

RAJAN BATTA

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Date of Birth: December 15, 1958

Citizenship: U.S.A.

Last updated: September 27, 2004

1. Professional Training

Industrial Engineering/Operations Research

2. Education

Doctor of Philosophy in Operations Research
Massachusetts Institute of Technology, Cambridge, Massachusetts
1984

Bachelor of Technology in Mechanical Engineering
Indian Institute of Technology, New Delhi, India
1980

3. Academic/Administrative Experience

Professor: 1994-

Associate Professor: 1990-1994

Assistant Professor: 1984-90

Director of Graduate Studies: 2003-

Chair: 1994-2003

Interim Chair: 1992-1994

4. Courses Taught

Undergraduate:

EAS 140, Engineering Solutions

IE 320, Engineering Economy

IE 326, Planning for Production

IE 373, Introduction to Operations Research: Deterministic Models

Graduate:

IE 504, Facilities Design

IE 505, Production Planning and Control

IE 575, Stochastic Methods

IE 576, Applied Stochastic Processes

IE 603, Location Theory

IE 661, Scheduling Theory

IE 678, Urban Operations Research

5. Journal Publications

- V. Akgun, A. Parekh, R. Batta and C.M. Rump, "Routing of a Hazmat Truck in the Presence of Weather Systems," accepted for Computers & Operations Research.
- K. Holness, C.G. Drury and R. Batta, "A Systems View of Personnel Assignment Problems," accepted for Human Factors and Ergonomics in Manufacturing.
- A. Sarac, R. Batta and C. Drury, "Extension of the Visual Search Models of Inspection," accepted for Theoretical Issues in Ergonomics Science.
- L. Babu, R. Batta and L. Lin, "Passenger Grouping Under Constant Threat Probability in an Airport Security System," accepted for European Journal of Operational Research.
- A. Sarkar, R. Batta and R. Nagi, "Planar Area Location/Layout in the Presence of Generalized Congested Regions," accepted for IIE Transactions.
- S. Mishra, R. Batta and R. Szczerba, "A Rule Based Approach for Aircraft Dispatching to Emerging Targets," accepted for Military Operations Research.
- D. Patel, R. Batta and R. Nagi, "Clustering Sensors in Wireless Ad hoc Networks Using a Dynamic Expected Coverage Location Model," accepted for Operations Research.
- M.R. Akella, R. Batta, E.M. Delmelle, P.A. Rogerson, A. Blatt and G. Wilson, "Base Station Location and Channel Allocation in a Cellular Network with Emergency Coverage Requirements," accepted for European Journal of Operational Research.
- Q. Wang, R. Batta and R. Szczerba, "Scheduling the Processing of Incoming Mail to Match an Outbound Truck Delivery Schedule," accepted for Computers & Operations Research.
- S.J. Wang, R. Batta and C. Rump, "Stability of a Crime Equilibrium Level," accepted for Socio-Economic Planning Sciences.
- S. Huang, R. Batta, K. Klamroth and R. Nagi, "The Planar k-Connection Location Problem," accepted for Annals of Operations Research.
- A. Sarkar, R. Batta and R. Nagi, "Commentary on 'Facility Location in the Presence of Congested Regions with the Rectilinear Distance Metric'," Socio-Economic Planning Sciences, 38, (2004), 291-306.
- P. Rogerson, E. Delmelle, R. Batta, M. Akella, A. Blatt and G. Wilson, "Optimal Sampling Design for Variables with Varying Spatial Importance," Geographical Analysis, 36, (2004), 177-194.
- Wang, R. Batta and C.M. Rump, "Facility Location Models for Immobile Servers with Stochastic Demand," Naval Research Logistics, 51, (2004), 137-152.
- M. Vamanan, Q. Wang, R. Batta and R.J. Szczerba, "Integration of COTS Software Products ARENA & CPLEX for an Inventory/Logistics Problem," Computers & Operations Research, 31, (2004), 533-547.
- P. Nandikonda, R. Batta and R. Nagi, "Locating a 1-Center on a Manhattan Plane with Barriers," Annals of Operations Research, 123, (2003), 157-172.
- M.R. Akella, C.W. Bang, R. Beutner, E.M. Delmelle, R. Batta, P. Rogerson, A. Blatt, G. Wilson, "Evaluating the Reliability of Automated Collision Notification Systems," Accident Analysis and Prevention, 35, 3, (2003), 349-360.

