vol.3, No.2, pp 1-16, 2010.*

77. **N.J.Mlot**, C.A.Tovey, D.Hu. "Fire Ants Self-Assemble into Waterproof Rafts to Survive Floods." Proceedings of the National Acad. Sciences, online April 2011 doi:10.1073.*

78. **Borie, Richard**, Tovey, Craig, and Koenig, Sven, "Algorithms and complexity results for graph-based pursuit evasion", Autonomous Robots, Vol 41, No. 4, pp. 317-332, 2011.*

79. **Nathan Mlot**, Craig Tovey, and David Hu. "Dynamics and Shape of Large Ant Rafts", Communicative and Integrative Biology, Vol 5, pp. 590-597, 2012.*
80. **Eric Tollefson**, David Goldsman, Anton Kleywegt, and Craig Tovey, "Optimal Selection of the Most Probable Multinomial Alternative", Sequential Analysis, vol 33 #4, pp. 491-508, 2014. *
81. Craig Tovey, "The Slippage Configuration is Always the Least Favorable Configuration for Two Alternatives," Sequential Analysis, Vol 33 #4, pp. 509-518,2014. *
82. Stefano Benati; Romeo Rizzi; Craig Tovey, "The Complexity of Power Indexes with Graph Restricted Coalitions," Mathematical Social Sciences, 2015. *
83. Inbal Gvili, Marc J. Weissburg, Jeannette Yen, Michael E. Helms, and Craig A. Tovey. "Development of Scoring Rubric for Evaluating Integrated Understanding in an Undergraduate Biologically-Inspired Design Course". International Journal of Engineering Education, Vol. 32, pp. 123-135, 2016. *
84. Mathieu Martin, Zephirin Nganmeni, Craig Tovey, "On the Uniqueness of the Yolk," Social Choice and Welfare, Vol. 47, pp. 511-518, 2016. *
85. Sulisay Phonekeo, Nathan Mlot, Daria Monaenkova, David Hu, Craig Tovey. "Fire ants perpetually rebuild sinking towers", Royal Society Open Science **4**, DOI: 10.1098/rsos.170475, 2017. *

86. **Timur Tankayev** and Craig Tovey, "Optimal Solution to the Multinomial Selection Problem for Two Alternatives," Sequential Analysis **36**, pp. 415-432, 2017. *
87. Lee, T. J., Kumar, A., Balwani, A. H., Brittain, D., Kinn, S., Tovey, C. A., Dyer, E. L., da Costa, N. M., Reid, R. C., Forest, C. R., & Bumbarger, D. J. ``Large-scale neuroanatomy using LASSO: Loop-based Automated Serial Sectioning Operation''. PLoS One, 2018. *
88. M. Martin, Z. Nganmeni, C. Tovey, "Dominance in Spatial Voting with Imprecise Ideals'', Social Choice and Welfare, 2021. *
89. **James Bailey**, Alex Nash, Sven Koenig, Craig Tovey, *Path Length Analysis for Grid-Based Path Planning,* Artificial Intelligence Journal, Vol. 30, 2021. *
90. Zephirin Nganmeni, Craig Tovey, "The Finagle Point is Close to the Yolk", Operations Research Letters, 2023. *
91. **Braden Hunsaker** and Craig Tovey, ``Easy and Hard Separation of Sparse and Dense Odd-Set Constraints in Matching", Discrete Optimization Vol. 54 (2024): 100849.*
92. Caitlin Beecham and Craig Tovey, "The Planar Ramsey Number PR(3,3,3)=13", in review at Discrete Mathematics, submitted August 2025.

B2. Conference Presentations with Proceedings (Refereed)

1. Ammons, J.C., L.F. McGinnis, and C.A. Tovey, ``Process Planning for Surface Mount'', Proceedings SMI, San Jose, 1991. *
2. Ammons, J. C., M. Carlyle, G. DePuy, K. Ellis, L. McGinnis, C. Tovey, and **H. Xu**, "Productivity Improvements in SMD Placement Through CAPP," Proceedings of the International Society of Hybrid Microelectronics Conference, San Francisco, California, October 19-21, 1992. *
3. Dell, R., W. Kemple, and C. Tovey, "Heuristically Solving the Stratigraphic Correlation Problem Based on Fossil Dating," 1st IE Research Conference, Chicago, Illinois 1992. *
4. Chandra, B., H. Karloff, and C. Tovey, "New Results on the old K-opt Algorithm for the TSP," 5th Annual ACM-SIAM Symposium on Discrete Algorithms, Arlington, Virginia, January 1994. *
5. Joye Bhadury, Craig Tovey. "Locating To Minimize Maximum Resentment". Proceedings of Seventh International Symposium on Locational Decisions, ISOLDE VI, pp 23-24, University of Alberta, Edmonton, June 1996. *
6. Ammons, J. C., K. Ellis, G. DePuy, L. McGinnis, and C. Tovey, "Process Optimization for Electronic Assembly Systems-Industrial Case Studies," Proceedings of the 5th Industrial Engineering Research Conference, Minneapolis, Minnesota, May 18-20, 1996. *
7. Pendurkar, R., A. Chatterjee, and C. Tovey, "Optimal Single Probe Traversal Algorithm for Testing of MCM Substrate," International Conference on Computer Design (ICCD '96), IEEE, Austin, TX October 7-9, 1996, pp. 396-401. *
8. Kwok, K., B. Driessen, C. Phillips, and C. Tovey, "Analyzing the Multiple-target-multiple-agent Scenario Using the Network Simplex Method," SPIE Proceedings Volume 3209, *Sensor Fusion*

and Decentralized Control in Autonomous Robotic Systems, 1997, pages 111-122. *

9. Kleywegt, A., V. Nori, M. Savelsbergh, and C. Tovey, "Online Resource Minimization," 10th Annual ACM-SIAM Symposium on Discrete Algorithms, Baltimore, Maryland, January 1999. *
10. Tovey, C. and S. Koenig, "Gridworlds as Testbeds for Planning with Incomplete Information," in Proceedings of the 17th National Conference on Artificial Intelligence (AAAI), pages 819-824, 2000. *

11. Koenig, S., C. Tovey and W. Halliburton, "Greedy Mapping of Terrain," in Proceedings of the International Conference on Robotics and Automation, pp. 3594-3599, 2001. *

12. Tovey and S. Koenig. "Greedy Localization," Proceedings of the International Conference on Intelligent Robots and Systems (IROS), pages 427-432. 2001. *

13. Tovey, C., S. Greenberg and S. Koenig, "Improved Analysis of D*," Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) 2003, pages 3371-3378. *

14. S. Nakrani and C. Tovey, "On Honey Bees and Dynamic Allocation in an Internet Server Colony," Proceedings of 2nd International Workshop on The Mathematics and Algorithms of Social Insects, Atlanta, Georgia, USA. December 15-17, 2003. *

15. Tovey and S. Koenig; Improved Analysis of Greedy Mapping; Proceedings of the *IEEE International Conference on Intelligent Robots and Systems* (IROS), 2003, pages 3251-3257. *
16. **Mudgal, A**., S. Koenig, and C. Tovey, "Analysis of greedy robot-navigation methods," Proceedings of the *International Symposium on Artificial Intelligence and Mathematics 2004*. *

17. Tovey, M. Lagoudakis, S. Jain and S. Koenig; The Generation of Bidding Rules for Auction-Based Robot Coordination; *Lecture Notes in Artificial Intelligence;* Proceedings of the Third International Multi-Robot Systems Workshop; A. Schultz, L. Parker and F. Schneider (Eds.); Springer; pages 3-14, 2005. *

