

CURRICULUM VITAE

Christos G. Cassandras

Division of Systems Engineering
and
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Education

1974-77 - B.S.	<i>Yale University</i> , New Haven, Connecticut
1977-78 - M.S.E.E.	<i>Stanford University</i> , Stanford, California
1978-79 - S.M.	<i>Harvard University</i> , Cambridge, Massachusetts
1979-82 - Ph.D.	<i>Harvard University</i> , Cambridge, Massachusetts Ph.D. Thesis: "Sample Path Analysis of Discrete Event Dynamic Systems"

Professional Experience

9/14 - present	Boston University, Boston, Massachusetts. Distinguished Professor of Engineering
7/08 - present	Boston University, Boston, Massachusetts. Head, Division of Systems Engineering, and Professor of Electrical and Computer Engineering
11/14 - present	Tsinghua University, Beijing, China. Chair Professor, Center for Intelligent and Networked Systems, Department of Automation
1/97 - 6/08	Boston University, Boston, Massachusetts. Professor of Manufacturing Engineering, and Professor of Electrical and Computer Engineering
9/93 - 12/97	University of Massachusetts, Amherst, Massachusetts. Professor of Electrical and Computer Engineering.
9/89 - 8/93	University of Massachusetts, Amherst, Massachusetts. Associate Professor of Electrical and Computer Engineering.

2/84 - 8/89	University of Massachusetts, Amherst, Massachusetts. Assistant Professor of Electrical and Computer Engineering.
9/82 - 1/84	ITP Boston, Inc., Cambridge, Massachusetts. Senior Systems Engineer.
6/79 - 9/82	Harvard University, Cambridge, Massachusetts. Research Assistant, Decision and Control Group, Division of Applied Sciences.
11/80 - 9/82	C.S. Draper Laboratory, Cambridge, Massachusetts. Participated in industrial automation projects as part of Ph.D. Thesis research.

Visiting Appointments

9/90 - 1/91	Harvard University, Cambridge, Massachusetts. Visiting Scholar (on sabbatical), Division of Applied Sciences.
3/93 - 7/93	Universite Catholique de Louvain, Louvain-la-Neuve, Belgium. Visiting Professor (on sabbatical).
9/03 - 10/03	Tsinghua University, Beijing, China. Visiting Professor (on sabbatical), Center for Intelligent and Networked Systems.
7/10 - 8/10	Universidad de los Andes, Bogota, Colombia. Visiting Professor (on sabbatical).

Consulting

2/84 - 6/87	ITP Boston, Inc., Cambridge, Massachusetts. Development of advanced software tools for computer integrated systems; capacity and production planning of manufacturing systems.
1/88 - present	Network Dynamics, Inc., Natick, Massachusetts. Development of decision support systems for manufacturing systems and computer/communication networks.
9/99 - 11/03	Alphatech, Inc., Burlington, Massachusetts. Modeling and decision support for command-control systems.
9/03 - 12/08	The Mathworks, Inc., Natick, Massachusetts.

Development of discrete event simulation tools.

Research Interests

- Analysis and control of discrete event and hybrid systems
- Stochastic control and optimization
- Distributed systems and cooperative control
- Dynamic control of computer/communication and sensor networks
- Performance analysis and production control of manufacturing systems
- Computer simulation
- Performance analysis and control of transportation systems
- Command-Control systems

Honors/Awards

- 2011 IEEE CSS Control Systems Technology Award
- Distinguished Member Award, IEEE Control Systems Society, 2006
- Harold Chestnut Prize (IFAC Best Control Engineering Textbook), 1999
- IFAC Fellow, elected 2008
- IEEE Fellow, elected 1996
- IEEE Distinguished Lecturer, 2001-2004
- 2014 Engineering Distinguished Scholar Award, Boston University
- 2014 IBM/IEEE Smarter Planet Challenge competition, 2nd prize (student team led by Theodora Brisimi)
- 2011 IBM/IEEE Smarter Planet Challenge competition, 2nd prize (student team led by Yanfeng Geng)
- Zhu Kezhen Award, 2012
- Kern Fellow, 2012
- Lilly Fellow, 1991-92
- Best Interactive Paper Award (with Chen Yao), 48th IEEE Conference on Decision and Control, 2009
- Best Student Paper Award Finalist (Julia Fleck), 2014 Workshop on Discrete Event Systems
- Best Student Paper Award Finalist (Yanfeng Geng), 2011 IEEE Multi-Conference on Systems and Control
- Poster Prize, Third place (with Yanfeng Geng), INFORMS 2011 Northeastern Conference
- Honorary Professor, Huazhong University of Science and Technology, 2003
- Honorary Professor, Wuhan University of Science and Technology, 2003
- Best Session Paper Presentation Award, American Control Conf., 1988
- National Science Foundation Research Initiation Award, 1985
- Harvard University Fellowship, 1978-79
- *Summa Cum Laude* Graduate, Yale University, 1977
- Distinction in Engineering and Applied Science, Yale University, 1977

- *Phi Beta Kappa*, Yale University, 1977
- *Tau Beta Pi*, Yale University, 1977
- Yale University Scholarship, 1974-77
- Scholastic Achievement Award of the Greek Ministry of Education, 1972, 1973

Editorial Activities

Editor-in-Chief,

IEEE Transactions on Automatic Control (1998 - 2009)

Editor, Technical Notes and Correspondence,

IEEE Transactions on Automatic Control (1994 - 1998)

Department Editor,

Journal of Discrete Event Dynamic Systems (2008 - present)

Editor,

Automatica (2015 - present)

Senior Editor,

Journal of Control and Decision (2013 - present)

Section Editor,

Encyclopedia on Systems and Control, 2013 - 2014

Advisory Editorial Board,

IEEE Transactions on Control of Network Systems (2013 - present)

Consulting Editorial Board,

Annual Reviews in Control (2014 - present)

Other Editorial Boards:

- *IEEE Transactions on Automatic Control* (1991 - 1993)
- *Automatica* (1993 - 2002)
- *Journal of Discrete Event Dynamic Systems* (1989 - 2008)
- *IEEE Control Systems Society Conference Edit. Board* (1994)
- *Encyclopedia of Systems and Control* (2013 - present)
- *Intl. Journal of Intelligent Computing and Cybernetics* (2007 - present)
- *Intl. Journal of BioSciences and Technology* (2008 - present)
- *Annual Reviews in Control* (2015 - present)
- *Foundations and Trends in Systems and Control* (2014 - present)

Guest Editor:

- *IEEE Trans. on Automation Science and Engineering* (with M. Fanti, C. Hadjicostis, S. Reveliotis, C. Seatzu), Special Issue on Advances in Discrete Event Systems for Automation, 2014.
- *Control Engineering Practice* (with A. Giua, C. Seatzu, J. Zaytoon), Special

- Section on Analysis and Design of Hybrid Systems, August 2008.
- *Nonlinear Analysis: Hybrid Systems* (with A. Giua, C. Seatzu, J. Zaytoon), Special Section on Analysis and Design of Hybrid Systems, March 2008.
- *Journal on Discrete Event Dynamic Systems* (with A. Giua, C. Seatzu, J. Zaytoon), Special Issue on Discrete Event Methodologies for Hybrid Systems, June 2008.
- *Control Engineering Practice* (with J. Zaytoon), Special Issue on Discrete Event Systems, October 2006.
- *Journal of Mathematical and Computer Modeling* (with L. Dai), Special Issue on Advances in Discrete Event Systems, July 1996.
- *Journal on Discrete Event Dynamic Systems*, Special Issue on Parallel Simulation and Optimization, April 1995
- *IEEE Control Systems Magazine* (with P. Ramadge), Special Issue on Discrete Event Systems, June 1990

