

Rajan Batta: Significant Grant Support

National Science Foundation (regular awards)

Collaborative Research: Advancing Supply Prepositioning for Emergency Preparedness by Social Sensing, \$369,965, 2017-2020. R. Batta and Q. He are co-PIs. Y. J. Son from University of Arizona is our collaborator and has a separate \$150,000 budget.

Collaborative Research: Regulating Hazardous Materials Transportation by Multi-Objective Dual Toll Pricing, \$318,362, 2011-2014. R. Batta and C. Kwon are co-PIs. Y. J. Son from University of Arizona is our collaborator and has a separate \$150,000 budget.

Inspection Strategies in Airport Security Systems, \$300,000, 2005-2008. R. Batta, C. Drury and L. Lin are co-PIs. Also got an REU Supplement for \$12,000 and an IREE Supplement for \$15,000.

Congestion in Facilities Location and Layout: Deterministic and Stochastic Models. \$200,000, 2003-2006. R. Batta and R. Nagi are co-PIs. Also got an REU supplement--\$12,000.

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.

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.

Center for Transportation Injury Research

Using Advanced Technology for Emergency Response. \$210,000. July 2009 through September 2012.

Delivery of Critical Items in a Prolonged Disaster Response Effort. \$70,000. July 2008 through June 2009. P. Rogerson is a co-PI.

Models for Air Medical Service Base Location. \$40,000. July 2006 through June 2007. P. Rogerson is a co-PI.

Provision of Air Medical Services, and Interpolation of Results from Mobile Sensors. \$87,000. January 2005 through May 2006. P. Rogerson is a co-PI.

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

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

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

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

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

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.

Government

Effective and Equitable Supply of Gasoline to Impacted Areas in the Aftermath of a Natural Disaster. \$79,572. 2014-15. R. Batta is PD. Co-PIs: C. Kwon and A. Baveja (Rutgers). Funded by Region II University Transportation Research Center.

Realizing Information Gain through Optimization of Reconnaissance and Surveillance (RIGORS), Office of Naval Research (ONR). Through CUBRC. UB portion \$706,452, PI P. Singla, co-PI R. Batta and M. Majji, September 2012—August 2017).

Control of Anarchical and Ordered Systems (CAOS): Mathematical Programming Approaches for Measuring Decentralized and Centralized Network Operations. Office of Naval Research (ONR), CUBRC/UB \$977,418, PI R. Nagi, co-PI Mark Karwan, R. Batta, M. Sudit (CUBRC PI), (July 2012–June 2015).

Optimization Planning and Tactical Intelligent Management of Aerial Sensors (OPTIMAS). \$1,171,247. 2008-2011. M. Karwan is PD. Co-PIs: R. Batta, J. Crassidis, R. Nagi, M. Sudit, T. Jasinski, P. Deignan, C. Barsalou, PM: M. Moskal. Funded by Office of Naval Research.

Redistricting and School Bus Route Optimization for Sweet Home School District: A GIS Approach. \$10,095. 2006. I. Casas is PD. R. Batta and R. Nagi are co-PIs. Funded by the Sweet Home School District, Amherst, New York.

Information Fusion Applied in an Earthquake Disaster Setting. \$2,500,000. 2000-2005. P. Scott is PD. J. Llinas, L. Lin, K. Kesavadas, and A. Bisantz are co-PIs. Funded by Air Force Office of Scientific Research.

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

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.

United Airlines

Irregular Operations Optimization. \$50,000.

Industry

Routing and Dispatching Software Development for the Center for Transportation Excellence. \$45,579. 2007. Funded as a sub-contract through CUBRC.

Computer Based Order Combination Method. \$6,662. 2007. Funded by American Coaster Company.

Layout Efficiency Analysis. \$11,000. 2007. Funded by Niagara Transformer.

Layout and Analysis of Assembly Packaging Area. \$14,000. 2006. Funded by Hydro-Air Components.

Warehouse Layout Study. \$16,923. 2006. Funded by Curbell, Inc. R. Nagi is a co-PI.

Manufacturing Layout Study. \$16,923. 2006. Funded by Curbell, Inc. R. Nagi is a co-PI.

Optimization of Roll and Sheet Sizes. \$14,478. 2005. Funded by MOD-PAC, Inc.

Improvement of Store Room Operations and Inventory Management, Phase-I. \$35,882. 2005. Funded by NFTA. L. Lin was a co-PI.

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 was 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.