- S. Huang, R. Batta and R. Nagi, "Variable Capacity Sizing and Selection of Connections in a Facility Layout," IIE Transactions, 35, (2003), 49-59.
- Q. Wang, R. Batta, J. Bhadury and C.M. Rump, "The Budget Constrained Location Problem with Opening and Closing of Facilities," Computers & Operations Research, 50, (2003), 2047-2069.
- Q. Wang, R. Batta and C.M. Rump, "Heuristics for a Facility Location Problem with Stochastic Customer Demand and Immobile Servers," Annals of Operations Research, 111, (2002), 17-34.
- S. Savas, R. Batta and R. Nagi, "Finite-Size Facility Placement in the Presence of Barriers to Rectilinear Travel," Operations Research, 50, 6, (2002), 1018-1031.
- S.J. D'Amico, S.-J. Wang, R. Batta and C.M. Rump, "A Simulated Annealing Approach to Police District Design," Computers & Operations Research, 29, 6, (2002), 667-684.
- J.H. Jaramillo, J. Bhadury and R. Batta, "On the Use of Genetic Algorithms to Solve Location Problems," Computers & Operations Research, 29, 6, (2002), 761-779.
- Z.S. Hall, R. Batta and R.J. Szczerba, "Supply-Chain Optimization: Players, Tools, and Issues," OR Insight, 14, 2, (2001), 20-30.
- W.C. Frank, J.C. Thill and R Batta, "Spatial Decision Support System for Hazardous Material Truck Routing," Transportation Research C, 8, (2000), 337-359.
- P. Zhao and R. Batta, "An Aggregation Approach to Solving the Network p-Median Problem with Link Demands," Networks, 36, 4, (2000), 233-241.
- V. Akgun, E. Erkut and R. Batta, "On Finding Dissimilar Paths," European Journal of Operational Research, 121, (2000) 232-246.
- P. Zhao and R. Batta, "Analysis of Centroid Aggregation for the Euclidean Distance p-Median Problem," European Journal of Operational Research, 113, (1999) 147-168.
- R. Narasimhan, R. Batta and M.H. Karwan, "Routing Automated Guided Vehicles in the Presence of Interruptions," International Journal of Production Research, 37, 3, (1999) 653-681.
- C. Oboth, R. Batta and M.H. Karwan, "Dynamic Conflict-Free Routing of Automated Guided Vehicles," International Journal of Production Research, 37, 9, (1999) 2003-2030.
- M. Jamil, A. Baveja and R. Batta, "The Stochastic Queue Center Problem," Computers & Operations Research, 26, 14, (1999) 1423-1436.
- A. Sarac, R. Batta, J. Bhadury and C. Rump, "Reconfiguring Police Reporting Districts in the City of Buffalo," OR Insight, Vol. 12, Issue 3, (1999).
- H. Jin and R. Batta, "Objectives Derived from Viewing Hazmat Shipments as a Sequence of Independent Bernoulli Trials," Transportation Science, 31, 3, (1997) 252-261.
- A. Baveja, J.P. Caulkins, W. Liu, R. Batta and M.H. Karwan, "When Haste Makes Sense: Cracking Down on Street Markets for Illicit Drugs," Socio-Economic Planning Sciences, 31, 4, (1997) 293-306.
- H. Jin, R. Batta, and M.H. Karwan, "On the Analysis of Two New Models for Transporting Hazardous Materials," Operations Research, 44, 5 (1996) 710-723.