18. M. Lagoudakis, V. Markakis, D. Kempe, P. Keskinocak, S. Koenig, A. Kleywegt, C. Tovey, A. Meyerson and S. Jain, Auction-Based Multi-Robot Routing, Proceedings of the International Conference on Robotics: Science and Systems (RoSS), 2005, pages 343-350, Cambridge, USA (plenary presentation). *
19. Sven Koenig, **Apurva Mudgal**, and Craig Tovey, "A Near-Tight Approximation Lower Bound and Algorithm for the Kidnapped Robot Problem", Proceedings of the Seventeenth ACM-SIAM Conference on Discrete Algorithms (SODA06), Proceedings Applied Mathematics 122, 2006.*

20. Sven Koenig, Craig Tovey, Michail Lagoudakis, , Vangellis Markakis, , David Kempe, Pinar Keskinocak, Anton Kleywegt, Adam Meyerson, Sonal Jain. The Power of Sequential Single-Item Auctions for Agent Coordination. Proceedings of the Twenty-First National Conference on Artificial Intelligence, July 2006, AAAI Press, Menlo Park, pages 1625-1629 [Nectar Paper]. *

21. S. Koenig, Y. I.,Sungur and C. Tovey, "Improving Sequential Single-Item Auctions" Proceedings of IJCAI 2006, 2006. *

22. Zheng, Koenig, and Tovey, "Improving Sequential Single-Item Auctions", Proceedings of IEEE International Conference on Intelligent Robots and Systems (IROS06), pages 2238-2244, Beijing, October 2006. Appeared also in: Proceedings of the AAI-06 Workshop on Auction-Mechanisms for Robot Coordination, 2006. *

23. Goldsman, J. Sokol, C. Tovey, T-X Wu, "General Adoption Model and Cultivation Effect", Proceedings of 36th International Conference on Computers and Industrial Engineering, (ICCIE) 2006; Taipei, Taiwan. *

24. Sven Koenig **,** Craig **A.** Tovey**,** Xiaoming Zheng , Ilgaz Sungur : Sequential Bundle-Bid Single-Sale Auction Algorithms for Decentralized Control. Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), 2007, pages 1359-1365 (Plenary Presentation). *
25. J. Melvin, P. Keskinocak, S. Koenig, C. Tovey and B. Yuksel Ozkaya, Multi-Robot Routing with Rewards and Disjoint Time Windows, Proceedings of the IEEE International Conference on Intelligent Robots and Systems (IROS), pages 2332-2337, 2008. *
26. S. Koenig, X. Zheng, C. Tovey**, R. Borie**, P. Kilby, V. Markakis, P. Keskinocak, "Agent Coordination with Regret Clearing", Proceedings of the AAAI Conference on Artificial Intelligence (AAAI), pages 101-107, 2008. *

27. **R. Borie**, S. Koenig, C. Tovey, "Algorithms and Complexity Results for Pursuit-Evasion Problems", pp. 59-66, Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI) 2009. *

28. K. Daniel**, R. Borie**, S. Koenig and C. Tovey, ESP: Pursuit Evasion on Series-Parallel Graphs [Poster Abstract], Proceedings of the International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS), pages 1519-1520, 2010. *

29. Nash, S. Koenig and C. Tovey, Lazy Theta*: Any-Angle Path Planning and Path Length Analysis in 3D, Proceedings of the AAAI Conference on Artificial Intelligence (AAAI), pages 147-154, 2010. An abstract of this paper appeared also in: Proceedings of the International Symposium on Combinatorial Search (SoCS), 2010. *

30. S. Koenig, P. Keskinocak and C. Tovey. "Progress on Agent Coordination with Cooperative Auctions" [Senior Member Paper]. In *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI),* 2010. *

31. Ashok Goel, Bert Bras, Michael Helms, Spencer Rugaber, Craig Tovey, Swaroop Vattam, Marc Weissburg, Bryan Wiltgen, & Jeannette Yen. "Computer-Aided Biologically Inspired Design: A Bridge Between Artificial Intelligence and Sustainable Development." Proc. AAAI Spring Symposia on AI and Sustainable Design, Stanford University, Palo Alto, March 2011. *

32. Ashok Goel, Bert Bras, Michael Helms, Spencer Rugaber, Craig Tovey, Swaroop Vattam, Marc Weissburg, Bryan Wiltgen, & Jeannette Yen "Design Patterns and Cross-Domain Analogies in Biologically Inspired Sustainable Design". In Proc. AAAI Spring Symposium on AI and Sustainable Design, Stanford University, Palo Alto, March 2011, pp. 45-51. Available at: http://www.aaai.org/ocs/index.php/SSS/SSS11/paper/view/2480/2930. *

33. Sam Saarinen, Craig Tovey, and Judy Goldsmith. "A Model for Intransitive Preferences." In Workshops at the Twenty-Eighth AAAI Conference on Artificial Intelligence. 2014.

34. Sven Koenig, Zachary Suffern, Craig Tovey, "Towards Completely Decentralized StarCraft Play with Price of Anarchy Performance Guarantees," Proceedings of the 14th International Conference on Autonomous Agents and Multiagent Systems (AAMAS2015), 1757-1758, 2015. *

35. **James Bailey**, Craig Tovey, Tansel Uras, Sven Koenig, Alex Nash, Path Planning on Grids: The Effect of Vertex Placement on Path Length," Proceedings of the Artificial Intelligence and Interactive Digital Entertainment Conference (AIIDE), 2015. *
36. H. Ma, S. Koenig, N. Ayanian, L. Cohen, W. Hoenig, S. Kumar, T. Uras, H. Xu, C. Tovey and G. Sharon, Overview: Generalizations of Multi-Agent Path Finding to Real-World Scenarios, IJCAI-16 Workshop on Multi-Agent Path Finding.

37. Hang Ma, Craig Tovey, Gilal Sharon, Satish Kumar, Sven Koenig, "Multi-Agent Path Finding with Payload Transfers and the Package-Exchange Robot-Routing Problem," Proceedings of the AAAI Conference on Artificial Intelligence, 3166-3173, 2016. *
38. Hang Ma, S. Koenig, N. Ayanian, L. Cohen, W. Hönig, T. Kumar, T. Uras, H. Xu, C. Tovey, G. Sharon, "Overview: Generalizations of multi-agent path finding to real-world scenarios," IJCAI-16 Workshop on Multi-Agent Path Finding, ArXiv 1702.05515 February 2017. *
39. James P. Bailey, and Craig A. Tovey. The Price of Deception in Facility Location. In the Proceedings of the 7th International Workshop on Computational Social Choice (COMSOC). 2018.
40. **James Bailey** and Craig Tovey, "Impact of Tie-Breaking on the Manipulability of Elections", Proceedings of the 23rd International Conference on Autonomous Agents and Multiagent Systems (AAMAS2024). May 2024, pp. 105-113.*
41. **James Bailey** and Craig Tovey, "On the Gale-Shapley Algorithm for Stable Matchings with a Partial Honesty Nash Refinement, Proceedings of the 24th International Conference on Autonomous Agents and Multiagent Systems (AAMAS2025), 2025, pp. 197-204.(24.5%.)* Selected as a premier paper for JAAMAS.
42. **James Bailey** and Craig Tovey, "The Price of Anarchy in Spatial Social Choice, Proceedings of the 24th International Conference on Autonomous Agents and Multiagent Systems (AAMAS2025), 2025, pp. 205-213. (24.5%).*

B3. Other Refereed Material

1. .Tovey, C. A., "Fire in Summer," a 40-bar strathspey for two couples, in The First San Francisco Collection, RSCDS, San Francisco, 1980.
2. Lofgren, C. and C. Tovey, "Performance Bounds on Machine Configuration in Flexible Manufacturing Systems," MHRC Technical Report, Georgia Institute of Technology, Atlanta, Georgia, October 1985. *
3. R. Borie, C. Tovey, K. Daniel and S. Koenig, ESP: Pursuit Evasion on Series-Parallel Graphs, Symposium on Combinatorial Search (SoCS), 2009

C. Other Publications and Creative Products

C1. Patents

C3.a. Provisional Patents, Applications, and Invention Disclosures

1. Provisional patent, 2006, Nakrani and Tovey, biomimetic web-hosting optimization.

C2. Invited Book Reviews

1. "Biomimicry for Optimization, Control, and Automation [Book Review]", *IEEE Control Systems Magazine,* August 2006, Vol. 26, Issue 4, pages 86-90.
2. "In defense of basic research'', review of The Usefulness of Useless Knowledge, *Science* **355-6327**, February 2017, p. 804.