Plenary/Keynote Lectures

- 55th IEEE Conf. Decision and Control (CDC), December 2016
- First Intl. Conference on Event-Based Control, Communication, and Signal Processing, June 2015
- First Workshop on Emerging Trends in Event-Based Systems, June 2015
- ACM/IEEE 6th Intl. Conference on Cyber-Physical Systems, April 2015
- 33rd Benelux Meeting on Systems and Control, March 2014
- 32nd Chinese Control Conference, July 2013
- 2013 IEEE CIS School for Computational Intelligence and Automation, July 2013
- 2012 Brazil Automation Conference, September 2012
- 2012 Society of Instrument and Control Engineers (SICE) Annual Conference, August 2012
- 24th Chinese Control and Decision Conference, May 2012
- 4th HYCON2 School on Control of Networked and Large-Scale Systems, June 2011
- 7th Intl. Conference on Electrical Engin., Computing Science, and Automatic Control, September 2010
- 18th IEEE Medit. Conference on New Directions in Control and Automation, June 2010
- 2009 MIT LIDS Student Conference, January 2009
- 2008 UK Automatic Control Conference, September 2008
- 3rd International Conference on Innovative Computing, Information and Control, June 2008
- 8th International Conference on Cooperative Control and Optimization, January 2008
- 2005 IEEE Intl. Symposium on Intelligent Control (ISIC), June 2005
- 41st IEEE Conf. Decision and Control (CDC), December 2002
- 17th Intl. Symposium on Computer and Information Sciences, October 2002
- 6th Intl. Workshop on Discrete Event Systems, October 2002

- *9th IFAC Intl. Symposium on Large Scale Systems*, July 2001
- *2001 American Control Conference (ACC)*, June 2001
- *8th IEEE Medit. Conference on New Directions in Control and Automation*, July 2000
- *Formal Methods in Performance Analysis Summer School*, July 2000
- *11th SPIE Intl. Symposium*, April 1997
- *11th Intl. Conf. on Control and Optim. of Systems*, June 1994
- *Discrete Event System Summer School*, June 1993
- *1st Intl. Workshop on Discrete Event Systems*, August 1992

Distinguished Lectures

- Boston University, College of Engineering Distinguished Scholar Award Lecture, March 2014
- Zhu Kezhen Distinguished Lecture, Zhejiang University, January 2013
- Colorado State University, Information Science and Technology Center Distinguished Lecture, October 2010

Professional Affiliations

Fellow, Institute of Electrical and Electronics Engineers (IEEE)
 Fellow, International Federation of Automatic Control (IFAC)
 Member, Institute for Operations Research and
 Management Science (INFORMS)

Professional and Organizational Activities

President, 2012, IEEE Control Systems Society

Vice President, Publication Activities, IEEE Control Systems Society (2010)

Board of Governors, IEEE Control Systems Society (1996 - 2013)

Board of Directors, American Automatic Control Council (2011 – present)

Co-Founder, Center for Information and Systems Engineering,
 Boston University, 2002

Chair, IEEE Control Systems Society Technical Committee on Control Theory
 (1994)

Chair, IEEE Control Systems Society Working Group on *Discrete Event
 Systems* (1989 - 1993)

Chair, IFAC Technical Committee on *Discrete Event and Hybrid Systems*
 (2002 - 2005)

IEEE Periodicals Committee, 2014-2015

IEEE Fellow Evaluation Committee, 2014-2017

IFAC Fellow Evaluation Committee, 2014-2017

Conference Chair:

- *13th IFAC-IEEE Intl. Workshop on Discrete Event Systems (WODES)*, 2016 (Co-Chair)
- *Workshop on Smart Cities*, December 2015 (sponsored by NSF)
- *2nd Intl. Conf. on Performance Evaluation, Methodologies, and Tools*, Oct. 2007 (Program Chair with A. Proutiere, K. Trivedi)
- *1st IFAC Workshop on Dependable Control of Discrete Systems*, June 2007 (Vice Chair)
- *2nd IFAC Conf. on Analysis and Design of Hybrid Systems (ADHS)*, June 2006 (Co-Chair)
- *43rd IEEE Conf. Decision and Control (CDC)*, December 2004 (General Chair)
- *7th Intl. Workshop on Discrete Event Systems (WODES)*, September 2004 (Co-Chair)
- *Symposium on Complex Systems Modeling and Optimization in the Information Age*, Boston, MA, June 2001 (Co-Chair)
- *38th IEEE Conf. Decision and Control (CDC)*, December 1999 (Program Chair)
- *9th INFORMS Applied Prob. Conf.*, June 1997 (with M. Caramanis)
- *Workshop on Discrete Event Systems*, June 1991 (sponsored by NSF)
- *2nd IEEE Workshop on Computer-Aided Modeling, Analysis and Design of Comm. Links and Networks*, October 1988 (Co-Chair)

Conference Organizing Committees:

- *5th IEEE Conf. on Industrial Electronics and Applications*, June 2010 (Intl. Adv. Committee)
- *Dynamics of Information Systems*, February 2010
- *37th IEEE Conf. Decision and Control*, December 1998 (Vice Chair)
- *36th IEEE Conf. Decision and Control*, December 1997 (Vice Chair)
- *35th IEEE Conf. Decision and Control*, December 1996 (Registr. Co-Chair)
- *32nd IEEE Conf. Decision and Control*, December 1993 (Workshop Chair)

Conference Program Committees:

- *2016 International Conference on System and Control*, May 2016
- *23rd IEEE Mediterranean Conf. on Control and Automation*, June 2015
- *22nd IEEE Mediterranean Conf. on Control and Automation*, June 2014
- *12th Intl. Workshop on Discrete Event Systems*, May 2014
- *18th IEEE Intl. Conf. on Emerging Technologies and Factory Automation*, September 2013
- *8th IFIP/IEEE Intl. Workshop on Feedback Control Implementation and Design*

in Computing Systems and Networks, June 2013

- *12th Intl. Conf. on Control, Automation, Robotics and Vision*, December 2012
- *20th IEEE Mediterranean Conf. on Control and Automation*, July 2012
- *7th IFIP/IEEE Intl. Workshop on Feedback Control Implementation and Design in Computing Systems and Networks*, June 2012
- *4th IFAC Conf. on Analysis and Design of Hybrid Systems*, June 2012
- *2nd Intl. Conf. on Systems and Control*, June 2012
- *6th IFIP/IEEE Intl. Workshop on Feedback Control Implementation and Design in Computing Systems and Networks*, June 2011
- *19th IEEE Mediterranean Conf. on Control and Automation*, June 2011
- *3rd Intl. Workshop on Dependable Control of Discrete Systems*, June 2011
- *6th IEEE Conf. on Industrial Electronics and Applications*, June 2011
- *2011 Chinese Control and Decision Conference*, June 2011
- *18th IEEE Mediterranean Conf. on Control and Automation*, June 2010
- *ACM/SIGSIM Symposium on Theory of Modeling and Simulation (DEVS 2010)*, April 2010
- *3rd IFAC Conf. on Analysis and Design of Hybrid Systems*, September 2009
- *6th Intl. Conf. on Informatics in Control, Automation and Robotics*, July 2009
- *2009 Chinese Control and Decision Conference*, June 2009
- *4th IFIP/IEEE Intl. Workshop on Feedback Control Implementation and Design in Computing Systems and Networks*, April 2009
- *47th IEEE Conf. Decision and Control*, December 2008
- *9th Intl. Workshop on Discrete Event Systems*, May 2008
- *3rd IFIP/IEEE Intl. Workshop on Feedback Control Implementation and Design in Computing Systems and Networks*, May 2008
- *5th Intl. Conf. on Informatics in Control, Automation and Robotics*, December 2008
- *2nd IFIP/IEEE Intl. Workshop on Feedback Control Implementation and Design in Computing Systems and Networks*, May 2007
- *3rd Intl. Conf. on Informatics in Control, Automation and Robotics*, August 2006
- *8th Intl. Workshop on Discrete Event Systems*, July 2006
- *1st IFAC Conf. on Analysis and Control of Chaotic Systems*, June 2006
- *Workshop on Feedback Control Implementation and Design in Computing Systems and Networks*, April 2006
- *Intl. Symp. on Automatic Systems for Building Infrastructure in Developing Countries*, October 2004
- *Intl. Conf. on Informatics in Control, Automation and Robotics*, August 2004
- *SPIE Defense and Security Symposium*, April 2004
- *IMACS/IEEE Conference on Computational Engineering in Systems Applications*, July 2003
- *IFAC Conference on Analysis and Design of Hybrid Systems*, June 2003
- *17th SPIE Intl. Symposium*, April 2003
- *6th Intl. Workshop on Discrete Event Systems*, October 2002
- *Intl. Conf. on Control, Automation, Robotics and Vision*, June 2002
- *16th SPIE Intl. Symposium*, April 2002
- *5th Intl. Workshop on Hybrid Systems: Computation and Control*, March 2002