- A.V. Naik, A. Baveja, R. Batta, and J.P. Caulkins, "Scheduling Crackdowns on Illicit Drug Markets," European Journal of Operational Research, 88, 2 (1996) 231-250.
- R.F. Dell, R. Batta, and M.H. Karwan, "The Multiple Vehicle TSP with Time Windows and Equity Constraints over a Multiple Day Horizon," Transportation Science, 30, 2 (1996) 120-133.
- D. Sun and R. Batta, "Scheduling Larger Job Shops: A Decomposition Approach," International Journal of Production Research, 34, 7, (1996) 2019-2033.
- G. Vemuganti, R. Batta, and Y. Zhu, "A Note on 'An Approximate Solution to Deterministic Kanban Systems'," Decision Sciences, 27, 4, (1996) 817-826.
- D. Sun, R. Batta and L. Lin, "Effective Job Shop Scheduling Through Active Chain Manipulation," Computers & Operations Research, 22, 2 (1995) 159-172.
- D. Sun, L. Lin, and R. Batta, "Cell Formation Using Tabu Search," Computers and Industrial Engineering, 28, 3 (1995) 485-494.
- R.A. Sivakumar, R. Batta, and M.H. Karwan, "A Multiple Route Conditional Risk Model for Transporting Hazardous Materials," Information Systems and Operational Research, 33, 1, (1995) 20-33.
- M. Faraji and R. Batta, "Forming Cells to Eliminate Vehicle Interference and System Locking in an AGVS," International Journal of Production Research, 32, 10, (1994) 2219-2242.
- R.A. Sivakumar and R. Batta, "The Variance-Constrained Shortest Path Problem," Transportation Science, 28, 4 (1994) 309-316.
- M. Jamil, R. Batta, and D.M. Malon, "The Traveling Repairperson Home Base Location Problem," Transportation Science, 28, 2, (1994) 141-149.
- Y. Ding, A. Baveja, and R. Batta, "Implementing Larson and Sadiq's Location Model Using a Geographic Information System," Computers & Operations Research, 21, 4 (1994) 447-454.
- N.N. Krishnamurthy, R. Batta, and M.H. Karwan, "Developing Conflict-Free Routes for Automated Guided Vehicles," Operations Research, 41 (1993) 1077-1090.
- R.A. Sivakumar, R. Batta, and M.H. Karwan, "A Network-Based Model for Transporting Extremely Hazardous Materials," Operations Research Letters, 13 (1993) 85-93.
- A. Baveja, R. Batta, J. Caulkins, and M.H. Karwan, "Modeling the Response of Illicit Drug Markets to Local Enforcement," Socio-Economic Planning Sciences, 27 (1993) 73-89.
- S.Y. Prasad and R. Batta, "Efficient Facility Locations on a Tree Network Operating as a FIFO M/G/1 Queue," Networks, 23 (1993) 597-603.
- R.A. Sivakumar, R. Batta, and K. Tehrani, "Scheduling Repairs at Texas Instruments," Interfaces, 23:4 (1993) 68-74.
- U.S. Palekar, R. Batta, R.M. Bosch, and S. Elhence, "Modeling Uncertainties in Plant Layout Problems," European Journal of Operational Research, 63 (1992) 347-359.
- L. Lindner-Dutton, R. Batta, and M.H. Karwan, "Equitable Sequencing of a Given Set of Hazardous Materials Shipments," Transportation Science, 25 (1991) 124-137.

- R. Gopalan, R. Batta, and M.H. Karwan, "The Equity Constrained Shortest Path Problem," Computers & Operations Research, 17(1990) 297-307.
- R. Gopalan, K. Kolluri, R. Batta, and M.H. Karwan, "Modeling Equity of Risk in the Transportation of Hazardous Materials," Operations Research, 38(1990) 961-973.
- R. Batta and N.R. Mannur, "Covering-Location Models for Emergency Situations that Require Multiple Response Units," Management Science, 36 (1990) 16-23.
- Y. Carson and R. Batta, "Locating an Ambulance on the SUNY-Buffalo Amherst Campus," Interfaces, 20:5 (1990) 43-49.
- W.V. Huang, R. Batta, and A.J.G. Babu, "The Relocation-Promotion Problem with Euclidean Distance," European Journal of Operational Research, 46 (1990) 61-72.
- R. Batta and W.V. Huang, "On the Synthesis of Advertising and Relocation Decisions for a Facility," Computers and Industrial Engineering, 16 (1989) 179-187.
- R. Batta, "A Queueing-Location Model with Service Time Dependent Queueing Disciplines," European Journal of Operational Research, 39 (1989)192-205.
- R. Batta, "The Stochastic Queue Median over a Finite Discrete Set," Operations Research, 37 (1989) 648-652.
- R. Batta and O. Berman, "A Location Model for a Facility Operating as an M/G/k Queue," Networks, 19 (1989) 717-728.
- R. Batta, A. Ghose, and U.S. Palekar, "Locating Facilities on the Manhattan Metric with Arbitrarily Shaped Barriers and Convex Forbidden Regions," Transportation Science, 23 (1989) 26-36.
- R. Batta, J. M. Dolan, and N. N. Krishnamurthy, "The Maximal Expected Covering Location Problem: Revisited," Transportation Science, 23 (1989) 277-287.
- R. Batta, "Single Server Queueing-Location Models with Rejection," Transportation Science, 22 (1988) 209-216.
- R. Batta and L.F. Leifer, "On the Accuracy of Demand Point Solutions to the Planar, Manhattan Metric p-Median Problem," Computers & Operations Research, 15 (1988) 253-262.
- R. Batta, R.C. Larson, and A.R. Odoni, "A Single Server Priority Queueing-Location Model," Networks, 8 (1988) 87-103.
- R. Batta and U.S. Palekar, "Mixed Planar/Network Facility Location Problems," Computers & Operations Research, 15 (1988) 61-67.
- R. Batta and S.S. Chiu, "Optimal Obnoxious Paths on a Network: Transportation of Hazardous Materials," Operations Research, 36 (1988) 84-92.
- R. Batta, "Comment on 'The Dynamics of Plant Layout'," Management Science, 33 (1987) 1065.
- R. Batta and U.S. Palekar, "Comment on 'Network Median Problems with Continuously Distributed Demand'," Transportation Science, 21 (1987) 217.
- M. Brandeau, S.S. Chiu, and R. Batta, "Locating 2-Medians on Tree Network With Continuous Link Demands," Annals of Operations Research, 6 (1986) 223-253.

