James R. Bradley

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Hays T. Watkins Professor of Operations
Management and Business Analytics

Research and Teaching Interests

My teaching over most my career has focused on operations management, manufacturing, supply chain management, information technology, and Lean Six Sigma process improvement. Recently, as I developed the Masters of Business Analytics Program at the Raymond A. Mason School of Business and assumed the role of Faculty Director, my teaching focus has changed to business analytics, including Python programming for analytics, optimization, and algorithm development. Similarly, my future research focus will be on data science including the control of multiple agents, particularly in the context of order fulfillment centers, and the Internet of Things (IoT).

Technology Skills

Current Languages:	Python, C++, Visual Basic.NET, Excel VBA
Previous Languages:	Matlab, Fortran, Assembler, Mathematica, PHP
Operating Systems:	Mainly Windows/DOS, some Linux/Unix
Databases:	MySQL, SQL Server, Access
Optimization:	Gurobi, CPLEX, Xpress MP
Visualization:	Tableau
Simulation:	Custom-programmed, ProcessModel, ServiceModel, Simul8, Arena, Siman

Current Courses

Competing through Business Analytics (introductory business analytics course at masters level), Optimization, Heuristic Algorithms, Python, MSBA Capstone Project Course, Management of Emerging Technologies

Education

Ph.D.; Industrial Engineering, Stanford University, Stanford, CA, 1997.

MBA; Operations Management concentration, Tuck School, Dartmouth College, Hanover NH, 1984.

B.E.; Mechanical and Electrical Engineering, General Motors Institute, Flint, MI, 1982.

Employment History

2015-2016	COLLEGE OF WILLIAM AND MARY	WILLIAMSBURG, VA
	Co-chaired Provost's Ad Hoc Committee on Engineering Opportunities at William and Mary.	
2014-Current	COLLEGE OF WILLIAM AND MARY	WILLIAMSBURG, VA
	Developed the Masters of Science in Business Analytics (MSBA) Program in the Raymond A. Mason School of Business. MSBA Faculty Director.	
2013-Current	COLLEGE OF WILLIAM AND MARY	WILLIAMSBURG, VA
	Operations and Information Systems Management Area Coordinator	
2004-Current	COLLEGE OF WILLIAM AND MARY	WILLIAMSBURG, VA
	Taught business analytics, supply chain management, operations management, information technology, and product development courses in the Raymond A. Mason School of Business undergraduate program, full-time MBA program, and the Flex MBA Program.	
1996-2004	CORNELL UNIVERSITY	ITHACA, NY
	Taught in, and directed the Semester in Manufacturing course, which is a fifteen-credit inter-disciplinary course on manufacturing that integrates (i) theory and real-world practice, (ii) shop-floor to boardroom issues, and (iii) the functional areas of a firm. Tours of manufacturing, distribution, and service sites along with guest speakers facilitate the integration of theory with its application.	
1994-1995	STANFORD UNIVERSITY	STANFORD, CA
	Faculty Advisor for Industrial Engineering Senior Project course. Teaching Assistant for Analysis of Production and Operating Systems and Manufacturing Strategy courses. Lectured in conjunction with Production and Operating Systems course.	
1994	DIGITAL EQUIPMENT CORPORATION	BOXBOROUGH, MA
	Researched maximizing return on assets in circuit board manufacturing.	
1991 - 1992	GENERAL MOTORS CORPORATION	LANSING, MI
	Production Superintendent of Lansing Car Assembly Paint Department. Responsibilities included budget attainment, subordinate development, and managing continual quality improvement in the 350- person department.	
1989 - 1991	GENERAL MOTORS CORPORATION	PITTSBURGH, PA
	Production Superintendent of metal stamping and fabrication production departments. Implemented quality improvements by developing relationships with customers and implementing statistical quality control.	

1987 - 1989 GENERAL MOTORS CORPORATION LANSING, MI

Administrator to Lansing Automotive Division Manufacturing Manager responsible for eight assembly and fabrication plants with an annual $2 billion annual budget. Directed the business planning process, budget development, and zero-base staffing planning.

1985 - 1987 Maintenance General Supervisor. Responsible for daily performance of a $300 million automated body assembly system. Supervised 24 first-line supervisors responsible for 350 skilled employees.