C3. Software

- Principal Software Developer for releases 7.5, 8.0 (2002) of CPLEX. Note: CPLEX won the first INFORMS IMPACT award in 2004.

- Web-Available Software: Separation of Rank 1 Chvatal-Gomory Inequalities, Manual at *http://www.engr.pitt.edu/hunsaker/cg-rank/cg_rank.pdf*, January 2005 (joint work with **Brady Hunsaker**).

C4. Technical and Non-Refereed Published Reports

1) Tovey, C. A., "Polynomial Local Improvement Algorithms in Combinatorial Optimization," Technical Report SOL 81-21, Stanford University, Stanford, California, November 1981.

2) Tovey, C. A. and G. Weiss, "A Note on the Volumes of Random Simplices," ISyE Report Series No. J-84-6, School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta, Georgia, 1984.
3) Ammons, J. C., L. McGinnis, and C. Tovey, "Process Planning for Surface Mount," Proceedings of Surface Mount International Conference, San Jose, California, August 25-29, 1991.[7]

4) Ammons, J. C., L. McGinnis, and C. Tovey, "Production Optimization for Circuit Card Assembly," Proceedings of the 1992 NSF Design and Manufacturing Systems Conference, Atlanta, Georgia, January 8-10, 1992.

5) Ammons, J. C., M. Carlyle, G. DePuy, K. Ellis, L. McGinnis, C. Tovey, and H. Xu, "Computer Aided Process Planning in Printed Circuit Card Assembly," Proceedings of the International Electronics Manufacturing Technology Symposium, Baltimore, Maryland, September 28-30, 1992.

6) Ammons, J. C., Baskerville, M. Carlyle, G. DePuy, K. Ellis, M. Fisher, L. McGinnis, C. Tovey, and H. Xu, "Process Optimization for Circuit Card Assembly," Proceedings of the 1993 NSF Design and Manufacturing Systems Conference, Charlotte, North Carolina, January 6-9, 1993.

7) Ammons, J. C., G. W. DePuy, K. P. Ellis, M. Fisher, L. F. McGinnis, and C. A. Tovey, "Process Optimization for Circuit Card Assembly," Proceedings of the 1994 NSF Design and Manufacturing Systems Conference, Boston, Massachusetts, January 5-7, 1994.

8) Ammons, J. C., G. W. DePuy, K. P. Ellis, L. F. McGinnis, and C. A. Tovey, "Process Optimization for Circuit Card Assembly," Proceedings of the 1995 NSF Design, Manufacturing, and Industrial Innovation Conference, San Diego, January 3-5, 1995.

9) Ammons, J. C., DePuy, G. W., Ellis, K. P., McGinnis, L. F., and Tovey, C. A., "Process Optimization for Circuit Card Assembly," Proceedings of the 1996 NSF Design, Manufacturing, and Industrial Innovation Conference, January 3-5, 1996.

D. Presentations

D1. Keynote Addresses and Plenary Lectures

1. Tovey, C. A., "OATs, BATs, and Hill Climbing Algorithms," Stanford Computer Forum, 1981.
2. "Simulated Annealing Algorithms and Diffusion Approximations for Finding Global Minima", Conference on Ordinary Differential Equations, Atlanta GA October 1985 (with R. Kertz).

3. Tovey, C. A., “Algorithms and Diffusion Approximations for Nonlinear Programming with Simulated Annealing,” IIASA International Workshop on Global Optimization, Sopron, Hungary, December 1985.
4. Bartholdi, J. J., Tovey, C. A., and Trick, M., “The Computational Difficulty of Voting Systems,” 11th Triennial Conference on Operations Research, Buenos Aires, Argentina, August 10 14, 1987.
5. Tovey, C. A., “Computational Difficulty of Manipulating an Election,” Modelisation, Analyse et Agregation des Preferences et des Choix, Centre International de Rencontres Mathematiques (CIRM), Marseille Luminy, France, April 25 30, 1988 (with J. B. Bartholdi and M. Trick).

6. ``Computational Impracticality of Some Voting Rules,'' Modelisation, Analyse et Agregation des Preferences et des Choix, Centre International de Rencontres Mathematiques (CIRM), Marseille-Luminy, France, April 25-30, 1988 (with J. B. Bartholdi and M. Trick).
7. Tovey, C. A., “A Polynomial Time Algorithm for Computing the Yolk in Fixed Dimension,” SIAM Symposium on Complexity and Numerical Optimization, Ithaca, New York, March 1991.
8. Schofield, Norman, and Tovey, Craig. “Probability and Convergence for Supra-Majority Rule with Euclidean Preferences”, presented at European Public Choice Meeting, Turin Italy, April 1992, and at the Public Choice Meetings, New Orleans, March 1992.
9. C. Tovey, A Simple Model of Fish School Formation, Eleventh Clemson Mini-Conference on Discrete Mathematics, 1996.
10. Self-Organizing Social Structure in Fish Groups, DIMACS Workshop on Large Scale Discrete Optimization, Rutgers University, May 27-29, 1998.
11. C. Tovey, “Computational Complexity and Voting Theory,” at Workshop on Complexity and Economic Theory, Yale University, Sept. 2003.
12. C. Tovey, D. Shepardson, A smallest tournament not induced by 2/3 majority voting, The Nineteenth Clemson mini-Conference on Discrete Math 2004.

13. C. Tovey, “Computational Complexity of Social Choice Procedures” (invited tutorial), DIMACS Tutorial on Social Choice and Computer Science, May 11, 2004.
14. C. Tovey, “Waggle Dance, Honey Bee Forager and Web Server Allocation”, Workshop on Biomimicry and Design, Costa Rica, 2005.

15. Richard McKelvey and Craig Tovey, The Yolk’s on Us, Conference on Spatial Voting:Choice over Multidimensional Issues, December 2005, UC Irvine.

16. Sunil Nakrani, Craig Tovey, Jeannette Yen, “Honeybees, Web Hosting, and Highways”,OGETA Forum, January 2006.

17. Nakrani and Tovey, "Resilient Honey Bee Biomimetic Web Server Allocation", CBID First International Symposium on Biologically Inspired Design, May 10-12,2006..

18. "Who, What, Why, and How: Four Keys to Successful Interdisciplinary Research",IRMSE 2007 Workshop, August 9 2007.

19. “Teaching Biologically Inspired Design at Georgia Tech: Lessons Learned”, 3rd Biomimicry Education Summit, Flat Head Lake Biological Station, Montana, July 2008.

20. “Resilience of Honey Bee Inspired Web Host Optimization,” Mathematical Bioscience Institute Workshop on Insect Self-Organization and Swarming, Ohio State University, March 18 2011.
21. ``Effectiveness of Biomimetic Task Allocation”, Workshop on Social Behavior, University of Arizona, February 2010.
22. The Spatial Model of Voting, Fourth International Workshop on Computational Social Choice Kraków, Poland, September 11–13, 2012.

D2. Invited Conference and Workshop Presentations

1. Tovey, C. A., “Low Order Polynomial Bounds on the Expected Number of Iterations of Local Improvement Algorithms,” TIMS/ORSA Joint National Meeting, Detroit, Michigan, April 1982.