6. Submitted Journal Papers

- A. Sarkar, R. Batta and R. Nagi, "Finding Rectilinear Least Cost Paths in the Presence of Convex Polygonal Congested Regions," submitted to Naval Research Logistics.
- A. Sarac, R. Batta and C.M. Rump, "A Branch-and-Price Approach for Operational Oriented Aircraft Maintenance Routing," revision submitted to European Journal of Operational Research.
- S. Huang, R. Batta and R. Nagi, "Selection and Sizing of Congested Connections for a Transportation Network," submitted to Naval Research Logistics.
- E. Delmelle, P. Rogerson, M. Akella, R. Batta, A. Blatt and G. Wilson, "Spatial Considerations in Evaluating the Effectiveness of Mayday Systems," submitted to Transportation Research C.
- A. Sarkar, R. Batta and R. Nagi, "Placing a Finite Size Facility with a Center Objective on a Rectilinear Plane with Barriers," submitted to European Journal of Operational Research.
- H. Kelachankuttu, R. Batta and R. Nagi, "Contour Line Construction for a New Rectangular Facility in an Existing Layout with Rectangular Departments," revision submitted to IIE Transactions.
- K. Thyagararjan, R. Batta, M. Karwan and R. Szczerba, "Routing Aircraft to Minimize the Chance of Detection During Mission Ingress," second revision submitted to Military Operations Research.
- M. Akella, R. Batta, E. Delmelle, P. Rogerson, A. Blatt, G. Wilson, "Using Spatial Interpolation for Solving the Adaptive Cell Tower Location Problem," submitted to Computers & Operations Research.
- S. Huang, R. Batta and R. Nagi, "An Integrated Model for Space Determination and Site Selection of Distribution Centers," submitted to Transportation Science.
- E. Delmelle, P. Rogerson, M. Akella, R. Batta, A. Blatt and G. Wilson, "Improving the Prediction of Cell Phone Signal Strength Using Terrain Information," submitted to Geographical Systems.
- R. Batta, O. Berman and Q. Wang, "Balancing Staffing and Switching Costs in a Call/Service Center," submitted to Operations Research.

7. Book Chapters

- O. Berman, S.S. Chiu, R.C. Larson, A.R. Odoni, and R. Batta, "Location of Mobile Units in a Stochastic Environment," Discrete Location Theory, co-edited by R. L. Francis and P.B. Mirchandani, John Wiley & Sons, NY, (1990) 503-549.
- R. Batta, "Demand Point Approximations for Location Problems," Accuracy of Spatial Databases, co-edited by M. Goodchild and S. Gopal, Taylor and Francis, PA, (1989) 197-207.
- M. Helander and R. Batta, "A Discrete Transmission Model for HIV," Modeling the AIDS Epidemic, co-edited by E.H. Kaplan and M.L. Brandeau, Raven Press, NY.

8. Peer Reviewed Grant Support

National Science Foundation (regular awards)

- Congestion in Facilities Location and Layout: Deterministic and Stochastic Models. \$200,000, 2003-2006. R. Batta and R. Nagi are co-PIs.
- Facility Layout (Re)Design Using Planar & Network Location Approaches. \$255,545. 1998--2001. R. Batta and R. Nagi were Co-PIs. Also got an REU Supplement--\$10,000 and International Supplement--\$14,000.
- Development and Analysis of Conflict-Free Routing Strategies for Free-Ranging Automated Guided Vehicles, \$109,961, 1992--1994. R. Batta and M.H. Karwan were Co-PIs. Also got an REU Supplement--\$10,000.

National Science Foundation (special programs)

- IGERT: Integrated Graduate Education and Research Training in Geographic Information Science. \$4,000,000. 2004-2009. Co-PI with 6 other UB Faculty. D.M. Mark is PI/PD.
- IGERT: Integrated Graduate Education and Research Training in Geographic Information Science. \$3,000,000. 1998-2003. Co-PI with 4 other UB Faculty. D.M. Mark is PI/PD.

National Institute of Justice (regular award)

- Detection and Prediction of Geographical Changes in Crime Rates. \$221,520. 1999-2001. R. Batta, P. Rogerson and C.M. Rump were co-PIs.

9. Grant Support from National Center for Geographic Information and Analysis

Research on Aggregation Analysis for Location Problems, NCGIA, \$19,600. June 1995 through May 1996.

Research on Aggregation Analysis for Location Problems, NCGIA, \$9,500, September 1994 through May 1995.

Research on the Modifiable Areal Unit Problem, Aggregation Analysis for Location Problems, and Modeling Trader Behavior. NCGIA, \$8,799, Summer 1994.