1984 - 1985 Chairperson of a 90-person task force responsible for increasing the productivity of a highly automated body assembly system. Predicted productivity increases and financial performance using learning curve theory. Developed simulation models to assess improvement strategies.

1977 - 1982 Engineering and supervised equipment installations, supervised production and maintenance employees as coop student.

Executive Education and Short-Term Teaching Programs

2007-2009 COLLEGE OF WILLIAM AND MARY WILLIAMSBURG, VA

Developed and taught custom executive programs in Lean Six Sigma green belt certification, and a custom executive program in manufacturing and supply chain management for the Defense Contract Management Agency.

2009-2010 UNIVERSITY OF COLOGNE COLOGNE, GERMANY

Taught supply chain management courses at the graduate level in the Seminar für Supply Chain Management Program.

1996-1998 CORNELL UNIVERSITY ITHACA, NY

Taught manufacturing and technology development in executive education programs.

1996 SANTA CLARA UNIVERSITY SANTA CLARA, CA

Developed and taught a course entitled “Integrating Design and Manufacturing” with two other instructors.

Honors

Masters of Science in Business Analytics Class of 2021 Faculty Excellence Award, Mason School of Business, 2021.

Dean's Research Fellow, 2017-2020, Raymond A. Mason School of Business.

Masters of Science in Business Analytics Class of 2017 Faculty Excellence Award, Mason School of Business, 2017.

Alfred N. Page Teaching Award, Masters of Science in Business Analytics, Mason School of Business, 2017.

McGlothlin Teaching Award, Mason School of Business, 2016.

Daniel C. Lewis Award for Exceptional Service, Mason School of Business, 2015

Class of 1997 Award for Innovation in the Use of Classroom Technology, College of William and Mary, Mason School of Business, 2014.

NASA Certificate of Achievement for contribution to CK-12 Modeling and Simulation educational materials, August 10, 2012

Governor's Technology Award, presented to the Modeling and Simulation Flexbook in which the chapter "Using Computer Simulation to Make Business Decisions" appeared, 2012

Hays T. Watkins Chaired Professor, 2011.

Best paper honors in the STEM Education track at MODSIM 2011.

Class of 1997 Award for Innovation in the Use of Classroom Technology, College of William and Mary, Mason School of Business, 2011.

Finalist in the *State Council of Higher Education for Virginia Outstanding Faculty Awards* competition for teaching with technology, 2011.

Cabell Fellowship, College of William and Mary, 2010. Given in recognition of exemplary teaching and scholarly excellence.

Daniel C. Lewis Award for Exceptional Service, Mason School of Business, 2009.

Finalist in the *State Council of Higher Education for Virginia Outstanding Faculty Awards* competition for teaching with technology, 2008.

Class of 1997 Award for Innovation in the Use of Classroom Technology, College of William and Mary, Mason School of Business, 2008.

Finalist in the *State Council of Higher Education for Virginia Outstanding Faculty Awards* competition for teaching with technology, 2007.

Class of 1997 Award for Innovation in the Use of Classroom Technology, College of William and Mary, Mason School of Business, 2005.

Finalist in the 2002 MSOM Student Paper Competition. Natalia Golovachkina under my supervision, "Supplier-Manufacturer Relationships Under Forced Compliance Contracts, 2002."

Operations Research Meritorious Service Award for Excellence in editorial service to that journal, 1998.

Students' Choice Award for Teaching Excellence, Semester in Manufacturing, Cornell University, 2001.

Future Professor of Manufacturing Start-up Grant, Stanford University, 1996.

Honors (continued)

Tony A. Johnson Fellow, Stanford University, 1996.

Department of Energy Integrated Manufacturing Fellowship, 1995-1996.

Thomas W. Ford Manufacturing Fellowship, 1994-1996.

Sloan Future Professors of Manufacturing Fellowship, 1992-1996.

Tuck Scholar, Dartmouth College, 1984.

General Motors Master's Degree Fellowship, 1982-1984.

Magna Cum Laude, GMI, 1982.

Tau Beta Pi, GMI, 1982.

Pi Tau Sigma, GMI, 1982.

Phi Eta Sigma Freshman Honor Society, GMI, 1981.

Management Honor Society, GMI, 1981.