- *15th SPIE Intl. Symposium*, April 2001
- *4th Intl. Workshop on Hybrid Systems: Computation and Control*, March 2001
- *IEEE Intl. Symposium on Intelligent Control*, July 2000
- *14th SPIE Intl. Symposium*, April 2000
- *IEEE Symposium on Robotics and Control*, July 1999
- *13th SPIE Intl. Symposium*, April 1999
- *IMACS 2nd Intl. Conf. on Circuits, Systems, and Computers*, October 1998
- *7th IEEE Conf. on Control Applications*, September 1998
- *3rd Intl. Workshop on Discrete Event Systems*, August 1998
- *12th SPIE Intl. Symposium*, April 1998
- *5th IEEE Medit. Conference on New Directions in Control and Automation*, July 1997
- *1997 European Control Conference*, June 1997
- *11th SPIE Intl. Symposium*, April 1997
- *2nd Intl. Workshop on Discrete Event Systems*, August 1996
- *IMACS/IEEE Conf. on Computational Engineering in Systems Applications*, July 1996
- *INRIA/IEEE Conf. on Emerging Technologies and Factory Automation*, October 1995
- *3rd IEEE Medit. Conference on New Directions in Control and Automation*, July 1995
- *1994 Intl. Workshop on New Directions in Control and Manufacturing*, November 1994
- *1994 American Control Conf.*, June 1994
- *11th International Conf. on Control and Optim. of Systems*, June 1994
- *12th IFAC World Congress*, July 1993 (Co-Chair of Target Area Program)
- *1993 American Control Conf.*, June 1993
- *3rd Intl. Computer Integrated Manuf. Conf.*, May 1992
- *30th IEEE Conf. Decision and Control*, December 1991
- *IFAC Workshop on Discrete Event System Theo. and Applic.*, June 1991
- *3rd IEEE Workshop on Computer-Aided Modeling, Analysis and Design of Comm. Links and Networks*, September 1990
- *11th IFAC World Congress*, August 1990

Developer or Co-Developer of Short Courses/Workshops:

- One-day workshop on *Five Decades of Ho-ntrol and Ho-ptimization*, 48th *IEEE Conference on Decision and Control*, December 2010
- Tutorial workshop on *Hybrid Dynamical Systems: Modeling and Optimal Control*, 5th *Intl. Workshop on Discrete Event Systems*, August 2000
- One-day workshop on *Discrete Event Dynamic Systems: The State of the Art and New Directions*, 14th *IFAC World Congress*, July 1999 and 36th *IEEE Conf. on Decision and Control*, December 1997
- Short course on *Perturbation Analysis and its Application in Manufacturing Systems*, *INRIA/IEEE Conf. on Emerging Technologies and Factory Automation*, October 1995
- Short course on *Discrete Event Systems*, 3rd *European Control Conf.*,

September 1995

- One-day workshop on *Discrete Event Systems: Modeling, Performance Analysis and Optimization*, 33rd IEEE Conf. on Decision and Control, December 1994
- One-day workshop on *Discrete Event Systems: The State-of-the-Art, Theory and Applications*, Amer. Control Conf., June 1991
- One-day workshop on *Discrete Event Systems: Modeling, Analysis and Applications*, Amer. Control Conf., June 1988

Organizer/Moderator of Conference Panel Sessions:

- *When the Hype hits the Fan: Reining in the Expectations of Modeling and Simulation*, 16th SPIE Intl. Symposium, April 2002
- *Discrete Event Systems*, 29th IEEE Conf. Decision and Control, December 1990

Organizer or Co-Organizer of Conference Technical Sessions:

- *Systems and Control Methods for Smart Cities as Cyber-Physical Systems*, 54th IEEE Conf. Decision and Control, December 2015
- *Systems and Control Methods for Cybersecurity*, 52nd IEEE Conf. Decision and Control, December 2013
- *Persistent Monitoring*, 51st IEEE Conf. Decision and Control, December 2012
- *Mobile Sensor Networks and Cooperative Control*, 49th IEEE Conf. Decision and Control, December 2010
- *Sensor Networks and Cooperative Control*, 48th IEEE Conf. Decision and Control, December 2009
- *Sensor Networks and Cooperative Control*, 47th IEEE Conf. Decision and Control, December 2008
- *Sensor Networks and Cooperative Control*, 46th IEEE Conf. Decision and Control, December 2007
- *Sensor Networks and Cooperative Control*, Tutorial Session, 44th IEEE Conf. Decision and Control, December 2005
- *Control of Wireless Sensor Networks*, 43rd IEEE Conf. Decision and Control, December 2004
- *Cooperative, Dynamic Mission Control for Uncertain, Multi-Vehicle Autonomous Systems*, 41st IEEE Conf. Decision and Control, December 2002
- *Recent Advances in Stochastic Networks*, 39th IEEE Conf. Decision and Control, December 2001
- *Optimal Control of Hybrid Systems*, 39th IEEE Conf. Decision and Control, December 2000
- *Recent Advances in Manufacturing Systems Research*, 38th IEEE Conf. Decision and Control, December 1999
- *Control and Performance Analysis of Computer Communication Networks*, 34th IEEE Conf. Decision and Control, December 1995
- *Parallel Processing in the Control and Optimization of Discrete Event Systems*, 32nd IEEE Conf. Decision and Control, December 1993

- *Beyond Perturbation Analysis of Discrete Event Systems, ORSA/TIMS/INRIA/SMAI Conf. on Applied Probability, June 1993.*
- *Performance Analysis of Discrete Event Dynamic Systems, 29th IEEE Conf. Decision and Control, December 1990*
- *Discrete Event Systems, 28th IEEE Conf. Decision and Control, December 1989*
- *Discrete Event Systems, 26th IEEE Conf. Decision and Control, December 1987*

Invited Speaker at numerous Universities, Industrial Organizations,
Research Institutes, Government Laboratories/Agencies

Chair or Co-Chair of numerous Conference Technical Sessions

Member of various Panels and Award Committees

Reviewer for papers submitted to various technical journals and for proposals
submitted to US and international funding agencies

Publications **(Christos G. Cassandras)**

Books

- [B1] "Applications of Perturbation Analysis in Stochastic Hybrid Systems", (with J.L. Fleck), Lambert Academic Publishing, 2016.
- [B2] "Energy-Latency Trade-offs in Real-Time Wireless Sensor Networks", (with L. Miao), VDM Publishing, 2009.
- [B3] "Introduction to Discrete Event Systems", 2nd Edition, (with S. Lafortune), Springer, 2008.
- [B4] "Stochastic Hybrid Systems", (C.G. Cassandras, and J. Lygeros (Ed's)), Taylor and Francis, 2006.
- [B5] "Introduction to Discrete Event Systems", (with S. Lafortune), Kluwer Academic Publ., 1999.
- [B6] "Discrete Event Systems: Modeling and Performance Analysis", Irwin Publ., 1993.⁽¹⁾
- [B7] Contributor to "Modern Electrical Communications: Theory and Systems" by Tuteur and Stark, 1977.

Articles in Journals and Books

- [A1] Ho, Y.C., and Cassandras, C.G., "A New Approach to the Analysis of Discrete Event Dynamic Systems", *Automatica*, Vol. 19, 2, pp. 149-167, 1983.
- [A2] Ho, Y.C., Cao, X., and Cassandras, C.G., "Infinitesimal and Finite Perturbation Analysis of Discrete Event Dynamic Systems", *Automatica*, Vol. 19, 4, pp. 439-445, 1983.
- [A3] Cassandras, C.G., and Ho, Y.C., "An Event Domain Formalism for Sample Path Perturbation Analysis of Discrete Event Dynamic Systems", *IEEE Trans. on Automatic Control*, AC-30, 12, pp. 1217-1221, 1985.
- [A4] Cassandras, C.G., "Dynamic Material Handling for a Class of Flexible Manufacturing Systems", *Annals of Operations Research*, Vol. 3, pp. 427-447, 1986.