Continuation of "Theoretical Analysis of Aggregation Methods in Location-Allocation Models," \$8,058, Summer 1993.

Theoretical Analysis of Aggregation Methods in Location-Allocation Models, \$7,306, Summer 1992.

Integration of the Hypercube Queueing Model for Police Districting into the ARC/INFO GIS, \$7,306, Summer 1991.

Sensitivity Analyses and the Development of Fast and Accurate Algorithms for Locating and Deploying Emergency Facilities in a Congested Environment, \$8,369, Summer 1990.

Demand Point Approximation for Location Problems, \$7,600, Summer 1989.

10. Grant Support from Center for Transportation Injury Research

Provision of Air Medical Services, and Interpolation of Results from Mobile Sensors. \$83,500. September 2004 through August 2005. P. Rogerson is a co-PI.

Coverage Models in Cellular Communications. \$77,000. September 2003 through August 2004. P. Rogerson is a co-PI.

Data Analysis and Solution Methods for Coverage Models that arise in Cellular Communications. \$70,000. September 2002 through August 2003. P. Rogerson is a co-PI.

Cell Tower Location and Data Analysis Project. \$68,000. September 2001 through August 2002. P. Rogerson is a Co-PI.

ACN/Cell-Phone Coverage Project. \$57,313. September 2000 through August 2001. P. Rogerson is a Co-PI.

CTIR Crash Registry and Cell Phone Coverage Analysis for the ACN System. \$67,500. September 1999 through August 2000. P. Rogerson is a Co-PI.

Western New York Baseline Study. \$32,000. October 1998 through August 1999. P. Rogerson is a Co-PI.

Research on Building an Accident Data Base, Developing a Probabilistic Model, and Identifying Geographical "Hot Spots" for the ACN Project, \$28,881. February 1996 through January 1997. P. Rogerson is a co-PI.

11. Grant Support from Lockheed Martin

Military Mission Planning. \$25,000 grant + \$20,000 gift. 2002.

Supply Chain Optimization. \$25,000 grant + \$14,000 gift. 2001.

Advanced Supply-Chain/Logistics Problems. \$25,000. 2000.

Postal Dispatching Study. \$25,000. 1999.

12. Grant Support from Government

The Design of Police Patrol Operations in the City of Buffalo. \$22,300. 1997-1998. C. Rump was a Co-PI.

Buffalo Police Department, Optimal Allocation of Police Cars in the City of Buffalo. \$5,000. 1997. C. Rump was a co-PI.

Innovative Fusion Capabilities: Tracking, Networking and Visualization. \$553,564. 2004. T. Singh and R. Nagi are co-PDs. Funded by Rosettex Technology and Ventures Group (NIMA/NGA).

13. Grant Support from United Airlines

Irregular Operations Optimization. \$50,000 (first year of a 5 year, \$250,000 pledge).

14. Grant Support from Industry

Distributed Mobile Fusion. \$50,000. 2001. R. Nagi was a co-PI. Funded by Boeing.

Support for Scheduling Software. \$8,500. 2001. L. Lin was a co-PI. Funded by Quebecor Printing.

Operations Analysis and Plant Layout/Facility Redesign Studies. 2001. \$9,943. R. Nagi was a co-PI. Funded by Ferro Electronics, Inc.

Assessment of Operation Efficiency/Layout Design and Development of a Computerized Production Scheduling System in Cylinder Manufacturing Operations. \$25,000. 2000. L. Lin is a co-PI. Funded by Quebecor Printing.

IE-Related Projects at Buffalo Wireworks, Buffalo Wireworks, Inc., \$60,000. 1991-1996.

Capacity Planning and Detailed Scheduling, Clearing Niagara, \$23,500. 1995. L. Lin was a co-PI.

The Development of Vehicle Routes for Overnight Parcel Deliveries, Federal Express Corporation, \$16,500. 1989-1990.

Protective Closures, Inc., Plant Layout. \$6,591. 1997.

Diversified Manufacturing, Inc., GRIT project, Process Improvement-Assessment with Implementation. \$19,166. 1996-1997. C.G. Drury was a co-PI.

Materials Management and Plant Layout Analysis, Harrison Radiator, \$25,000. 1988-1989.

Methods Study for Various Tasks Involved in the Overhauling Procedure of New York City Cars in Blasdell, New York, General Electric Co., \$13,524. 1987.

Data Collection, Relationship Analysis and Personnel Training for a Critical Path Method (CPM) Procedure for Overhauling New York City Cars in Blasdell, New York, General Electric Co., \$9,223. 1986.

15. Graduate Student Supervision (chronologically ordered)

A. Doctoral Dissertations

Wilfred V. Huang; graduated 1/87. Dissertation title: "The Effects of Special Cost Functions and Promotion in Locational Decisions." Job Placement: Assistant Professor, Division of Industrial Engineering, Alfred University, Alfred, New York.