2. Tovey, S. Greenberg, W. Halliburton, S. Koenig, A. Mudgal, Y. Smirnov and D. Vroon, Analysis of Robot Navigation Tasks and Methods [Minipresentation], INFORMS Computing Society Conference (ICS), 2005.

3. Tovey, C. A., “Rescheduling for a Dynamic Environment,” ORSA/TIMS Joint National Meeting, San Diego, California, October 1982.

4. Parker, R. G., Rardin, R. L. and Tovey, C. A., “The Region of Optimality in the Planar Traveling Salesman Problem,” ORSA/TIMS Joint National Meeting, Orlando, Florida, November 1983.

5. Tovey, C. A., “On the Performance of Local Improvement Algorithms,” ORSA/TIMS Joint National Meeting, Orlando, Florida, November 1983.

6. Tovey, C. A., “Improving the Efficiency of the Polymatroidal Flow Algorithm with Layering,” ORSA/TIMS Joint National Meeting, San Francisco, California, May 1984.

7. Tovey, C. A., “The Role of Extremal Combinatorics in Average Case Analysis of Algorithms,” ORSA/TIMS Joint National Meeting, Dallas, Texas, November 1984.

8. Tovey, C. A., “Scheduling With an Uncertain Number of Processors,” ORSA/TIMS Joint National Meeting, Dallas, Texas, November 1984.

9. Tovey, C. A., “Failure of Neighborhood Search in Integer Programming,” ORSA/TIMS Joint National Meeting, Dallas, Texas, November 1984.

10. Tovey, C. A., “Rescheduling to Minimize the Maximum of Penalty Functions,” TIMS/ORSA Joint National Meeting, Boston, Massachusetts, April 1985.

11. Tovey, C. A., “Probabilistic Global Optimization by Simulated Annealing,” 12th International Symposium on Mathematical Programming, Boston, Massachusetts, August 1985.

12. Tovey, C. A. and Trick, M., “Improving the Efficiency of Augmenting Path Algorithms,” ORSA/TIMS Joint National Meeting, Atlanta, Georgia, November 1985.

13. Tovey, C. A., “Derivations of Properties of Random Simplices,” ORSA/TIMS Joint National Meeting, Atlanta, Georgia, November 1985.

14. Stone, R. and Tovey, C. A., “Karmarkar's Algorithm as a Generalization of Simplex,” TIMS/ORSA Joint National Meeting, Los Angeles, California, May 1986.

15. Kertz, R. and Tovey, C. A., “Diffusion Approximations to Simulated Annealing,” TIMS/ORSA Joint National Meeting, Los Angeles, California, May 1986.

16. Tovey, C. A., “Simulated Simulated Annealing,” ORSA/TIMS Joint National Meeting, Miami, Florida, October 1986.

17. Tovey, C. A., “Routing Printed Circuit Cards in Flexible Assembly Systems,” TIMS/ORSA Joint National Meeting, New Orleans, Louisiana, May 1987.

18. Llewellyn, D. C. and Tovey, C. A., “Finding Local Minima in Discrete Optimization,” TIMS/ORSA Joint National Meeting, New Orleans, Louisiana, May 1987.

19. Tovey, C. A., “Complexity, Algorithms, and Scheduling in Automated Manufacturing,” ASEE Annual Conference, Reno, Nevada, June 1987.

20. Tovey, C. A., “Design for Manufacturing of Electronic Circuit Boards,” EURO TIMS Meeting, Paris, France, July 1988.

21. Tovey, C. A., “Computational Complexity in Social Choice,” 4th SIAM Conference on Discrete Mathematics, San Francisco, California, June 10, 1988.

22. Bartholdi, J. B., Lofgren, C. and Tovey, C. A. “New Results for the Periodic Delivery Problem,” ORSA/TIMS Joint National Meeting, Denver, Colorado, October 1988.

23. Borie, R. B., Parker, R. G. and Tovey, C. A., “Automatic Generation of Linear Time Algorithms from Predicate Calculus Descriptions of Problems on Recursively Constructed Graph Families,” TIMS/ORSA Joint National Meeting, Las Vegas, Nevada, May 1990.

24. Rosenthal, A., Tovey, C. A., and **Xu, H**., “Parallel Processing Scheduling,” TIMS/ORSA Joint National Meeting, Las Vegas, Nevada, May 1990.

25. Bartholdi III, J. J., Tovey, C. A. and Trick, M. A., “The Computational Difficulty of Manipulating an Election,” TIMS/ORSA Joint National Meeting, Las Vegas, Nevada, May 1990.

26. Tovey, C. A., “Probabilistic and Computational Safeguards in Social Choice,” TIMS/ORSA Joint National Meeting, Las Vegas, Nevada, May 1990.

27. Carlyle, M., Ammons, J. C., Cranmer, L., DePuy, G., Ellis, K. and Tovey, C. A., “Broad Based Heuristics for Printed Circuit Board Assembly,” ORSA/TIMS Joint National Meeting, Anaheim, California, November 1991.

28. Joye Bhadury, Craig Tovey. "The (1|1) Centroid Problem”, TIMS/ORSA Conference, Chicago, May 1993.

29. Calkin, N., Erdös, P., Tovey, C. A., “Cyclic Ramsey Numbers,” Mathematical Society Summer Meeting, Mathfest, Burlington, Vermont, 1995.

30. Pendurkar, R., Chatterjee, A. and Tovey, C., “New Heuristic Approach for Efficient Single Probe Routing in Testing MCM Substrate,” MCM Test III, Advanced Technology Workshop, Napa, CA, September 15-18, 1996.

31. Tovey, C., “A Novel Single Probe Scheduling Algorithm for High Throughput MCM Substrate Interconnect Test,” International Symposium on Microelectronics, Philadelphia, PA, October 14, 1997.

32. Alon, N. and Tovey, C, “Quality of Local Optima in Partitioning,” INFORMS Seattle 1998

33. Tovey, C. “The shape of schools formed by obligate schooling fish,” 2001 South East Nerve Net, March 2001, also “Decentralized formation of ellipsoidal fish schools, CNCC July 2000.

34. I. Chase, C. Tovey, “An empirical test of self-organization in dominance hierarchies,” 27th International Ethological Conference, Tubingen, Germany, 2002.

35. Hunsaker, B. , Johnson, E., Tovey, C., “Measuring Cutting Planes,” INFORMS San Jose 2002.

36. Tovey, C., Chase, I., “Social Dynamics and Natural Selection in the Formation of Animal Dominance Hierarchies,” INFORMS San Jose 2002.

37. I. Chase, C. Tovey “The formation of linear dominance hierarchies,” at Workshop: Self-organization and evolution of social behavior; Monte Verita, Switzerland, sponsored in part by Dept. of Information Technology and Anthropological Institute and Museum, University of Zurich, 2002.

38. Hunsaker, B., Johnson, E., Tovey, C., “Computing Chvatal-Gomory Rank,” INFORMS 2003 Atlanta Ga.

39. C.Tovey, I. Chase, “Dynamical Details in the Formation of Animal Dominance Hierarchies,” INFORMS 2003 Atlanta Ga.

40. C. Tovey, I. Chase, “Two’s Company, Three’s a Crowd,” INFORMS 2003 Atlanta Ga.

41. C. Tovey, S. Nakrani, “Honey bee foraging and internet service resource allocation,” INFORMS 2003 Atlanta Ga.

42. B. Hunsaker, C.Tovey, Simple Lifted Cover Inequalities and Hard Knapsack Problems,” INFORMS 2004.

43. “Two Takes on Cyberinfrastructure for Operations Research,” NSF 2004 Workshop on Cyberinfrastructure, DMII Grantees and Research Conference, January 6, 2004.

44. B. Hunsaker, E.Johnson,and C.Tovey,”Checking for Rank 2 Chvatal-Gomory Inequalities, INFORMS, October 2005.

45. B. Hunsaker and C. Tovey, Discovering Classes of Valid Inequalities Using Automated Separation of Rank I CG Inequalities, 9th Informs Computing Society Conference, January 2005, Annapolis Md.