President of Junior Class, 1980.

Research Activities

Published Research Articles

The Generation of Visually Credible Adversarial Examples with Genetic Algorithms, forthcoming in *ACM Transactions on Evolutionary Learning and Optimization*.

Frequently Co-cited Publications: Features and Kinetics, (with S. Devarakonda, D. Korobskiy, Tandy Warnow, G. Chacko), Quantitative Social Science, Volume 1, Issue 3, Summer 2020, 1223-1241.

Cocitations in context: disciplinary heterogeneity is relevant (with S. Devarakonda, A. Davey, S. Liu, D. Korobskiyb, T. Warnow, and G. Chacko, Quantitative Science Studies, Volume 1, Issue 1, Winter 2020, 264–276.

The Effect of Distribution Practices on Replenishment Lead Time and Inventory, Production and Operations Management, Volume 26, Number 12, December 2017, 2287–2304.

An Evaluation of Capacity and Inventory Buffers as Mitigation for Catastrophic Supply Chain Disruptions, chapter in Global Supply Chain Security, Andrew Thomas, Vaduva, Sebastian eds., Springer, Ltd. 2014.

An Improved Method for Managing Catastrophic Supply Chain Disruptions, Business Horizons, July-August 2014, Volume 57, Number 4, 483-495.

Failure Modes and Effects Analysis: An Evaluation of Group versus Individual Performance, with Hector Guerrero, Production and Operation Management, Volume 22, Issue 6, Nov.-Dec. 2013, 1524-1539.

An Alternative FMEA Method for Simple and Accurate Ranking of Failure Modes, with Hector Guerrero, *Decision Sciences*, Volume 42, Number 3, August 2011, 743-771.

The Global Replenishment Problem, with Héctor Guerrero. Wiley Encyclopedia of Operations Research and Management Science, 2011.

A Framework for RFID Deployment in Supply Chains, with Hector Guerrero, IT Professional, IEEE Computer Society, July/August 2010, 44-50.

The Complexity of Assessing Supply Chain Risk, Supply Chain Security: International Practices and Innovations in Moving Goods Safely and Efficiently, Praeger Security International, 2010, 89-120.

Lifetime Buy Decisions with Multiple Parts (with H. H. Guerrero), Production and Operations Management, Volume 18, No.1, Jan.-Feb. 2009, 114-126.

Product Design for Life Cycle Mismatch, (with H. H. Guerrero), Production and Operations Management, Volume 17, No. 5, Sept.-Oct. 2008, 497-512.

Further Improvements on Base-Stock Approximations for Independent Stochastic Lead Times with Order Crossover, (with Lawrence W. Robinson), Manufacturing and Service Operations Management, Volume 10, Number 2, Spring 2008, 325-327. (50%)

Online Appendix for Further Improvements on Base-Stock Approximations for Independent Stochastic Lead Times with Order Crossover, (with Lawrence W. Robinson), published in Manufacturing and Service Operations Management online: http://www.informs.org/site/MSOM/index.php?c=12&kat=Online+Supplements+%26+Data+Sets, Spring 2008. (50%)

Analyzing the Effect of the Inventory Policy on the Nonstationary Performance with Linear Control Theory, (with K. Hoberg and U. Thonemann), IIE Transactions, Volume 39, Number 9, September 2007, 911-924. (40%)

Analyzing the Effect of Inventory Policy on Order and Inventory Variability with Linear Control Theory, (with K. Hoberg and U. Thonemann), European Journal of Operational Research, Volume 176(2007), 1620-1642.

Improved Base-Stock Approximations for Independent Stochastic Lead Times with Order Crossover, (with Lawrence W. Robinson). Manufacturing and Service Operations Management, Volume 7, Number 4, Fall 2005, 319-329. (50%)

Appendix to “Improved Base-Stock Approximations for Independent Stochastic Lead Times with Order Crossover”, published online at Manufacturing and Service Operations Management publication web site: http://www.informs.org/site/MSOM/index.php?c=12&kat=Online+Supplements+%26+Data+Sets. (99%)

Optimal Control of a Dual Service Rate M/M/1 Production-Inventory Model, European Journal of Operational Research, Vol. 163, No. 3 (2005), 812-837.