Robert F. Dell; graduated 9/90. Dissertation title: "Development of Equitable Vehicle Routes for Overnight Parcel Deliveries." Mark H. Karwan was a co-advisor. Job Placement: Assistant Professor, Department of Operations Research, Naval Postgraduate School, Monterey, California.

Nirup N. Krishnamurthy; graduated 9/90. Dissertation title: "Modeling Blocking in Automated Guided Vehicle Systems." Mark H. Karwan was a co-advisor. Job Placement: Analyst, Corporate Research, United Airlines, Chicago, Illinois.

Mamnoon Jamil; graduated 4/91. Dissertation title: "The 1-Center Problem with Queueing." Job Placement: Assistant Professor, Department of Management Science, Rutgers, Camden, New Jersey.

Raj A. Sivakumar; graduated 7/92. Dissertation title: "Transportation of Hazardous Materials: A New Modeling Perspective." Mark H. Karwan was a co-advisor. Job Placement: Senior Analyst, Corporate Research, United Airlines, Chicago, Illinois.

Mary Helander; graduated 9/92. Dissertation title: "A Discrete Framework for Modeling and Analyzing HIV Transmission Dynamics." Job Placement: Assistant Professor, Department of Industrial Engineering and Information Systems, Northeastern University, Boston, Massachusetts.

Alok Baveja; graduated 8/93. Dissertation title: "Crackdowns on Drug Markets." Mark H. Karwan was a co-advisor. Job Placement: Assistant Professor, Department of Management Science, Rutgers, Camden, New Jersey.

Thomas D. Hill; graduated 9/93. Dissertation title: "Equity Constrained Preventive Police Patrolling." Job Placement: Lecturer, Dept. of Ind. Engg., SUNY at Buffalo.

Honghua Jin; graduated 8/93. Dissertation title: "Routing of Hazardous Materials: A Probabilistic Perspective." Mark H. Karwan was a co-advisor. Job Placement: Systems Analyst, U.S. Steel Corporation, Gary, Indiana.

Dake Sun; graduated 9/93. Dissertation title: "Dynamic Job Shop Scheduling: An Integrated Approach." Li Lin was a co-advisor. Job Placement: OR Analyst, AVIS Rent-a-Car, New York, New York.

Linda Chattin; graduated 8/94. Dissertation title: "Maximizing Expected Coverage Using State Sensitive Dispatch Assignments." Job Placement: Lecturer, Department of Industrial Engineering, State University of New York at Buffalo.

Ramprasad T. Narasimhan; graduated 1/96. Dissertation title: "Conflict-Free Routing and Scheduling of Automated Guided Vehicles." Mark Karwan was a co-advisor. Job Placement: Analyst, Corporate Research, United Airlines, Chicago, Illinois.

Peiwu Zhao; graduated 4/96. Dissertation title: "Analysis of Aggregation Effects in Location Problems." Job Placement: OR Analyst, ESRI Corporation, San Bernadino, California.

Christopher Oboth; graduated 11/96. Dissertation title: "Conflict-Free Routing of Automated Guided Vehicles: A Simulation Study." Mark Karwan was a co-advisor. Job Placement: Lecturer, Makerere University, Uganda.

Shoou-Jiun Wang; graduated 9/00. Dissertation title: "Optimal Police Enforcement Allocation - A Socio-Economic Model of Criminal Geographic Displacement." Christopher Rump was a co-advisor. Job placement: First USA Bank, Wilmington, Delaware.

Selcuk Savas; graduated 9/00. Dissertation title: "A Spatial Modeling Perspective to Problems in Facilities Design." Rakesh Nagi was a co-advisor. Job Placement: Assistant Professor, Koc University, Istanbul, Turkey.

Qian Wang; graduated 9/00. Dissertation title: "Discrete Facility Location Design with Stochastic Customers and Immobile Servers." Co-advisor was Christopher Rump. Job Placement: Senior Operations Research Specialist, Synquest, Inc., Washington, D.C.

Vedat Akgun; graduated 2/01. Dissertation title: "Routing Hazardous Materials in the Presence of Weather Systems." Christopher Rump was a co-advisor. Job Placement: Senior System Analyst, Emery Worldwide Airways.

Abdul Sarac; graduated 2/01. Dissertation title: "Daily Operational Aircraft Maintenance Routing Problem." Co-advisor was Christopher Rump. Job Placement: Operations Research Analyst, United Airlines, Chicago, Illinois.

William J. Frank; graduated 9/01. Dissertation title: "On Investigating the Effect of Temporal Link Parameters on Hazmat Route Selection." Job Placement: Postdoctoral Associate, CMIF Lab, University at Buffalo (SUNY).