46. C. Tovey, S. Greenberg, C. Halliburton, S. Koenig, A. Mudgal, Analysis of Robot Navigation Tasks and Methods, 9th Informs Computing Society Conference, January 2005, Annapolis Md.

47. "An algorithm for producing neuronal models by self-assembly from voltage trace data", Neuroscience 2006, Atlanta, Ga Oct 14 2006, co-authored with Astrid Prinz and Dylan Shepardson

48. "Tutorial on Auction-Based Agent Coordination", with Koenig, Lagoudakis, Dias, Zlot et al., AAMAS 2006.

49. "Cut Generator for Chvatal-Gomory Rank 1 Inequalities", INFORMS 2006, Pittsburgh,Joint Session Open-Source/ICS: New in COIN-OR, November 5, with Hunsaker and Baz.

50. Panel Presentation on biomimicry, 2nd Southeast Bioneers Conference, October 21, 2006.

51. "Tutorial on Auction-Based Agent Coordination", with Koenig, Lagoudakis, Dias, Zlot et al. AAMAS 2006, (Peer reviewed).

52. ``A Smallest Tournament not Realizable by 2/3 Voting and Some Open Problems'', January 2010, San Francisco, Joint Meeting of American Math Society, Special Session on Voting.

53. "How Honey Bees Set Web Servers Abuzz", Symposium at 2018 AAAS annual meeting, Austin, Texas, February 2018.

54. "Tutorial on Nature-Inspired Heuristics", INFORMS, 2018.

D3. Conference and Workshop Presentations

1.Pilcher, M., Rardin, R. L. and Tovey, C. A., "Generation of Discrete Optimization Problems in NP Intersect CO NP," TIMS/ORSA Joint National Meeting, Chicago, Illinois, April 1983.

2. Fathi, Y. and Tovey, C. A., "Computational and Theoretical Results on the Effectiveness of Affirmative Action Algorithms," TIMS/ORSA Joint National Meeting, San Francisco, California, May 1984.
3. Tovey, C. A., Weiss, G., and Wilson, J., "Minimum Waste Sequencing," TIMS/ORSA Joint National Meeting, San Francisco, California, May 1984.
4. Lofgren, C. and Tovey, C. A., "Job Routing in Flexible Manufacturing," TIMS/ORSA Joint National Meeting, Boston, Massachusetts, April 1985.

E. Grants and Contracts

E1. As Principal Investigator

1. "Sensitivity Analysis and Rescheduling Algorithms for Deterministic Scheduling"

    a. National Science Foundation
    b. Amount Requested: $47,993, January 1983
    c. Result: Funded $47,993 (June 1983-September 1985)

2. Presidential Young Investigator Award, 1985
    a. National Science Foundation
    b. Amount Requested: $125,000 base plus matching (June 1985-June 1990)
    c. Result: Funded (July 1, 1985-December 31, 1990) plus matching funds indicated below.

3. "Combinatorial Optimization"
    a. Atlanta Gas Light
    b. Amount Requested: $50,000
    c. Result: Funded $50,000 plus $50,000 matching funds from NSF
    d. (1985-1987)

4. "Automated Scheduling"
    a. Digital Equipment Corporation
    b. Amount Requested: $37,500, October 1986
    c. Result: Funded $37,500 hardware/software plus $37,500 cash
    d. Matching funds from NSF

5. PYI Research Matching Grant
    a. Personal Productivity Corporation
    b. Amount Funded: $5,400 plus $5,400 matching funds from NSF

6. C. Tovey, unsolicited GT foundation grant, John Grigsby, amount unknown.

7. C. Tovey, unsolicited GT foundation grant, John Grigsby, $16,484.

8. "Munitions Warehousing Optimization"
    a. IDSC, TLI Leaders in Logistics
9. Tovey (lead), J. Bartholdi and M. Savelsberg (unfunded co-investigators), 2003
    a. Funded: $25,000

10. **"The Price of Deception", Craig Tovey PI, NSF grant** 1335301, Operations Research Program, $276,880, 2013-2017

E2. As Co-Principal Investigator

i. 6. "Configuring a PCB Assembly Stations"
    a. Co-Principal Investigator
    b. Manufacturing Research Center
    c. Amount Requested: $31,000, April 1989
    d. Result: Funded
    e. Additional Funding Requested: $14,536, 1990
    f. Result: Funded plus $12,000 matching funds from NSF

ii. 7. "Configuring a PCB Insertion Workstation (Continuation)"
    a. Co-Principal Investigator

b. Manufacturing Research Center
c. Amount Requested: $19,162, Fall1990
d. Result: Funded $28,000

2. 15. "Printed Circuit Card Assembly Management"
   a. Manufacturing Research Center
   b. J. C. Ammons, L. F. McGinnis and C. A. Tovey
   c. Result: Funded $60,000, September 1994-August 1995

3. "Strategies for Using Teamwork in Problems with Limited Resources"
   a. J. Hodgins and C. Tovey, 1996
   b. Funded: $12,000 (1/2 time GRA 3 quarters)

4. "Printed Circuit Card Assembly Management"
   a. Material Handling Research Center
   b. Co-Principal Investigator
   c. Total amount received: approximately $89,200, Fall 1990-Summer 1991

5. "Production Optimization for Circuit Card Assembly"
   a. National Science Foundation
   b. J. C. Ammons, L. F. McGinnis, and C. A. Tovey
   c. Amount Requested: $130.677, October 1990
   d. Result: Funded $66,000, Fall 1991- Summer 1992

6. "Printed Circuit Card Assembly Management"
   a. Manufacturing Research Center
   b. Co-Principal Investigator
   c. Total Amount Received: $37,000, Fall 1991-Summer 1992

7. "Printed Circuit Card Assembly Management"
   a. Material Handling Research Center
   b. Co-Principal Investigator
   c. Total Amount Received: approximately $70,000, Fall 1991-Summer 1992

8. "Printed Circuit Card Assembly Management"
    a. Manufacturing Research Center
    b. Co-Principal Investigator
    c. Total Amount Funded: $37,000, February 1992

9. "Process Optimization for Circuit Card Assembly"
    a. National Science Foundation
    b. J. C. Ammons, L. F. McGinnis, and C. A. Tovey
    c. Result: Funded $300,000, Fall 1992-Summer 1995

10. "Printed Circuit Card Assembly Management"
    a. Manufacturing Research Center
    b. J. C. Ammons, L. F. McGinnis and C. A. Tovey
    c. Result: Funded $60,003, September 1993-August 1994

11. "Understanding and Improving On-Line Planning Methods"
    a. S. Koenig and C. Tovey, Co-PI's
    b. Funded: $ 385,662, July 2001 – December 2005

12. "Analysis, Evaluation and Improvement of Sequential Single-Item Auctions for the Cooperative Real-Time Allocation of Tasks." Sven Koenig and Craig Tovey, PIs. U.S. Army Research Laboratory. 2008. Funded, 53K at Georgia Tech.
13. "Collaborative Research: Web-Available Chvatal-Gomory Rank Determination"
    a. NSF Division of Manufacturing Enterprise Systems, ENG/DMII
    ii. Co-PI: Braden Hunsaker at Pittsburgh
    a. October 2004
    b. Amount Requested: $386,000/3 years
    c. Funded: $150,000/18 months May 2005-Nov 2006.

14. "Center for Biologically Inspired Design", J. Yen, M. Weissburg, C.Tovey co-PI's, interdisciplinary seed grant, Georgia Tech, funded: $30,000.
15. "Fundamentals and Applications of Connect-the-Dots Problems," Xiaoming Huo and Craig Tovey, PIs. NSF CMMI 0700152. 2007-10. Funded: $248, 741.