⁽¹⁾ Awarded Harold Chestnut Prize (Best IFAC Control Engineering Textbook), 1999

- [A5] Cassandras, C.G., "Autonomous Material Handling in Computer Integrated Manufacturing", in "Flexible Manufacturing Systems: Methods and Studies", Elsevier Publ., pp. 81-98, 1986.
- [A6] Cassandras, C.G., "On-Line Optimization for a Flow Control Strategy", *IEEE Trans. on Automatic Control*, AC-32, 11, pp. 1014-1017, 1987.
- [A7] Cassandras, C.G., and Strickland, S.G., "Perturbation Analytic Methodologies for Design and Optimization of Communication Networks", *IEEE Journal on Selected Areas in Communications*, Vol. 6, 1, pp. 158-171, 1988.
- [A8] Cassandras, C.G., "Optimal Transmission and Jamming Strategies in a Communication Channel", *Journal of Optimal Control Applications and Methods*, Vol. 9, pp. 19-36, 1988.
- [A9] Cassandras, C.G., and Strickland, S.G., "On-Line Sensitivity Analysis of Markov Chains", *IEEE Trans. on Automatic Control*, AC-34, 1, pp. 76-86, 1989.
- [A10] Cassandras, C.G., and Strickland, S.G., "Sample Path Properties of Timed Discrete Event Systems", *Proceedings of the IEEE*, Vol. 77, 1, pp. 59-71, 1989.
- [A11] Cassandras, C.G., and Strickland, S.G., "Observable Augmented Systems for Sensitivity Analysis of Markov and Semi-Markov Processes", *IEEE Trans. on Automatic Control*, AC-34, 10, pp. 1026-1037, 1989.
- [A12] Ho, Y.C., and Cassandras, C.G., "A New Approach to the Analysis of Discrete Event Dynamic Systems", in "Modeling and Control of Automated Manufacturing Systems" (A.A. Desrochers, Ed.), pp. 206-224, IEEE Computer Society Press, 1989.⁽²⁾
- [A13] Cassandras, C.G., and Ho, Y.C., "An Event Domain Formalism for Sample Path Perturbation Analysis of Discrete Event Dynamic Systems", in "Modeling and Control of Automated Manufacturing Systems" (A. A. Desrochers, Ed.), pp. 225-229, IEEE Computer Society Press, 1989.⁽²⁾
- [A14] Cassandras, C.G., Abidi, M.V., and Towsley, D., "Distributed Routing with On-Line Marginal Delay Estimation", *IEEE Trans. on Communications*, COM-38, 3, pp. 348-359, 1990.
- [A15] Cassandras, C.G., and Ramadge, P.J. (Ed's), Special Issue on Discrete Event Systems, *Control Systems Mag.*, Vol. 10, 4, 1990.
- [A16] Cassandras, C.G., and Ramadge, P.J., "Toward a Control Theory for Discrete Event Systems", *Control Systems Mag.*, Vol. 10, 4, pp. 66-68, 1990.

⁽²⁾ Reprint of older journal article

- [A17] Cassandras, C.G., Lee, J.I., and Ho, Y.C., "Efficient Parametric Analysis of Performance Measures for Communication Networks", *IEEE J. on Selected Areas in Communications*, Vol. 8, 9, pp. 1709-1722, 1990.
- [A18] Gong, W-B., Cassandras, C.G., and Pan, J., "Perturbation Analysis of a Multiclass Queueing System with Admission Control", *IEEE Trans. on Automatic Control*, AC-36, 6, pp. 707-723, 1991.
- [A19] Cassandras, C.G., Gong, W-B., and Lee, J.I., "On the Robustness of Perturbation Analysis Estimators for Queueing Systems with Unknown Distributions", Vol. 30, 3, pp. 491-519, *J. of Optimization Theory and Applic.*, 1991.
- [A20] Suk, J.B., and Cassandras, C.G., "Optimal Scheduling of Two Competing Queues with Blocking", *IEEE Trans. on Automatic Control*, AC-36, 9, pp. 1086-1091, 1991.
- [A21] Cassandras, C.G., and Strickland, S.G., "Sample Path Properties of Timed Discrete Event Systems", in "Discrete Event Dynamic Systems" (Y.C. Ho, Ed.), pp. 21-33, IEEE Press, 1991.⁽²⁾
- [A22] Gong, W-B., Pan, J., and Cassandras, C.G., "Obtaining Derivatives of Stationary Queue Length Probabilities through the Matrix-Geometric Solution Method", *Applied Math. Letters*, Vol. 5, 1, pp. 69-73, 1992.
- [A23] Sparaggis, P., and Cassandras, C.G., "Monotonicity of Cost Functions in a General Class of Queueing Networks", *J. of Discrete Event Dynamic Systems*, Vol. 1, 3, pp. 315-327, 1992.
- [A24] Wardi, Y., Gong, W-B., Cassandras, C.G., and Kallmes, M.H., "Smoothed Perturbation Analysis for a Class of Piecewise Constant Sample Performance Functions", *J. of Discrete Event Dynamic Systems*, Vol. 1, 4, pp. 393-414, 1992.
- [A25] Cassandras, C.G., and Han, Y.N., "Optimal Inspection Policies for a Manufacturing Station", *Eur. J. of Oper. Res.*, Vol. 63, pp. 35-53, 1992.
- [A26] Towsley, D., Sparaggis, P., and Cassandras, C.G., "Optimal Routing and Buffer Allocation for a Class of Finite Capacity Queueing Systems", *IEEE Trans. on Automatic Control*, AC-37, 9, pp. 1446-1451, 1992.
- [A27] Gong, W-B., Yan, A., and Cassandras, C.G., "The M/G/1 Queue with Queue-Length Dependent Arrival Rate", *Stochastic Models*, Vol. 8, 4, pp. 733-741, 1992.
- [A28] Wardi, Y., Kallmes, M.H., Cassandras, C.G., and Gong, W-B., "Perturbation Analysis Algorithms for Estimating the Derivatives of Occupancy-Related Functions in Serial Queueing Networks", *Annals of Operations Research*, Vol.

39, pp. 269-293, 1992.

- [A29] Ho, Y.C., Cassandras, C.G., and Makhoul, M., "Parallel Simulation of Real-Time Systems via the Standard Clock Approach", *J. of Math. and Comp. in Simulation*, Vol. 35, pp. 33-41, 1993.
- [A30] Mohanty, B.P., and Cassandras, C.G., "The Effect of Model Uncertainty on Some Optimal Routing Problems", *J. of Optimization Theory and Applic.*, Vol. 77, 2, pp. 257-290, 1993.
- [A31] Sparaggis, P., Towsley, D., and Cassandras, C.G., "Extremal Properties of the Shortest Non-Full Queue and the Longest Non-Full Queue Policies in Finite Capacity Systems with State-Dependent Service Rates", *J. of Applied Probability*, Vol. 30, pp. 223-236, 1993.
- [A32] Sparaggis, P., Cassandras, C.G., and Towsley, D., "On the Duality Between Routing and Scheduling Systems with Finite Buffer Space", *IEEE Trans. on Automatic Control*, AC-38, 9, pp. 1440-1446, 1993.
- [A33] Cassandras, C.G., "Perturbation Analysis and "Rapid Learning" in the Control of Manufacturing Systems", in "Dynamics of Discrete Event Systems", (C.T. Leondes, Ed.), pp. 243-284, Vol. 51, Academic Press, 1994.
- [A34] Sparaggis, P., Towsley, D., and Cassandras, C.G., "Sample Path Criteria for Weak Majorization", *Adv. in Applied Probability*, Vol. 26, pp. 155-171, 1994.
- [A35] Sparaggis, P., Towsley, D., and Cassandras, C.G., "Routing with Limited State Information in Queueing Systems with Blocking", *IEEE Trans. on Automatic Control*, AC-39, 7, pp. 1492-1497, 1994.
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Miscellaneous (Non-Refereed Conferences, Technical Reports, etc.)

- [M1] Cassandras, C.G., "Uncertainty Propagation in Discrete Linear Systems",

Technical Report, Dept. of Engineering and Applied Science, Yale University, 1977.