Simin Huang, graduated 9/04. Dissertation title: "The Connection/Location Problem and its Application to Supply Chain Design." Co-advisor was Rakesh Nagi. Job Placement: Postdoctoral Associate, School of Business, University of Toronto.

Avijit Sarkar; graduated 9/04. Dissertation title: "Finite-Size Facility Placement in the Presence of Generalized Congested Regions." Co-advisor was Rakesh Nagi. Job Placement: Visiting Assistant Professor, University of Toledo.

B. Master's Theses

June M. Squilla; graduated 6/86. Thesis title: "Relaxing the Independence Assumption of a Maximal Covering Location Problem."

Ram Gopalan; graduated 7/87. Thesis title: "Modeling the Equity of Risk in the Transportation of Hazardous Materials." Mark Karwan was a co-advisor.

Heidi J. Wild; graduated 5/88. Thesis title: "Optimization of a Deterministic Conveyor System."

Yolanda M. Carson; graduated 8/88. Thesis title: "Locating an Ambulance on the State University of New York at Buffalo Amherst Campus."

Sharad Elhence; graduated 8/88. Thesis title: "Modeling Uncertainties in Plant Layout Problems."

Krishna S. Kolluri; graduated 8/88. Thesis title: "Multiple Routing for Equity of Risk in the Transportation of Hazardous Materials." Mark Karwan was a co-advisor.

Mojgan Faraji; graduated 10/89. Thesis title: "A New Dispatching Control Policy that Eliminates Blocking in an Existing Multi-Vehicle Automatic Guided Vehicle System (AGVS) by forming Cells--A Simulation Study."

Raj A. Sivakumar; graduated 8/89. Thesis title: "Modeling Wind Effects in the Transportation of Liquefied Gas Hazardous Materials."

V. A. Viswanathan; graduated 8/89. Thesis title: "Demand Point Approximations for the Planar, Euclidean Metric, p-Median Problem, With and Without Barriers to Travel."

George Martin; graduated 6/92. Thesis title: "Police Patrol Routing."

Gautham Vemuganti; graduated 10/92. Thesis title: "A Hardware Simulation of an AGV System." Li Lin was a co-advisor.

Pradeep Bandla; graduated 6/94. Thesis title: "Aircraft Route Selection for Effective Maintenance Repairs."

Amitabh Bansal; graduated 7/94. Thesis title: "Analysis of Error due to Aggregation of Demand in Location Problems."

Colleen Eagen; graduated 2/96. Thesis title: "Practical Hazardous Materials Routing Under Insurance Parameters."

Abdulkadar Sarac; graduated 4/97. Thesis title: "One Dimensional Systematic Search with Finite Defect Length." Colin Drury was a co-advisor.

Steven J. D'Amico; graduated 8/97. Thesis title: "Allocation of Police Patrol Cars in the City of Buffalo." Christopher Rump was a co-advisor.

Mohamed H. Badr; graduated 8/98. Thesis title: "Dyanmic Facility Location with Time Varying Demands." Joy Bhadury was a co-advisor.

Jorge H. Jaramillo; graduated 8/98. Thesis title: "Genetic Algorithms for Location Problems." Joy Bhadury was a co-advisor.

Pavan Kumar Nandikonda; graduated 9/00. Thesis title: "1-Center Facility Placement in a Rectilinear Plane with Barriers." Rakesh Nagi was a co-advisor.

Mayur Vamanan, graduated 2/01. Thesis title: "A Heuristic for Optimal Order Fulfillment in an (s,S) Inventory System with Stochastic Customer Demands."

Goutham Ekollu, graduated 9/01. Thesis title: "Three Tier Flight Attendant Recovery Model During Airline Disruptions."

Avijit Sarkar, graduated 6/02. Thesis title: "Study of Rectilinear Least Cost Travel (Path and Entry/Exit) through Convex Polygonal Congested Regions." Rakesh Nagi was a co-advisor.

H-C. Su, graduated 6/02. Thesis title: "A Queueing Model of Airline Passenger Demand Spill and Recapture for Revenue Management." Chris Rump was a co-advisor.

Feng Gao, graduated 6/02. Thesis title: "A Constrained Transportation Model for Optimizing Crackdowns on Illicit Drug Markets." Chris Rump was a co-advisor.

Geetika Rana, graduated 9/02. Thesis title: "Optimizing Inventory Levels and Order Fulfillment Strategies in a Supply Chain."

Mohan Akella, graduated 2/03. Thesis title: "Base Station Location and Channel Allocation in a Cellular Network with Emergency Coverage Requirements."

Karthik Tyagarajan, graduated 9/03. Thesis title: "Routing Aircraft to Minimize the Chance of Detection During Mission Ingress." M. Karwan was a co-advisor.