Cornell Students Participate in Lord Corporation Kaizen Projects, (with Jim Willett). Interfaces, Vol. 34, No. 6(2004), 451-459. (95%)

A Brownian Approximation of a Production-Inventory System with a Manufacturer That Subcontracts, Operations Research, Vol. 52, No. 5, (2004), 765-784.

Bridging the Cultures of Business and Poverty: Welfare-to-Career at Cascade Engineering, Inc., Stanford Social Innovation Review, 1(2003), 72-81.

Supplier-Manufacturer Relationships Under Forced-Compliance Contracts, (with Natalia Golovachkina), Manufacturing and Service Operations Management, Vol. 5, No. 1, 2003, 67-69 (extended abstract). (50%)

Managing Cyclic Inventories, (with R. W. Conway), Production and Operations Management, Vol. 12, No. 4(2003), 464-479. (80%)

The Effect of Product Variety on Supply-Chain Performance, (with U. W. Thonemann), European Journal of Operational Research. Vol. 143, No. 3(2002), 548-569. (50%)

Managing Capacity and Inventory Jointly in Manufacturing Systems, (with Peter W. Glynn), Management Science, Vol. 48, No. 2 (2002), 273-288. (90%)

Consequences of Order Crossover Under Order-Up-To Policies, (with L. W. Robinson and J. Thomas), Manufacturing and Service Operations Management, Vol. 3, No. 3 (2001), 175-188. (45%)

The Simultaneous Planning of Production, Capacity, and Inventory in Seasonal Demand Environments, (with Bruce Arntzen), Operations Research, Vol. 47, No. 6 (1999), 795-806. (95%)

Refereed Educational Materials

Using Computer Simulation to Make Business Decisions, cK-12 FlexBook sponsored by NASA, http://www.ck12.org/flexbook, 2012.

Books

Improving Business Performance with Lean, Second Edition, Business Expert Press, 2015.

Improving Business Performance with Lean, Business Expert Press, 2012.

Dissertation

Managing Manufacturing Assets and Subcontracting Policies, (advisors: Peter W. Glynn, J. Michael Harrison, and Hau L. Lee), Stanford University. 1997.

Published Business Articles

Inventory Magic, (with H. H. Guerrero) APICS Magazine, May 2007, 18-22.

Performance Measurement in Practice: Learning by Example (with A. P. Blossom), APICS—The Performance Advantage, April 2005. (80%)

What Has NOT Changed in Supply Chains Because of ‘e-biz?’, (with J. Suwinski, D. Thomas, and L. J. Thomas), Achieving Supply Chain Excellence Through Technology, 3(2001), 75-78. (33%)

Proceedings Articles

The Supply Chain Game: Serious Gaming in Supply Chain Management Curricula, MODSIM World 2011 Conference Proceedings, published by NASA.

Desktop Modeling and Simulation: Parsimonious, Yet Effective Discrete-Event Simulation Analysis, MODSIM World 2011 Conference Proceedings, published by NASA.

Analyzing the Bullwhip Effect of Installation-Stock and Echelon-Stock Policies with Linear Control Theory, (with K. Hoberg and U. Thonemann), pp. 63-71 in *Operations Research Proceedings 2003: Selected Papers of the International Conference On Operations Research*. 2003, ed. by D. Ahr, R. Fahrion, M. Oswald and G. Reinelt, Springer, Heidelberg, 2003.

Research Grant Reports

Hampton Roads Supply Chains and their Impact on the City of Portsmouth, delivered to the City of Portsmouth VA, 2/4/2009.

Transportation, Warehousing, and Distribution: An In-depth Study of the Supply Chains of Hampton Roads, delivered to Opportunity Inc., May 28, 2009.

Manuscripts under Review

Generating Adversarial Examples for Visual Similarity, Counterfactuals, and the Measurement of Robustness, submitted to *IEEE Transactions on Neural Networks and Learning Systems*.