- [M2] Cassandras, C.G., "A Model of a TCI Production Line", Technical Report TCI-12, C.S. Draper Laboratory, January 1981.
- [M3] Ho, Y.C., and Cassandras, C.G., "A Concise Explanation of Sensitivity in General Terms", Technical Report FM92200-53, C.S. Draper Laboratory, July 1981.
- [M4] Ho, Y.C. (Ed.) "SPEEDS: A New Technique for the Analysis of Discrete Event Dynamic Systems", Division of Applied Sciences Technical Report, Harvard University, February 1983.
- [M5] Cassandras, C.G., "Perturbation Analysis of Discrete Event Systems in the Event Domain", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, August 1984.
- [M6] Burstein, M., Ort, D., and Cassandras, C.G., "The Interaction of Rivalry and Experience Curve in the Optimal Planning of New Manufacturing Technology when Further Technical Advance is Anticipated", *ORSA/TIMS Conf.*, April 1985.
- [M7] Cassandras, C.G., "Dynamic Routing in Networks: the Perturbation Analytic Approach", *IEEE Intl. Symp. Information Theory*, June 1985.
- [M8] Cassandras, C.G., and Strickland, S.G., "Applications of Perturbation Analysis to Communication Networks", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, August 1985.
- [M9] Cassandras, C.G., "Autonomous Resource Allocation in Flexible Manufacturing Systems", *ORSA/TIMS Conf.*, November 1985.
- [M10] Cassandras, C.G., and Strickland, S.G., "Performance Sensitivity Information from a Single Sample Realization", *1st IEEE Workshop Computer-Aided Modeling, Analysis and Design of Communication Links and Networks*, May 1986.
- [M11] Cassandras, C.G., and Hruby, M., "Modeling and Analysis of a High Performance Distributed Processing System", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, September 1986.
- [M12] Cassandras, C.G., "Sample Path Analysis and Optimization of a State Dependent Routing Strategy", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, September 1986.
- [M13] Cassandras, C.G., "Error Correction in Perturbation Algorithms for Queueing Systems", *ORSA/TIMS Conf.*, October 1986.

- [M14] Cassandras, C.G., Lee, J.I., and Hruby, M., "Performance Evaluation of a Computer-Controlled Tracking System", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, February 1987.
- [M15] Ho, Y.C., Suri, R., Cao, X., Cassandras, C.G., and Zazanis, M.A., "Perturbation Analysis (PA) of Discrete Event Systems - Limited or Unlimited?", *ORSA/TIMS Conf.*, May 1987.
- [M16] Cassandras, C.G., and Strickland, S.G., "Sensitivity Analysis of Markov Processes with Discrete Parameters", *9th Symp. on Math. Prog. with Data Perturbations*, May 1987.
- [M17] Lee, J.I., and Cassandras, C.G., "A Simple Adaptive Load-Balancing Scheme for a Computer-Controlled Tracking System", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, July 1987.
- [M18] Lee, J.I., and Cassandras, C.G., "A Procedure for Generating Real-Time Sensitivity Estimates of Queueing Systems through Augmented Markov Chains", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, July 1987.
- [M19] Cassandras, C.G., "Adaptive Control in Queueing Systems", *11th Triennial Conf. on Operations Research*, August 1987.
- [M20] Strickland, S.G., and Cassandras, C.G., "Efficient Sensitivity Estimation Using Augmented Systems", *2nd IEEE Workshop Computer-Aided Modeling, Analysis and Design of Communication Links and Networks*, October 1988.
- [M21] Mohanty, B., Cassandras, C.G., Towsley, D., and Kurose, J.F., "A Comparative Performance Study for Virtual Circuit and Datagram Based Routing Algorithms", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, October 1988.
- [M22] Cassandras, C.G., Djaferis, T.E., Han, Y.N., Lewis, J., and Looze, D.P., "Dynamic Dispatching Control Algorithms Based on Load Balancing", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, April 1989.
- [M23] Cassandras, C.G., and Strickland, S.G., "On the Constructability of Parameterized Sample Path Families of Discrete Event Systems", *SIAM Conf. on Control in the 90's*, May 1989.
- [M24] Cassandras, C.G., and Han, Y.N., "Optimal Quality Control for a Manufacturing

Cell", *TIMS XXIX Conf.*, August 1989.

- [M25] Cassandras, C.G., Gong, W-B., and Pan, J., "Perturbation Analysis with Rescheduling", *1st Perturbation Analysis Workshop*, August 1989.
- [M26] Cassandras, C.G., "Sensitivity Analysis in Networks with Real-Time Traffic", *28th ORSA/TIMS Conference*, October 1989.
- [M27] Cassandras, C.G., Djaferis, T.E., Lewis, J., and Looze, D.P., "Dispatching through Dynamic Load Balancing (DLB): The "Noontime" Scenario", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, January 1990.
- [M28] Cassandras, C.G., "Dynamic Network Management in the Presence of Real-Time and Non-Real-Time Traffic", *RADC Workshop on Network Management*, March 1990.
- [M29] Cassandras, C.G., Lee, J.I., and Ho, Y.C., "'Parallel' On-Line Simulation Analysis of Transient Performance Measures in Networks", *3rd IEEE Workshop Computer-Aided Modeling, Analysis and Design of Communication Links and Networks*, September 1990.
- [M30] Cassandras, C.G., "Timed Models and Sensitivity Analysis for Discrete Event Systems", *1991 Intern. Workshop on Discrete Event Systems*, June 1991.
- [M31] Cassandras, C.G., and Pan, J., "Flow Control of Bursty Traffic Using Perturbation Analysis", *1992 ORSA Telecommunications Conference*, March 1992.
- [M32] Sparaggis, P., and Cassandras, C.G., "Weak Forms of Majorization with Applications to Finite-Capacity Queueing Systems", *1992 ORSA/TIMS Conference*, April 1992.
- [M33] Cassandras, C.G., "Perturbation Analysis and "Rapid Learning" for Discrete Event Systems: An Overview and a Case Study", *Intern. Workshop on Discrete Event Systems*, August 1992.
- [M34] Cassandras, C.G., "'Sample Path Constructability for Discrete Event Systems", *ORSA/TIMS/INRIA/SMAI Conf. on Applied Probability*, June 1993.
- [M35] Cassandras, C.G., "'Rapid Learning' Techniques for Discrete Event Systems", *IEE Colloquium on Discrete Event Systems*, June 1993.
- [M36] Cassandras, C.G., "Control, Scheduling, and Performance Analysis of Queueing Systems", *Discrete Event Systems Summer School*, June 1993.
- [M37] Bao, G., Cassandras, C.G., Djaferis, T.E., Gandhi, A., and Looze, D.P., "Elevator

Dispatchers for Downpeak Traffic", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, January 1994.

- [M38] Cassandras, C.G., "Perturbation Analysis and Beyond", *Symposium on Decision and Control*, April 1994.
- [M39] Gandhi, A., and Cassandras, C.G., "Optimal Control of Transportation Polling Models with Applications to the Control of Elevator Systems", *ORSA/TIMS/Conf.*, April 1994.
- [M40] Gandhi, A., and Cassandras, C.G., "Scheduling Elevators with Multiple Performance Criteria", *ORSA/TIMS/Conf.*, October 1994.
- [M41] Julka, V., and Cassandras, C.G., "Marking/Phantomizing Perturbation Analysis Techniques for Discrete Stochastic Optimization Problems", *ORSA/TIMS/Conf.*, October 1994.
- [M42] Cassandras, C.G., "On-Line Determination of Policy Parameters for Some Markov Decision Problems in Telecommunication Applications", *3rd ORSA Telecommunications Conf.*, March 1995.
- [M43] Cassandras, C.G., "'Rapid Learning' Techniques for Complex Design and Optimization Problems", *1995 UTECA Conf.*, April 1995.
- [M44] Cassandras, C.G., and Julka, V., "On-Line Optimization Algorithms for Stochastic Discrete Resource Allocation Problems", *8th Applied Probability Conf.*, June 1995.
- [M45] Cassandras, C.G., "Optimal Call Admission in Circuit-Switched Networks", *TIMS XXXIII Conf.*, July 1995.
- [M46] Bergendahl, J., Cassandras, C.G., Esterman, D. and Sullivan, M., "Computer-Controlled LEGO Factory", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, June 1995.
- [M47] Bao, G., and Cassandras, C.G., "Stochastic Comparison Algorithm: Theory and Applications", Dept. of Electrical and Computer Engineering Technical Report, University of Massachusetts/Amherst, November 1995.
- [M48] Cassandras, C.G., and Bao, G., "Concurrent Simulation and Response Surface Estimation for Metamodeling", *AIS'96 Conf.*, April 1996.
- [M49] Cassandras, C.G., and Vazquez-Abad, F., "Weak Convergence of Decentralized Asynchronous Stochastic Approximation Algorithms", *INFORMS Conf.*, May 1996.