Seethal Mishra, graduated 6/03. Thesis title: "A Rule Based Approach for Handling Time Critical Targets in a Dynamic Battlefield Environment."

Lazar Babu, graduated 6/03. Thesis title: "Airport Security System Design." L. Lin was a co-advisor.

Hari Kettalachu, graduated 6/03. Thesis title: "Contour Line Construction for a New Rectangular Facility in an Existing Layout with Rectangular Departments." R. Nagi was a co-advisor.

Amit Parekh, graduated 9/03. Thesis title: "Dynamic Shortest Path Algorithms for Routing of a Hazmat Truck in the Presence of Weather Systems." C. Rump was a co-advisor.

Nishant Mishra, graduated 9/03. Thesis title: "Capacity and Non-Steady State Generalizations to the Dynamic MEXCLP Model for Distributed Sensing Networks." R. Nagi was a co-advisor.

Karen S. Holness, graduated 6/04. Thesis title: "A Case Study in Personnel Assignment." C. Drury was a co-advisor.

Amit Malik, graduated 9/04. Thesis title: "Routing of Unmanned Aerial Vehicles (UAVs) to Reduce the Possibility of Detection." M. Karwan was a co-advisor.

Sameer Naik, graduated 9/04. Thesis title: "Delay Estimation and its Impact on the Aircraft Ground Holding Problem."

16. Current Graduate Students

A. Doctoral (past A-exam stage)

Mohan R. Akella

Arun Jotshi

Qiang Gong

Jay Neelakanthan (A. Gosavi is a co-advisor)

B. Masters

Viral Garac

17. Professional Activities (significant ones in bold)

- Member of the Institute for Operations Research and the Management Sciences.
- Senior Member of the Institute of Industrial Engineers.
- Refereed articles for the following scientific journals:
 - Computers and Industrial Engineering
 - Computers & Operations Research
 - European Journal of Operational Research
 - Geographical Analysis
 - IEEE Transactions on Systems, Man and Cybernetics
 - IIE Transactions
 - International Journal of Flexible Manufacturing Systems
 - Information Systems and Operational Research
 - Journal of Optimization Theory and Application
 - Location Science
 - Management Science
 - Mathematics of Operations Research
 - Naval Research Logistics
 - Networks
 - Operations Research
 - Transportation Science
- Served as an Associate Editor for Transportation Science on two occasions.
- Refereed proposals for the National Science Foundation, the Department of Transportation, the State Education Board of the State of Idaho, and the North Carolina Department of Administration.
- Consulted for several major corporations--NYNEX, Dunlop, Motorola, Texas Instruments, Fort James and Georgia Pacific.
- Served numerous times on review panels for the National Science Foundation.
- Served as a book reviewer for West Publishing Company, Inc., on several occasions.
- **Member of the Editorial Advisory Board for the Journal Computers & Operations Research.**
- Served on ACORD Board.
- **Department Editor for Location and Transportation Modeling, IIE Transactions: Scheduling and Logistics.**
- Chair of Fora Subcommittee, INFORMS, June 2000-present.
- Served as ABET reviewer for two programs.

18. Academic Awards

Recipient of the Junior and Senior Science Talent Awards from the Indian government.

Recipient of Merit Scholarships for all five years of study at the Indian Institute of Technology, Delhi.

Sustained Achievement Award (2002), Exceptional Scholar Program, University at Buffalo.

19. News Articles on Research

"UB Software to Give U.S. Military a Clearer Picture of 'Theater of War'," [Read more.](#)

"Understanding Battlefield Realities: Software Allows the Military to Track and Predict Movements," [Industrial Engineering](#), March 2004.

"New Software Helps Lift 'Fog and War'," [Read more.](#)

"Mathematical Model Joins War on Drugs," [OR/MS Today](#), October 1992, Vol. 19, No. 5.

"Industrial Engineers Develop Model for War on Drugs," [Industrial Engineering](#), September 1992, Vol. 24, No. 4.

"War on Drugs gets Help from Unlikely Source: Math Model Predicts Success," [Crime Control Digest](#), June 22, 1992, Vol. 26, No. 25.

"The Police Department in Buffalo gets Some Ideas About how to Make its Drug-Enforcement Efforts More Efficient," [The Chronicle of Higher Education](#), July 8, 1992, Vol. 38, No. 44.

"Researchers Eye Formula for War on Drug Business," [The Buffalo News](#), June 22, 1992.

"Fighting Drugs with Mathematics," [UB Today](#), Fall 1992.

"Drug War: Researchers Say Common Manufacturing Strategy Could Help," [Narcotics Control Digest](#), September 15, 1993, Vol. 23, No. 19.

Discussion on CBS Radio, Seattle, Washington. "Waging an Optimal War on Drugs," [OR/MS Today](#), October 1993, Vol. 20, No. 5.