> Adversarial examples for neural networks are used for adversarial training, measuring robustness, and creating counterfactuals that explain in a non-technical fashion the classifications that arise from neural networks. The literature focuses most often on generating adversarial examples quickly rather than on their quality. This is appropriate when adversarial examples are presented to neural networks programmatically. However, recent legislation requires that companies explain decisions made by automated decision-making processes, such as classifications from neural networks, to those affected by the decisions. Adversarial examples in this context, which are often called counterfactuals, must be interpretable by humans. We develop a genetic algorithm to provide such counterfactuals for the MNIST data set, which affords us comparison with other methods developed for this popular data set. Genetic algorithms are slower than other methods, such as gradient descent, but we find that they provide adversarial examples that are more visually similar to the original input.

The Transferability of Adversarial Examples Within and Across Neural Network Architectures, submitted to *IEEE Transactions on Neural Networks and Learning Systems*.

> Our research evaluates neural network architectures for their vulnerability to adversarial attack and also their robustness, which is defined as the dynamic where small perturbations in the inputs (features) of a neural network lead to small perturbations in the classification returned by the neural network. Specifically, we will initially use the MNIST handwriting data set and evaluate the possibly varying vulnerability among neural network architectures to adversarial attacks, the efficacy of adversarial training, and the likelihood of transfer-based attacks across neural network architectures.

Research Grants

SEVA-PORT Operational Competency Gap Analysis of Hampton Roads Virginia Transportation, Warehousing, and Distribution Operations, 2008-2009.

Portsmouth Virginia Analysis of Traffic Congestion and Marine Terminal Activity, 2008-9.

Presentations at Professional Meetings

The Effect of Distribution Center Processes on Supply Chain Inventory, *INFORMS* Conference, November 2019.

The Mason School's Masters of Business Analytics Programs, *INFORMS* Conference, November 2019.

"The Educational Mission of Its Master of Science in Business Analytics," SouthEast Decision Sciences Institute Meeting, February 19, 2016.

Analytical Models of Replenishment Lead Time for Distribution Practices, *INFORMS* Conference, November 2011.

Desktop Modeling and Simulation: Parsimonious, Yet Effective Discrete-Event Simulation Analyses, MODSIM World Conference, Virginia Beach, VA, October 13, 2011.

The Supply Chain Game: Serious Gaming in Supply Chain Management Curricula, MODSIM World Conference, Virginia Beach, VA, October 13, 2011.

Featured speaker at Richmond/Tidewater INFORMS Chapter Meeting: "Industry and Academia: Working Together", November 17, 2010.

Invited research presentation: "An Efficient, Accurate, and Valid FMEA Priority Ranking Methodology," INFORMS Conference, October 2008.

"Life-time Buy Decisions with Multiple Obsolete Parts," INFORMS Conference, October 2008.

"Supply Chain Risk Management," Center for Innovation Management Conference, Williamsburg, June 2008.

VPA Economic Impact Analysis, International Trade Data Users Conference, Baruch College—The City University of New York, New York, June, 2008.

Life-Time Buy Decisions for Products with Multiple Obsolete Parts, *POMS*, May 2008.

"Implementing RFID Technology in Industry," Gaming and Wireless Technology Workshop for Educational Institutions, Norfolk State University, April 28, 2008

Product Design for Life Cycle Mismatch, *INFORMS* Conference, November 2007.

Life-Time Buy Decisions for Products with Multiple Obsolete Parts, *INFORMS* Conference, November 2007.

Life-Time Buy Decisions with Multiple Parts and Multiple Products, *POMS* Conference, May 2007.

Life-Time Buy Decisions with Multiple Products and Multiple Parts, *INFORMS* Conference, November 2006.

Product Design for Life Cycle Management, *INFORMS* Conference, November 2006.

The Life Cycle Mismatch Problem, forthcoming presentation at *Production and Operations Management Society* Conference, May 2006.

Improved Base-Stock Policies Under Order Crossover, *INFORMS Conference*, October 2003.

Presentations at Professional Meetings (continued)

Improved Base-Stock Policies Under Order Crossover, *INFORMS Conference*, Nov. 2002.

Improved Base-Stock Policies Under Order Crossover, *INFORMS Manufacturing and Service Operations Management Conference*, June 2002.

Improved Base-Stock Policies Under Order Crossover, *INFORMS Conference*, November 2001. (Session chair.)

Using Product Mix Flexibility to Implement a Make-to-Order Assembly Line, research with A. Paul Blossom, *INFORMS Conference*, June 2001.