16. MAJOR: Computational Tools for Enhancing Creativity in Biologically Inspired Engineering Design, co-PI with Ashok Goel, Jeannette Yen, Bert Bras, Spencer Rugaber, NSF IIS. $767,457, 2011-2014.

E3. As Senior Personnel or Contributor

1. "Center for Behavioral Neuroscience"
   National Science Foundation
   Science and Technical Centers
   Requested $19.9M/5 years
   Result: Funded
2. "Biologically Inspired Design: A novel interdisciplinary biology-engineering curriculum", CCLI-Type 2 STEM, 2010. $599,401.

G. Societal and Policy Impacts

Present a brief list of the broader impacts of your scholarship and elaborate on them in your personal statement; include testimony before legislative committees or other public bodies, expert witness roles, and press and media coverage, if appropriate.

The Golden Goose award is the most visible evidence of impact. I think my review of "The Usefulness of Useless Knowledge" in Science was a small help in supporting funding and appreciation for basic research. Within the academic world, the papers I wrote with John Bartholdi and Mike Trick started the field of computational social choice. The research on search time for food-storer bees that I did with Tom Seeley opened his eyes (his words) to the power of mathematical modeling; that influenced his and other sociobiologists' research. Several of my research results have garnered quite a bit of media publicity, which I hope has contributed to public support for scientific and engineering research.

Media Coverage

1. *The Economist*, The internest: Bees can teach computer programmers a lesson, April 15th 2004. Article about research with Ph.D. student Nakrani on biologically-inspired web-hosting.
2. *MSNBC.com*, Scientists abuzz over more efficient Web servers: Honeybee waggle dance inspires system for Internet-hosting company, by Bryn Nelson, columnist, 12/16/2007.
3. *ScienceDaily* Nov. 16, 2007, Bee Strategy Helps Servers Run More Sweetly.
4. My honey bee biomimetic algorithm is the subject of a chapter in the book "*The Secret Life of Numbers: 50 Easy Pieces on How Mathematicians Work and Think"* by George Szpiro, 2006.
5. Other articles about the honey bee algorithm appeared in digitaljournal.com,theregister.co.uk,science.howstuffworks.com, India's national newspaper www.hindu.com/2007/12/26/stories/2007122659781600.htm, and others.
6. *The Incredible Floating Fire Ant,* by Brian Vastag, April 25, 2011, front page article in *The Washington Post,* about PNAS article on floating fire ant rafts.
7. *Ferry Tale: Fire Ants Aggregate into Living Rafts to Escape Floods,* by Nina Bai, *scientificamerican.com,* April 26 2011; *Fire Ants Link Together to Stay Afloat,* by Cynthia Graber, April 25 2011, *scientificamerican.com.*

8. Youtube video www.youtube.com/watch?v=2bdry7_5qck of fire ant raft pushed down in water, over 2 million views as of September 13, 2013.
9. Video of the week and voice-over interview on *Science Friday*, April 29 2011, http://www.sciencefriday.com/program/archives/201104294.
10. *How Fire Ants Fare in Water,* interview on *CBC Radio Show "Quirks and Quarks,"* April 30 2011,
11. *Ants team up to stay dry,* by Lizzie Buchen, nature.com, Nature | doi:10.1038/news.2011.257, April 26 2011.
12. Numerous other websites picked up the fire ant raft story. Google search on "fire ant raft tovey" had about 4780 results, November 2011.
13. United Kingdom Daily Mail http://www.dailymail.co.uk/sciencetech/article-2514349/Mystery-ants-survive-floods-solved-Insects-hook-legs-form-LIFE-RAFTS-help-float.htmlb
14. Congressional Record, September 22, 2016, Vol. 162 # 144 pp. E1344-E1345, Hon. Ann Kuster *In Recognition of the 5th Annual Golden Goose Award*; , AAAS https://www.aaas.org/news/golden-goose-award-goes-scientists-who-use-bees-web-hosting;
15. Washington Post article by Hunter Rawlings and G.P. "Bud" Peterson, *How honeybee research improved your Internet experience,* September 22 2016;
16. Ga. Tech Honey Bee Algorithm Wins Golden Goose Award by Tasnim Shamma,
17. WABE morning edition Sept 27 2016 excerpts interview with Tovey, full article and longer interview at *http://news.wabe.org/post/ga-tech-honey-bee-algorithm-wins-golden-goose-award.*
18. Pacific Standard, https://psmag.com/how-honey-bees-helped-the-internet-c711cab5ff0#.ca29rzwlk by Rick Paulas, January 9 2017
19. ; other articles at AMS
20. , AAMC,
21. Pascho
22. Phronesis
23. , Steemit,
24. Slate, etc.
25. Ant tower paper (#129): NYThttps://www.nytimes.com/video/science/100000005161948/ants-building-towers.html?playlistId=100000002331748;NYT Writeup
26. https://www.nytimes.com/2017/07/17/science/ants-dutiful-escape-artists-build-towers-in-constant-flux.html;
27. Nature http://www.nature.com/news/ant-colonies-flow-like-fluid-to-build-tall-towers-1.22290;
28. Scientific American https://www.scientificamerican.com/video/fire-ants-build-eiffel-tower-structures/;
29. The Washington Post https://www.washingtonpost.com/news/morning-mix/wp/2017/07/13/
30. how-fire-ants-use-their-bodies-to-build-wriggling-eiffel-tower-like-columns/
31. ?tid=ptv_rellink&utm_term=.6e6a8a91248c;
32. The Washington Post (video only) https://www.washingtonpost.com/video/national/
33. fire-ants-use-their-bodies-to-build-wriggling-eiffel-tower-like-columns/
34. 2017/07/13/1995dc74-67d2-11e7-94ab-5b1f0ff459df_video.html;

35. Yahoo from WaPo https://www.yahoo.com/news/m/fb44bae3-b405-3898-9488-a3966d9df962/
36. ss_georgia-tech-professor-finds.html;
37. AJC from WaPo http://www.ajc.com/news/georgia-tech-professor-finds-how-fire-ants-build-wriggling-eiffel-tower-like-columns/XxxikLHBLqSgde6C6MP4nJ/;
38. Vox https://www.vox.com/videos/2017/7/25/16025522/fire-ant-float-physics
39. Science News https://www.sciencenews.org/blog/wild-things/fire-ants-build-towers-three-simple-rules;
40. National Geographic http://news.nationalgeographic.com/2017/07/fire-ants-create-towers-rafts-video-spd/;
41. National Geographic (video only) http://video.nationalgeographic.com/video/news/
42. 170713-fire-ants-create-towers-own-bodies-vin-spd;
43. National Geographic Australia http://www.nationalgeographic.com.au/animals/see-fire-ants-create-towers-from-their-own-bodies.aspx;
44. The Conversation https://theconversation.com/
45. how-do-fire-ants-form-amazing-towers-and-rafts-without-a-master-plan-80717;
46. Science Friday https://www.sciencefriday.com/segments/
47. ants-exhibit-towering-engineering-skills/;
48. Gizmodo http://gizmodo.com/
49. scientists-discover-the-secret-behind-incredible-ant-to-1796813537;
50. Gizmodo Australia https://www.gizmodo.com.au/2017/07/
51. scientists-discover-the-secret-behind-incredible-ant-towers/;business insider https://www.facebook.com/Insiderscience/videos/1391829794218863/;
52. MSN http://www.msn.com/en-us/video/watch/how-fire-ants-use-themselves-to-build-moving-towers/vp-BBEmdTE;
53. The Future is Now https://www.facebook.com/thefutureisnowbymic/videos/vb.720610231382345/1266125076830855/?type=2&theater;
54. New Scientist https://www.newscientist.com/article/2140354-ants-build-living-towers-that-flow-to-fight-endless-collapse/;
55. Smithsonian http://www.smithsonianmag.com/smart-news/how-fire-ants-build-incredible-writhing-towers-180964055/;
56. LiveScience https://www.livescience.com/59771-fire-ants-build-sinking-eiffel-towers.html;
57. Quartz https://qz.com/1029975/fire-ants-can-build-complex-towers-to-get-out-of-trouble/;
58. Mashable http://mashable.com/2017/07/12/fire-ants-tower-flooding/#j0K2DpZ0iaqZ;
59. Daily Mail http://www.dailymail.co.uk/sciencetech/article-4685494/Fire-ants-uses-bodies-build-huge-Eiffel-Towers.html;
60. San Francisco http://www.sfgate.com/news/article/How-do-fire-ants-form-amazing-towers-and-rafts-11281741.php;
61. Salon (Conversation) http://www.salon.com/2017/07/15/
62. how-do-fire-ants-form-amazing-towers-and-rafts-without-a-master-plan_partner/
63. Newsy http://www.abc2news.com/newsy/fire-ants-can-build-roiling-ant-towers-to-get-around;