- [M50] Cassandras, C.G., "On-Line Control and Optimization of Manufacturing Systems Using Concurrent Estimation Techniques", *AMS-SIAM 1996 Workshop*, June 1996.
- [M51] Cassandras, C.G., and Gong, W-B., "A New Paradigm for Fast Interactive Simulation", Technical Report RL-TR-96-259, March 1997.
- [M52] Cassandras, C.G., "Concurrent Simulation: A Tutorial", *SPIE 11th Annual Intl. Symposium*, April 1997.
- [M53] Cassandras, C.G., Dai, L., and Panayiotou, C.G., "Dynamic Control in Stochastic Resource Allocation Problems", *9th Applied Probability Conf.*, June 1997.
- [M54] Cassandras, C.G., "Concurrent Simulation for Hard Stochastic Optimization Problems", *6th Intl Colloquium on Numerical Analysis and Computer Science with Applications*, August 1997.
- [M55] Cassandras, C.G., and Gokbayrak, K., "Adaptive Admission Control in Wireless Networks", *INFORMS Conf.*, May 1999.
- [M56] Panayiotou, C., and Cassandras, C.G., "A Perturbation Analysis-Based Solution to the Ground-Holding Problem in Air Traffic Control", *INFORMS Conf.*, November 1999.
- [M57] Cassandras, C.G., and Yu, R., "On-Line Lot Size Optimization in Manufacturing Systems", *INFORMS Conf.*, November 1999.
- [M58] Cassandras, C.G., "From Programmable Logic Control to Discrete Event Systems", *NSF Workshop on Logic Control for Manufacturing Systems*, June 2000.
- [M59] Cassandras, C.G., "Joys and Perils of Automation", *NSF Workshop for High School Teachers of Math. and Science*, June 2000.
- [M60] Cassandras, C.G., "Discrete Event Simulation", *Intl. Workshop on Formal Methods for Performance Analysis*, July 2000.
- [M61] Gokbayrak, K., and Cassandras, C.G., "The 'Surrogate Problem' Methodology for Discrete Stochastic Optimization Problems", Dept. of Manufacturing Engineering Technical Report, Boston University, July 2000.
- [M62] Panayiotou, C., and Cassandras, C.G., "Enabling Modeling and Simulation Technologies for Real-Time Course of Action Analysis", Information Superiority Conference, June 2001.
- [M63] Panayiotou, C., and Cassandras, C.G., "Performance Optimization of Complex

Systems”, *Electronic Prototyping Review*, July 2001.

- [M64] Panayiotou, C., Cassandras, C.G., Sun, G., Wardi, Y., and Melamed, B., "Stochastic Fluid Models for Control and Optimization of Communication Networks with QoS Requirements”, *Intl. Workshop on Applied Probability*, January 2002.
- [M65] Cassandras, C.G., Baillieul, J., Castanon, D., Paschalidis, I., Gao, R., Deshmukh, A., and Gong, W., "A Control and Optimization Science Base for Sensor Networks in Adverse and Stochastic Environments”, in *Proceedings of 2005 Design, Service, and Manufacturing Research and Grantees Conf.*, January 2005.
- [M66] Cassandras, C.G., and Zhuang, S., "Dynamic Voltage Scaling for Power-Limited Systems with Hard and Soft Real-Time Tasks”, *2006 INFORMS Annual Meeting*, Nov. 2006.
- [M67] Baillieul, J., Cassandras, C.G., Castanon, D., Paschalidis, I., Gao, R., Deshmukh, A., and Gong, W., "A Control and Optimization Science Base for Sensor Networks in Adverse and Stochastic Environments: Selected Advances of 2007”, in *Proceedings of 2008 Civil, Mechanical and Manufacturing Innovation Grantees Conf.*, June 2008.
- [M68] Cassandras, C.G., and Ning, X., "Dynamic Sleep Time Control in Wireless Sensor Networks Using Traffic Statistics”, *2008 INFORMS Annual Meeting*, Oct. 2008.
- [M69] Cassandras, C.G., Bestavros, A., Paschalidis, I.C., Gao, R., and Gong, W., "Event-driven Sensing for Enterprise Reconfigurability and Optimization”, *2008 INFORMS Annual Meeting*, Oct. 2008.
- [M70] Paschalidis, I.C., and Cassandras, C.G., “New Results on Distributed wireless sensor networks for long-term deployments”, *DOE NNSA University and Industry Technical Interchange Review Meeting (UITI 2008)*, Dec. 2008.
- [M71] Gao, R., Deshmukh, A., Gong, W., Baillieul, J., Cassandras, C.G., Castanon, D., and Paschalidis, I., , "A Control and Optimization Science Base for Sensor Networks in Adverse and Stochastic Environments: Selected Advances of 2008”, in *Proceedings of 2009 Civil, Mechanical and Manufacturing Innovation Grantees Conf.*, June 2009.
- [M72] Paschalidis, I.C., and Cassandras, C.G., "Wireless Sensor Networks for Localization and Coverage Control”, *DOE NNSA University and Industry Technical Interchange Review Meeting*, Dec. 2009.

- [M73] Cassandras, C.G., “Cooperative Control and Optimization in an Uncertain Asynchronous Wireless Networked World”, *18th IEEE Mediterranean Conference on Control and Automation*, June 2010.
- [M74] Cassandras, C.G., and Paschalidis, I.C., “Optimizing the Transportation System’s Response Capabilities”, *DHS 2011 Science Conference - Fifth Annual University Network Summit*, March 2011.
- [M75] Geng, Y., and Cassandras, C.G., “A “Smart Parking” Approach for Urban Settings”, *INFORMS 2011 Northeastern Conference*, May 2011.
- [M76] Rossell, D., Cassandras, C.G., Wang, J., and Paschalidis, I.C., “Network Anomaly Detection using Adaptive Resonance Theory”, *Advanced Cyber Security Center Second Annual Working Conf.*, Boston, MA, Nov. 2012.
- [M77] Wang, J., Paschalidis, I.C., Rossell, D., and Cassandras, C.G., "Anomaly Detection Techniques for Data Exfiltration Attempts", *Advanced Cyber Security Center Second Annual Working Conf.*, Boston, MA, Nov. 2012.
- [M78] Geng, Y., and Cassandras, C.G., “A New “Smart Parking” System Based on Optimal Resource Allocation and Reservations”, *Johns Hopkins Workshop on Cyber-Physical Systems*, Baltimore, MD, March 2013.
- [M79] Fleck, J.L., Pavel, A.B., and Cassandras, C.G., “Integrating mutation and gene expression cross-sectional data to infer cancer progression”, *Systems Approaches to Cancer Biology Conference*, Woods Hole, MA, April 2016.

Patents

“Method and System for Dynamic Parking Allocation in Urban Settings”, Provisional Patent 61/521,424.

Grants and Contracts Awarded

1. "Advanced Design Aids for Computer Integrated Manufacturing"
Principal Investigator
ITP Boston, Inc., 2/85 - 2/87, \$44,000.
2. "Perturbation Analysis of Networks with Dynamic Routing Strategies"
Principal Investigator
National Science Foundation (Res. Init. Grant), 6/85 - 12/87, \$60,000.

3. "Real-Time Control and Performance Optimization of Networks"
Principal Investigator
General Electric Co., 9/85 - 9/86, \$25,000.
4. "Computer-Aided Analysis of High Performance Distributed Processing Systems"
Principal Investigator
General Electric Co., 11/86 - 5/88, \$25,000.
5. "Intelligent Controllers for High Performance Distributed Processing Systems"
Principal Investigator
General Electric Co., 10/87-4/89, \$25,000.
6. "Telecommunication System Analysis"
Co-Principal Investigator (with D. Towsley, J. Kurose, W. Kohler and C.M. Krishna)
Department of Transportation , 11/85 - 9/87, \$15,000.
7. "Resource Contention Management in Parallel Systems"
Principal Investigator (with D. Towsley, J. Kurose)
Rome Air Development Center, 5/87 - 9/87, \$63,000.
8. "Problems in Survivable Multi-Media Networks"
Co-Principal Investigator (with D. Towsley, J. Kurose)
Office of Naval Research, 6/87 - 1/90, \$343,000.
9. "Problems in Survivable Multi-Media Networks" (extension)
Co-Principal Investigator (with D. Towsley, J. Kurose)
Office of Naval Research, 1/90 - 9/91, \$165,000.
10. "Survivable Routing for Dynamically Changing Networks"
Principal Investigator (with D. Towsley, J. Kurose)
Rome Air Development Center, 4/88 - 4/89, \$67,250.
11. "Dynamic Dispatching Control"
Principal Investigator (with T. Djaferis, D. Looze)
United Technologies, 3/88 - 12/94, \$300,000.
12. "Sensitivity Analysis and Real-Time Control of Discrete Event Systems"
Principal Investigator
National Science Foundation, 8/88 - 2/92, \$175,000.
13. "Design and Evaluation of Scheduling Policies for Real-Time and Non-Real-Time Traffic in Communication Networks"
Co-Principal Investigator (with D. Towsley, J. Kurose)
DARPA/NASA, 3/89 - 7/91, \$445,000.