Increasing Product Mix Flexibility on the Assembly Line, *INFORMS Conference*, November 2000. (Session organizer and chair.)

The Effect of Product Variety on Supply Chain Performance" *INFORMS Conference*, November 1999.

The Simultaneous Planning of Production, Capacity, and Inventory in Seasonal Demand Environments, *INFORMS Conference*, November 1999.

Nine Mistakes in the Use of Performance Measures to Motivate Your Organization, at *INFORMS Conference*, November 1998.

The Semester in Manufacturing, at *INFORMS Conference*, Spring 1998. (Session organizer and chair.)

Managing Manufacturing System Assets & Subcontracting Policies, at *INFORMS Conference*, Spring 1997.

A Subcontracting Manufacturing Model, Invited Session, INFORMS Conference, Spring 1996.

The Capacity/Inventory Investment Tradeoff in Manufacturing Systems, Sponsored Session, INFORMS Conference, Fall 1995.

Other Presentations

"Industry and Academia: Working Together," Featured speaker at Hampton Roads Chapter of INFORMS, November 17, 2010

"A New FMEA Ranking Method," invited talk at the Seminar für Supply Chain Management, University of Cologne, Germany, May 2010

"SEVAPORT Grant Research Summary" Portsmouth Marine Summit; March 26, 2010

"A New FMEA Ranking Method and Comparison of FMEA Ranking Methods," invited talk at Cox School of Business, Southern Methodist University, January 2010

Presented results of SEVAPORT Grant White Paper at the Hampton Roads Transportation, Warehousing, and Distribution Forum, VMASC, Suffolk VA, September 25, 2009

"Strategies to Maximize Port Utilization while Minimizing Traffic Congestion in Hampton Roads," Maritime Port Summit, Portsmouth, VA, February 2009.

Panel Discussion on Changes in Supply Chain Structure, Distribution Networks, and Distribution Center Management Due the Recent Trends in Oil Prices and Other Market Factors, Swisslog Customer Conference, Williamsburg, VA, September 2008.

"The Challenges of Implementing RFID Technology in Industry," Trends and Advances in Wireless Technology Workshop, Norfolk State University, March 12, 2008

The Life Cycle Mismatch Problem, presentation at *Cisco Systems*, March 2006.

Improved Base-Stock Policies Under Order Crossover, University of Pennsylvania Wharton School, April 2005.

Integrating Capacity Investment Decisions with Decisions About Inventory and Outsourcing, College of William and Mary, April 2005.

Integrating Capacity Investment Decisions with Decisions About Inventory and Outsourcing, Cisco Systems, January 2005.

Integrating Capacity Investment Decisions with Decisions About Inventory and Outsourcing, Stanford Alliance for Innovative Manufacturing, Stanford University, November 2004.

Integrating Capacity Investment Decisions with Decisions About Inventory and Outsourcing, School of Business, San Francisco State University, November 2004.

Improved Base-Stock Policies Under Order Crossover, College of William and Mary Business School, February 2004.

Immersion Learning: Semester in Manufacturing (SiM), Erdman Center Industrial Advisory Board Meeting, University of Wisconsin School of Business, October 2003.

Make-to-Order Production in the Automobile Industry, Stanford Business School, 2002.

Improved Base-Stock Policies Under Order Crossover, Stanford Business School, 2002.

Capacity Management, Industrial Engineering and Engineering Management Department, Stanford University, January 1999.

Doing Business in a Global Environment. Co-organized and facilitated this conference for small business managers, government officials, and educators with The Center for Applied Competitive Technologies at De Anza College and The National Coalition of Advanced Technology Centers, 1996.

Work-in Progress

The Transferability of Adversarial Examples Generated with Genetic Algorithms

Our research evaluates neural network architectures for their vulnerability to adversarial attack and also their robustness, which is defined as the dynamic where small perturbations in the inputs (features) of a neural network lead to small perturbations in the classification returned by the neural network. Specifically, we will initially use the MNIST handwriting data set and evaluate the possibly varying vulnerability among neural network architectures to adversarial attacks, the efficacy of adversarial training, and the likelihood of transfer-based attacks across neural network architectures.

Autonomous Control of Multiple Agents in an Automated Order Fulfillment Center

The goal of this project is to use neural networks to derive policies for autonomous order fulfillment agents that require the minimum of state information in order to achieve order fulfillment tasks without collision and undue congestion.