64. Cosmos https://cosmosmagazine.com/biology/fire-ants-self-organise-to-build-towers-to-reach-safety
65. International Business times http://www.ibtimes.co.uk/watch-ants-build-miraculous-living-eiffel-tower-1629877
66. Popular Mechanics http://www.popularmechanics.com/science/animals/a27268/ant-towers-emergent-engineering/;
67. The Verge https://www.theverge.com/2017/7/12/15959386/fire-ants-tower-construction-rafts-tovey-collective-behavior-science;
68. Tech Times http://www.techtimes.com/articles/211408/20170712/how-are-fire-ants-able-to-build-amazing-towers-for-escape.htm;
69. Capital Berg https://www.capitalberg.com/fire-ants-raise-living-towers/211826/;
70. Silver Ink https://www.thesilverink.com/fire-ants-complex-structures/210055/;
71. Earth Touch (Conversation) https://www.earthtouchnews.com/natural-world/how-it-works/
72. how-do-fire-ants-form-amazing-towers-and-rafts-without-a-master-plan/;
73. Atlas Obscura http://www.atlasobscura.com/articles/fire-ants-eiffel-tower.
74. Radiolab episode on the honey bee algorithm: interviews 2025; expected release postponed until 2026.

H. Other Professional Activities

Consulting: Freddie Mac, Weyerhaeuser Corp., AT&T Bell Labs, IDS Inc. (Singapore)

V. Education

A. Courses Taught

List course taught at Georgia Tech. (Most recent first and include **the last six years**. Do not include CIOS scores here.

Semester, Year	Course Number	Course Title	Number of Students
Spring 2026	3232	Stochastic Manufacturing & Service Systems	16
Spring 2026	4723-X	Create-X Capstone Design	5 (1 team)
Spring 2026	4106	Senior Design	13 (2 teams)
Fall 2025	4106	Senior Design	7 (1 team)
Fall 2025	3232	Stochastic Manufacturing & Service Systems	20
Spring 2025	2027	Probability with Applications	41
Spring 2025	4106	Senior Design	24 (3 teams)

Fall 2024	4106	Senior Design	8 (1 team)
Fall 2024	3232	Stochastic Manuf & Service Systems	35
Spring 2024	3232	Stochastic Manuf & Service Systems	14
Spring 2024	2027	Probability with Applications	20
Fall 2023	4723-X	Create-X Capstone Design	7
Fall 2023	4106	Senior Design	24
Spring 2023	4723-X	Create-X Capstone Design	8
Spring 2023	4106	Senior Design	8
Spring 2023	6669	Deterministic Optimization	22
Spring 2022	6661	Linear Optimization	11
Fall 2021	3232	Stochastic Manuf & Service Systems	78 (2 sections)
Spring 2021	6761	Stochastic Processes I	14
Spring 2021	6661	Linear Optimization	11
Spring 2021	4723-X	Create-X Capstone Design	8
Fall 2021	4106	Senior Design	24

B. Individual Student Guidance

B1. Ph.D. Students

B1.a. Graduated Ph.D. Students

1. Richard Borie, (Computer Science) Fall 1988, "Recursively Constructed Graph Families: Membership and Algorithms" (co-advised with R. G. Parker). Current position: Retired Associate Professor, Computer Science, University of Alabama.

2. Moshe Eben-Chaime, 1990. "Physical Design of Printed Circuit Boards: A Mathematical Programming Approach" (co-advised with Jane C. Ammons). Resulting Award: The 1991 Joseph Levy Prize awarded by ORSIS, the Operations Research Society of Israel, for "Outstanding Work in Operations Research"
Current position: Associate Professor, Dept. of Industrial Engineering and Management, Ben Gurion University, Israel.

3. Hua Xu, May 1992, "Scheduling with Flexible Parallelism". Current position: Engineer, Nokia Siemens Networks.

4. Paulus Kristanto, June 1998. "Yield Management in Airline Competition."
Current position: Senior biostatistician, AARDEX Group Ltd., Switzerland.

5. Eva Regnier, August 2001. "Discounted Cash Flows and Environmental Decisions."
Current position: Professor, Operations and Logistics, Naval Postgraduate School.

6. Brady Hunsaker (ACO) 2003. “Measuring Effectiveness of Cutting Planes for Branch-and-Cut” (co-advised with Ellis Johnson). Current position: Google.

7. Yaxin Liu (CoC) 2005, “Decision-Theoretic Planning Under Risk-Sensitive Planning Objectives,” (with S. Koenig). Current position: Google. Thesis won best dissertation award in CoC 2005.
8. Sunil Nakrani (Oxford Univ.) 2006. “Biomimetic Orchestration of Internet Servers.” Thesis shortlisted for distinguished dissertation in computing, U.K. Current position: Tata Research Center.

9. Dylan Shepardson (ACO), 2009. Current Position: Associate professor and Chair of Mathematics and Statistics, Mt. Holyoke College.

10. Apurva Mudgal (CS). 2010. Robot Navigation Algorithms. Current Position: Associate Professor, Department of Computer Science and Engineering, I.I.T. Ropar.

11. Eric Tollefson, 2012. “Optimal Multinomial Selection Procedures” (co-advised with David Goldsman). Current position: Assistant Professor and Analyst, United States Military Academy at West Point.

12. Nathan Mlot, 2013, co-advised with David Hu in School of Mechanical Engineering, ``Self-Assemblage of Fire Ant (*Solenopsis Invictus*) Structures.''

13. James Bailey, “The Price of Deception in Social Choice”, ACO, 2017. Current position: Assistant Professor, Rensselaer Polytech.
14. Timur Tankayev, , “Optimal Selection of Effective Disease Treatments”, 2020. Current position: Amazon.

B2. M.S. Students (Indicate Thesis Option for Each Student)

B2.a. Graduated M.S. Students

James Wilson (Thesis).

B3. Undergraduate Students

Nola Pickering, Summer Undergraduate Research Scholar, 2024. Spatial Modeling of Supreme Court Members and Votes.

B4. Service on Thesis or Dissertation Committees

B4.a. Internal (suggest a table with Student Name, School, Advisor, Dates)

B4.b. External (suggest a table with Student Name, School, Advisor, Dates)

B5. Mentorship of Postdoctoral Fellows or Visiting Scholars

B5.a. Postdoctoral Fellows

1. Sunil Nakrani, 2007. Research topic: Energy-efficient Honey Bee-Inspired Web Hosting.
2. Tanguy Hubert, 2015. Research topic: Fair Electricity Pricing for Prosumers

C. Educational Innovations and Other Contributions

List all other significant educational innovations and activities such as new educational programs, new courses developed, mentoring programs, continuing education, laboratory experiments and instructional materials developed, participation in any doctoral committees, and participation in interdisciplinary teaching activities, etc.