14. Workshop on Discrete Event Systems
Principal Investigator
National Science Foundation, June 1991, \$15,000
15. IBM Graduate Fellowship for PhD candidate P. Sparaggis
Principal Investigator
IBM, 8/91 - 8/93, \$36,000
16. "Discrete Event Dynamic System Based Approaches for Scheduling
Transmissions in Multihop Packet Radio Networks"
Principal Investigator
Naval Research Laboratory, 10/91 - 9/92, \$45,000
17. "Analysis, Control, and Optimization of Discrete Event Dynamic Systems"
Co-Principal Investigator (with W-B. Gong and researchers from
Harvard University and Boston University)
National Science Foundation, 9/92 - 8/96, \$390,000.
18. "Discrete Event Dynamic System Based Approaches for Control in
Integrated Voice/Data Multihop Radio Networks"
Principal Investigator
Naval Research Laboratory, 10/92 - 9/93, \$48,000
19. "Dynamic Dispatching Control for Elevator Systems"
Principal Investigator
National Science Foundation, 9/93 - 9/95, \$30,000
20. REU Supplement to "Dynamic Dispatching Control for Elevator Systems"
Principal Investigator
National Science Foundation, 9/94 - 9/95, \$10,000
21. "A New Paradigm for Fast, Interactive Simulation"
Principal Investigator (with W-B. Gong)
Rome Laboratory, 7/94 - 9/95, \$100,000
22. Editorial Expenses, *IEEE Transactions on Automatic Control*
Principal Investigator, *IEEE*, 8/94 - 12/06, \$1,040,000
23. "Design, Optimization, and Applications of Discrete Event Dynamic Systems"
Co-Principal Investigator (with Y.C. Ho)
Air Force Office of Scientific Research, 1/95 - 1/98, \$333,000
24. "Enabling Technologies for Real-Time Simulation"
Principal Investigator (with W-B. Gong)
Rome Laboratory, 9/95 - 9/96, \$110,000

25. "Analysis, Control, and Optimization of Discrete Event Dynamic Systems"
Co-Principal Investigator (with researchers from
Harvard University and University of Massachusetts)
National Science Foundation, 1/96 - 1/00, \$400,000.
26. "Real-Time Simulation Technologies for Complex Systems"
Principal Investigator (with W-B. Gong)
Air Force Research Laboratory, 5/97 - 4/99, \$102,000
27. "Performance Analysis of a Class of Hybrid Transportation Systems"
Principal Investigator
RTZ-CRA Group, \$10,000
28. "Optimization and Applications of Discrete Event Dynamic Systems"
Principal Investigator (with Y.C. Ho, Harvard University)
Air Force Office of Scientific Research, 1/98 - 12/00, \$525,000
29. "Data Clustering through Neural Networks"
Principal Investigator
ALCOA Co., \$11,000
30. "Synergistic and Decentralized Decision Making in Complex Stochastic Systems"
Co-Principal Investigator (with M. Caramanis, Y. Paschalidis and researchers
from MIT and Tufts University)
National Science Foundation, 10/98 - 9/01, \$1,162,000.
31. "Modeling and Diagnosis Methods for Large-Scale Complex Networks"
Principal Investigator (with researchers at Harvard U., MIT,
U. of Massachusetts, U. of Washington)
EPRI/DOD, 1/99 - 12/01, \$1,500,000.
32. "Modeling Abstraction and Simulation Techniques"
Principal Investigator
Air Force Research Laboratory, 5/99 - 4/02, \$200,000
33. "Quality of Service Provisioning, Scheduling, and Pricing in Communication
Networks"
Co-Principal Investigator (with Y. Paschalidis and J.Q. Hu)
NOKIA, 9/99 - 12/01, \$55,000
34. "Performance Optimization of Complex Systems"
Principal Investigator (with Y.C. Ho, Harvard University)
Air Force Office of Scientific Research, 12/00 - 4/04, \$537,000
35. "Vulnerability Assessment Tools for Complex Information Networks"

Principal Investigator (with researchers at Harvard U., Georgia Tech.,
U. of Massachusetts)
Army Research Office, 5/01 - 4/06, \$2,200,000

36. "Development of a Discrete Event Dynamic Systems Curriculum Using a Web-Based Real-Time Simulated Factory"
Co-Principal Investigator (with P. Vakili, J.Q. Hu)
National Science Foundation, 4/01 - 12/04, \$500,000
37. "Cooperative Mission Control for Unmanned Air Vehicles"
Co-Principal Investigator (with D. Castanon)
Air Force Office of Scientific Research, 5/01 - 4/04, \$438,000
38. "A Control and Optimization Science Base for Sensor Networks in Adverse and Stochastic Environments"
Principal Investigator (with D. Castanon, I. Paschalidis, J. Baillieul and researchers at U. of Massachusetts)
National Science Foundation, 9/03 - 8/09, \$2,500,000
39. "Performance Optimization of Complex Systems"
Principal Investigator (with Y.C. Ho, Harvard University)
Air Force Office of Scientific Research, 4/04 - 3/07, \$818,000
40. "Cooperative Mission Control for Unmanned Air Vehicles in Complex Stochastic Environments"
Co-Principal Investigator (with D. Castanon)
Air Force Office of Scientific Research, 3/04 - 2/07, \$464,000
41. "Development of a Discrete Event and Hybrid System Simulator"
Principal Investigator
The MathWorks, 5/04 - 12/06, \$42,000
42. "Control of Wireless Sensor Networks"
Principal Investigator
Honeywell Laboratories, 12/04 - 12/05, \$15,000
43. "Distributed Wireless Sensor Networks for Long-Term Deployments"
Co-Principal Investigator (with I. Paschalidis)
Dept. of Energy, 9/06 - 8/11, \$1,130,000
44. "Distributed Mission Control for Unmanned Air Vehicles in Stochastic Environments"
Co-Principal Investigator (with D. Castanon)
Air Force Office of Scientific Research, 7/07 - 7/10, \$466,000
45. "Performance Optimization of Complex Systems"

Principal Investigator

Air Force Office of Scientific Research, 7/07 - 11/08, \$265,000

46. "Event-Driven Sensing for Enterprise Reconfigurability and Optimization"
Principal Investigator (with I. Paschalidis, A. Bestavros and
researchers at U. of Massachusetts)
National Science Foundation, 11/07 - 10/11, \$2,000,000
47. "Real-Time Optimization in Complex Stochastic Environments"
Principal Investigator
Air Force Office of Scientific Research, 3/09 - 11/11, \$373,000
48. "Smart Adaptive Reliable Teams for Persistent Surveillance"
Co-Principal Investigator (with C. Belta and
researchers at MIT, U. of Pennsylvania, UC Berkeley)
Office of Naval Research, 9/09 - 5/16, \$4,500,000
49. "Intelligent Systems and Networks"
Co-Principal Investigator
*KIOS Research Center for Intelligent Systems and Networks, Cyprus
1/11 – 12/14, \$62,000*
50. "A Coordinated Approach to Cyber-Situation Awareness Based on Traffic
Anomaly Detection"
Co-Principal Investigator (with I. Paschalidis, M. Crovella and
a researcher at U. of Wisconsin)
Army Research Office, 9/11 – 8/14, \$600,000
51. ""Smart Parking": An Optimal Parking Assignment and Reservation System"
Principal Investigator
*Boston University Office of Technology Development,
1/12 – 12/15, \$50,000*
52. "Real-Time Optimization in Complex Stochastic Environments"
Principal Investigator
Air Force Office of Scientific Research, 4/12 - 3/15, \$389,647
53. "A Cyber-Physical Infrastructure for the "Smart City""
Principal Investigator (with I. Paschalidis, A. Bestavros, A. Kfoury and
researchers at U. of Massachusetts, U. of Connecticut)
National Science Foundation, 9/12 - 9/16, \$1,000,000
54. "Center for Innovation in Point of Care Technologies for the Future
of Cancer Care"
Co-Investigator (PI: C. Klapperich)
National Institutes of Health NIBIB, 7/12 - 6/17, \$8,000,000