An Evaluation of Neural Network Misclassification Due to Underspecification versus Data Variation

An analysis of a large data set ("Big Data") to better understand the most significant root causes of neural network classification errors whether it be underspecification of the neural network model or variation in training data. The former cause is an emerging concept and a better understanding of these root causes can contribute to improved neural network architectures.

Optimal Design of Automated Order Fulfillment Centers

Automated order fulfillment centers operate under very different circumstances than typical distribution centers and order fulfillment operations. The goal of this research is to find the optimal aspect ratio, orientation of pod storage, and aisle layout in order to maximize throughput of an automated order fulfillment center.

Fast Heuristic for Multi-Agent Pickup and Delivery in Automated Order Fulfillment Centers

The well-known A-star algorithm can be used for planning paths through automated order fulfillment centers. Its timely use become difficult, however, as the scale of an order fulfillment center increases. This project aims to derive a fast heuristic of the A-star algorithm with the least possible increase in path distance.

Ethics, Equity, Fairness, and Explainability in Data Science

The dawn of the Data Science Era has brought great promise for improved data analysis, but also concern in terms of decisions that cannot be understood or explained and equity amongst those who are affected by the emerging analytical techniques. The goal of this project is to understand the core qualitative issues in this realm and to develop tangible techniques for instantiating fairness, equity, and explainability into data science methods.

Editorships, Editorial Boards, & Journal Review Activities

2009-2015	Associate Editor, *Manufacturing and Service Operations Management*, an INFORMS journal.
2007-2020	Editorial Board for the *Journal of Supply Chain Management*.
2002-2006	Editorial Board, *Manufacturing and Service Operations Management*, an INFORMS journal.
1996-2000	Associate Editor, *Operations Research.*
1994-Present	Ad hoc reviewer for *European Journal of Operational Research, Operations Research, Management Science, Manufacturing and Service Operations Management, IIE Transactions,* and *Production and Operations Management*.

School and University Service

2019/2020	Member Mason School of Business Personnel Committee
2014-2019	MSBA Faculty Director
2015-2017	Co-chair Provost's Committee on Engineering and Design Opportunities at William and Mary
2012-Present	Member Mason School of Business CCE Advisory Committee
2010-2014	Member Mason School of Business Personnel Committee
2013-2014	Member Ad Hoc Committee on Blended MBA Program
2013	Member Real Estate Search Committee
2010	Member Fort Lee MGJW MBA Program Curriculum Development Committee
	Advisory Board Member for William & Mary Technology and Business Center
2006-2009	Member (Chair) Faculty Affairs Committee of the Mason Business School.
2008-2009	Member Faculty University Priorities Committee
2008-2009	Member Mason School Operations Committee
2006-2008	Faculty Advisor for undergraduate students.
2007	Ad hoc member of the Academic Review Committee.
2006-2007	Chaired Teaching Evaluation Committees for two promotion reviews.
2005-2007	Co-director of Northrop Grumman Speaker Series Committee.
2005-2007	Co-director of Operation and Information Systems Group Seminar Series.
2006	Engaged two community clients in support of the College of William and Mary Economic Development Department.
2006	Panelist for "Who Killed the Electric Car," a documentary presented in conjunction with the Mason School Undergraduate Business Program.
2006	Participated in the committee that developed the proposal for the undergraduate major in Process Management & Consulting.
2001-2003	Cornell University Faculty Club Board of Directors.

Community Service

2009	Taught a seminar on Lean processes for Williamsburg area transportation, distribution, and warehousing managers in conjunction with William & Mary Economic Development Department and Opportunity Inc.
2009	Taught a seminar on Lean processes for Williamsburg area business owners and managers
2008	Taught a seminar for the Center for Innovative Technology member companies
2008	Taught two seminars for Williamsburg area business people on Lean Thinking.
2007	Taught a seminar for the Center for Innovative Technology member companies
2007	Interviewed for an article on the business climate in Williamsburg for small businesses (Next Door Neighbors Magazine).
2007	Taught three seminars for Williamsburg area business people on business uses for Excel and Lean Thinking.
2007	Participated in recruiting companies to relocate in Williamsburg in conjunction with the Williamsburg Economic Development Department,
2006	Gave a (free) seminar to Hampton Roads area business people on the use of advanced features of Excel in business.