1.New Courses Developed

1) Modeling in Industrial Engineering (IE 2030)
2) How to Read and Do Proofs
3) Design of Heuristics.
4) Measuring Sustainability.
5) Mathematics for Operations Research (developed jointly with Jim Dai).
6) Duality: an Interdisciplinary Exploration
7) Polarization in U.S.A. Politics
8) Group Decision Making
9) Probabilistic Analysis of Algorithms
10) Research in Economic Decision Analysis
11) Biologically Inspired Design (developed jointly with Jeannette Yen, Mark Weissburg, and Michael Helms)
12) Introduction to Analytical Models (M.S. Analytics Program)

VI. Service

A. Professional Contributions

A1. Editorial Board Memberships

1. Associate Editor, Management Science, 1986-1988.
2. Acting Associate Editor, Operations Research, 2003,2004.
3. Associate Editor, Discrete Optimization, 2004-present.
4. Editorial Advisory Board, Algorithmic Operations Research , 2004—2012.

A2. Society Offices, Activities, and Membership

1.INFORMS 1981-present,
2. SIAM, ACM, 1984-1986,
3.Society for Neuroscience 2004-2011,

4. AAAS 2018-present
5.Vice Chairman, ORSA Committee for Student Affairs 1984-6.
6.Chairman, Nicholson Prize Committee, 1985 (ORSA student paper awards)

7.Chairman, Facilities Committee, ORSA/TIMS Joint National Meeting, Atlanta, Georgia, November 1985

A3. Organization and Chairing of Technical Sessions, Workshops, and Conferences

1. Member, Program Committee, Auction Mechanisms for Robot Coordination, AAAI 06.
2. AAAI-15 Program Committee
3. ORSA Workshop, "Integrating Karmarkar's Algorithm into the Curriculum," (organized jointly with R. Stone), ORSA/TIMS Joint National Meeting, Miami, Florida, October 1986;
4. Workshop, ORSA/TIMS Joint National Meeting, St. Louis, Missouri, October 1987 (with R. Stone).
5. Chairman, Facilities Committee, ORSA/TIMS Joint National Meeting, Atlanta, Georgia, November 1985
6. Member, Program Committee, 2nd International Workshop on the Mathematics and Algorithms of Social Insects, 2003.

A4. Technical Journal or Conference Referee Activities

Operations Research, Mathematical Programming Studies, Networks, Naval Research Logistics Quarterly, Algorithmica, Management Science, Discrete Applied Mathematics, Social Choice and Welfare, Journal of Mathematical Analysis and Applications, Journal of Economic Theory, Operations Research Letters, Annals of Operation Research, Discrete Mathematics, Behaviour, Artificial Intelligence, Information Processing Letters, SODA, STOC, IEEE Control, IEEE Trans. on Robotics, Journal of Mathematical Economics, Mathematical Social Science, STACS, Nature Scientific Reports, Discrete Optimization, IEEE Access, Journal of Artificial Intelligence Research, PLOS ONE, American Mathematics Monthly.

A5. Proposal Panels and Reviews

1. Reviewer, National Science Foundation. (mainly OR, also Animal Behavior in 2004, 2014, 2015,2016).
2. Panel Member: Integrated Manufacturing Systems Doctoral Fellowship Program Evaluation, National Research Council, Washington, D.C., 1993, 1994
3. Chair, Review Panel, Mathematics, Department of Homeland Security Undergraduate Scholarship and Graduate Fellowships, 2003.

4. Panel Member, NSF, Proposals on OR/SEE Optimization Methods, April 2003; Robotics 2005.
5. IIE Transactions Awards Reviewer, 2000.

6. Member, Review Panel, Physical Sciences and Mathematics, Department of Homeland Security Scholarships and Fellowships, 2004.
7. Member, Review Panel, NSF, Proposals: Robotics 2005.
8. Member, Review Panel, Physical Sciences and Mathematics, Department of Homeland Security Scholarships and Fellowships, 2006.
9. Member, Review Panel, Operations Research, NSF, December 2009, Washington, D.C.

10. Member, Review Panel, Industrial and Systems Engineering, SMART program, Washington D.C. January 2010.

11. 2013 SMART panel member, Washington D.C..

12. 2013 NDSEG panel member, Washington D.C.

13. 2013 NSF Graduate Research Fellowship Program Evaluation, panel member.

A6. Other Involvement

1. External Reviewer, Promotion and/or Tenure, Columbia University, Carnegie-Mellon University, Rutgers University, The Technion, Ben Gurion University, Colgate University, University of Alabama, University of Auckland, Jerusalem College of Technology, Duke University, Virginia Tech, University of Illinois Chicago, Yale University
2. External Reviewer, Ph.D. dissertation, University of Warwick, Great Britain
3. Participant, Government University Industry Research (GUIR) Round Table Conference (sponsored by NAS and NAE), Washington, D.C., February 1986
4. Reviewer: Hillier, F. and Lieberman, G., Introduction to Operations Research, 3rd Edition, 4th Edition
5. NSF Workshop on Cyberinfrastructure, Operations Research, and Enterprise-wide Applications, August 30-31, 2004, Washington DC.

6. Participant, International Workshop on Biomomicry Database Portal, February 2006, Toronto, Canada.
7. Participant, NSF Workshop on Integrating Social Sciences and Sustainability, University of Chicago, October 2012. (The 30 participants were selected by an external review committee.)

8. Reviewer, Chapter on Computational Social Choice, Handbook of Social Choice and Voting, Nick Miller, ed. 2014

B. Public and Community Service

1. Johns Creek Student Leadership Speaker and Mentor, 2018-2024.
2. Reviewer, educational material on biomimicry for NOVA (PBS Science Program).
3. Advisory Board, Lifeboat Foundation, 2008-2018.
4. Science Fair Judge, Atlanta Jewish Academy, 2019,2023

C. Institute Contributions

List all committee involvement and leadership, and other activities within Georgia Tech, indicate whether Institute, college, or school/department level. Internal contributions to other organizations for which you were previously employed, if any, may be included. Do not list service on thesis or dissertation committees (should be listed under IV.B5).

1.Member, Georgia Tech faculty senate, 2009-2012, 2016-2018.
2.ACO advisory committee, 1990-2009.
3.Committee for formation of College of Computing
4.Committee for formulation of Georgia Tech PTR.
5. COE Dean Search Committee 1996-97.
6.Georgia Tech Student Academic and Financial Affairs Committee, 2009-2015; chair 10/2010-8/2015.
7.ISyE Advisory Committee, 2008-2015.
8. Chair, ISyE Reappointment, Promotion, and Tenure Committee 2009 and 2010.
9. ISyE Awards Committee, 2008-2011, chair 2010-2011
10. ISyE Periodic Post-tenure Review Committee, Chair, 2010-2012.
11.Member of various area committees for P&T 2011,2012,2013,2014,2015,2016
12.Sigma Xi Best Ph.D. Dissertation Committee, 2014
13.Member, Georgia Tech Enrollment Management Advisory Group 2013-2015.
14.Member, OR Ph.D. Comprehensive Exam Committee, 2015-2017
15. Member, ISyE Awards Committee 2017-2018,**2024 (chair).**
16.Member, Faculty Senate, 2016-2019, 2024-2025.
17.Member, Faculty Executive Board and Chair, Faculty Executive Board Nominations Committee 2019-2020.
18.Vice-Chair, Faculty Executive Board, 2020.
19.ISyE OR Comps, Optimization and Stochastics, 2021,2023-2025
20.ISyE PPR Committee, 2019-2023, Chair 2021-2023
21. ISyE Advisory Committee, Fall 2024, 2025
22. Georgia Tech Faculty Status and Grievance Committee, 2025

C4. Program Development: Research

Co-founder and co-director, Center for Biologically Inspired Design, 2006-2018.