Professional Societies & Related Activities

I am a member of the Institute for Operations Research and Management Science (INFORMS) and the Production and Operations Management Society (POMS).

I have taken leadership roles in the following activities related to professional societies:

2005-2006	Production and Operations Management Society Wickham Skinner Teaching Award Committee.
2003	Chair, *INFORMS* Prize Committee.
2002-2004	Member of *INFORMS* Prize Committee.
2002	Chaired and Hosted the *INFORMS Multi-Echelon Inventory Conference* at Cornell University.
2000	INFORMS Session Chair, *Innovative Management of Manufacturing Capacity*.
1998	INFORMS Session Chair, *Education Programs in Manufacturing*.
1996	Seminar co-organizer, *Doing Business in a Global Environment*, De Anza College.

Fellowships

1996	*Future Professor of Manufacturing Start-up Grant*, Stanford University.
1996	*Tony A. Johnson Fellow*, Stanford University.
1995-1996	Department of Energy Integrated Manufacturing Fellowship.
1994-1996	Thomas W. Ford Manufacturing Fellowship.
1992-1996	Sloan Future Professors of Manufacturing Fellowship.
1995-1996	Department of Energy Integrated Manufacturing Fellowship.

Consulting Activities

2020	Analyzed optimal locations for cell tower investment for major cell phone service provider.
2019	Analyzed online retail sales data to recommend preferred sales channels.
2017	Develop natural language processing solution for automatic cleansing and categorization of input data.
2002-Present	Facilitated many Lean Six Sigma process improvement projects in manufacturing, service, and administration processes.
2011	Developed of a decision-making tools at a distribution facility
2011	Increased efficiency of material replenishment process at large electronics manufacturing plant
2011	Analyzed and improved efficiency of distribution center picking operations are distribution center of multi-billion dollar enterprise
2010	Lean Six Sigma projects on quick changeover and quality improvement at Ball Manufacturing, Williamsburg, VA.
2010	Streamlined crossdock operation materials flow at Army Air Force Exchange Service distribution center
2009	Taught Executive Education Program on Manufacturing and Supply Chain Management for Defense Contract Management Agency
2008	Taught Executive Education Program on Lean Six Sigma for Maersk Lines, Limited.
2007	Analyzed Economic Impact on Virginia Economy for Virginia Port Authority.
2007	Taught Executive Education Program on Lean Six Sigma for Maersk Lines, Limited.
2007	Taught seminars on business uses of Excel and Lean Thinking.
2007	Analyzed the traffic impact of a new port terminal for the City of Portsmouth
2006	MYMIC. Performed a strategic analysis for this modeling and simulation company.
2006	Applied EM. Performed a strategic analysis for this company's software marketing business, and developed a tool to assess prospective new markets.

Consulting Activities (continued)

2005	Built a data-driven decision support system for rationalizing the delivery of services for Virginia Employment Commission.
2005	Lean Project Management Training and Kaizen Event for the Navy NEXCOM Command, in conjunction with William and Mary Business School Center for Corporate Education.
1996	3M, Optimized return on assets in a seasonal demand environment.

Boards

2020-present	Kettering University School of Management Industry Advisory Board
2000-2004	Women's Opportunity Center (Ithaca, NY)

Teaching—Independent Studies

I advised many independent study courses while at Cornell University. At William and Mary, I have advised these independent study programs:

Spring, 2020	Cole Fairbanks
Spring, 2019	Evin Smith
Fall, 2018	Peret Strand
Spring, 2018	David Young
Fall, 2017	Michel Rivas
Spring, 2016	Derek Anderson
Spring, 2016	Lauren Goldfarb
Spring, 2015	Sonali Haldar
Fall, 2014	Larry Subramanian
	Many in the 2008 – 2014 time frame
Summer, 2007	Matt Foerster, International Finance.
Spring, 2007	Beulah Pidakala, Supply Chain Risk Management and Process Improvement.
Spring, 2006	Patrick Molitor, Supply Chain Management.
Fall, 2005	Grzegorz Nowak, Visual Basic Programming and Decision Analysis.