55. “Effective Classification and Actionable Obstacle Detection from Roadway Data”
Principal Investigator (with I. Paschalidis)
City of Boston, 9/13 - 9/14, \$85,000
56. “A Smart-city Cloud-based Open Platform and Ecosystem (SCOPE)”
Co-Principal Investigator (with A. Bestavros, L. Hutyra)
National Science Foundation, 8/14 - 7/17, \$800,000
57. “Detection and tracking of multiple dynamic targets using cooperating networked agents”
Co-Principal Investigator (with S. Andersson)
National Science Foundation, 8/15-7/18, \$400,000
58. “Real-Time Optimization in Complex Stochastic Environments”
Principal Investigator
Air Force Office of Scientific Research, 9/15 - 9/18, \$465,293
59. “Workshop on Smart Cities”
Principal Investigator
National Science Foundation, 11/15-10/16, \$80,000
60. “New Frontiers for SimEvents: Advanced Driver Assistance Systems (ADAS) and Automated Sensitivity Analysis”
Principal Investigator
The MathWorks, 6/16 - 5/17, \$50,000
61. “Dynamic Resource Allocation for Energy-Efficient Urban Mobility”
Principal Investigator
Oak Ridge National Laboratory, 12/16-11/19, \$156,252
62. “New Driving Models and Controllers for Connected Autonomous Vehicles”
Principal Investigator
BOSCH, 03/17-02/20, \$328,057
63. “Simultaneous Optimization of Vehicle and Powertrain Operation Using Connectivity and Automation”
Co-Principal Investigator (with researchers at U. of Delaware, U. of Michigan, ORNL, BOSCH)
ARPA-E, 04/17-03/20, \$ 3,357,191
64. “A Dynamic Optimization Framework for Connected Automated Vehicles in Urban Environments,”
Principal Investigator (with I. Paschalidis)
National Science Foundation, 04/17-03/20, \$ 425,000

Doctoral Dissertations Supervised

• At University of Massachusetts, Amherst:

1. "Stochastic Sample Path Analysis of Discrete Event Dynamic Systems",
Stephen G. Strickland, 1988.
2. "Analysis and Optimization of Flow Control and Dynamic Scheduling Problems in
Queueing Systems",
Jung-Bong Suk, 1989.
3. "A Dynamic Load Balancing Approach to the Control of Multi-Server Polling
Systems with Applications to Elevator System Dispatching",
James Lewis, 1991.
4. "Sensitivity Analysis and Control of Queueing Systems with Real-Time Constraints
and Discontinuous Performance Measures",
Michelle H. Kallmes, 1992.
5. "Modeling and Performance Issues in Routing Problems",
Bibhu Mohanty, 1993
6. "Sample Path Analysis and Control of Finite Capacity Queueing Systems",
Panayotis Sparaggis, 1993
7. "Sample Path Based Sensitivity Analysis Techniques in Flow Control Problems",
Jie Pan, 1993
8. "Performance Response Surface Estimation Using Perturbation Analysis
Techniques",
Gang Bao, 1994
9. "Analysis and Control of Multiple Server Multiple Queue Polling Models",
Asif Gandhi, 1995
10. "Sample Path Techniques for Resource Allocation in Wireless Networks",
Vibhor Julka, 1995
11. "Performance Optimization Strategies for Discrete Event and Hybrid Systems",
David Pepyne, 1998
12. "Sample Path Optimization Techniques for Dynamic Resource Allocation
in Discrete Event Systems",
Christos Panayiotou, 1999

• **At Boston University:**

13. "New Optimization Methods for Some Complex Systems",
Kagan Gokbayrak, 2000
14. "Perturbation Analysis and On-Line Control for Discrete Event
Systems via Stochastic Fluid Models",
Gang Sun, 2003
15. "Perturbation Analysis of Feedback-Controlled Stochastic Flow Systems",
Haining Yu, 2004
16. "Cooperative Control and Application to Multi-Vehicle Systems
and Sensor Networks",
Wei Li, 2006
17. "System and Control Engineering Approaches to Some Network
Vulnerability Problems",
Xiaoyi Wu, 2006
18. "Energy-Latency Tradeoffs in Real-Time Wireless Sensor Networks",
Lei Miao, 2006
19. "Receding Horizon Methods in Cooperative Control for Stochastic
Transportation Applications on Graphs",
Kirk Wesselowski, 2007
20. "Optimization Approaches for Reducing Energy Consumption in Wireless
Sensor Nodes and Networks",
Brenda Zhuang, 2007
21. "Dynamic Energy Management in Resource Limited Systems with
Real-Time Constraints",
Jianfeng Mao, 2008
22. "Control and Optimization Approaches for Power Management in Wireless
Sensor Networks",
Ning Xu, 2009
23. "Distributed Control and Optimization in Energy Limited Cooperative Systems",
Minyi Zhong, 2010
24. "Perturbation Analysis, Optimization and Resource Contention Games
in Stochastic Hybrid Systems",
Yao Chen, 2011

25. “Scheduling, Optimization and Perturbation Analysis in Stochastic Hybrid Systems”
Ali Kebarighotbi, 2012
26. “Optimization Methods for Intelligent Transportation Systems in Urban Settings”
Yanfeng Geng, 2013
27. “Control and Optimization Approaches for Power Management in Energy-Aware Battery-Powered Systems”
Tao Wang, 2013
28. “Optimal Control Approaches for Persistent Monitoring Problems”
Xuchao Lin, 2014
29. “An Event-Driven Approach to Control and Optimization of Multi-Agent Systems”
Yasaman Khazaeni, 2016
30. “Topics in Perturbation Analysis for Stochastic Hybrid Systems”
Julia Lima Fleck, 2016
31. “Control and Optimization Approaches for Energy-Limited Systems: Applications to Wireless Sensor Networks and Battery-Powered Vehicles”
Sepideh Pourazarm, 2017

in progress:

“Distributed Optimization for Non-convex Multi-Agent Problems”
Xinmiao Sun

“An Optimal Control Framework for Connected Autonomous Vehicle in Traffic Networks”
Yue Zhang

“Event-Driven Multi-Agent Persistent Monitoring of a Finite Set of Targets”
Nan Zhou

“Dynamic Resource Allocation for Energy-Efficient Urban Mobility”
Rebecca Swaszek

Master's Theses Supervised at University of Massachusetts, Amherst.

1. "Development of a Simulator of Discrete Event Dynamic Systems", Sotirios K. Barkas, February 1985.
2. "The Design of a Task Scheduler for a Parallel Processor Operating with Real-Time Requirements", James Lewis, June 1986.
3. "Use of Perturbation Analysis Techniques for Optimal Routing in Computer Networks", Mohammad V. Abidi, June 1987.
4. "Design Issues for Higher-Level Protocols in High-Speed Communication Networks", Guy VanLeemput, February 1988.
5. "On-Line Sensitivity Estimation for Load Balancing in Real-Time Distributed Systems", Jung-Im Lee, August 1988.
6. "Load Sharing Algorithms in Distributed Systems", Sumitra Chary, August 1989
7. "Sensitivity Analysis of Multiclass Traffic Environments", Vibhor Julka, December 1989
8. "Structural Properties and Dynamic Control of Queueing Systems", Panayotis Sparaggis, June 1990.

• At Boston University:

9. "Optimal Control of One-Stage and Two-Stage Hybrid Systems", Qinjia Liu, 1999
10. "Analysis of Regulation Mechanisms in Communication Networks", Ying Liu, 2003
11. "Receding Horizon and Optimal Control for Manufacturing Processes as Hybrid Systems", Reetabrata Mookherjee, 2003
12. "Optimal Control of Energy Efficient Systems", Brendan O'Hare, 2003
13. "A Receding Horizon Approach to Resource Allocation and Data Harvesting", Egill Tomasson, 2011

14. “Coverage Control and Localization with Sensor Networks”,
Jizong Shang, 2012
15. “Anomaly Detection using Adaptive Resonance Theory”,
Daniel Rossell, 2013

Courses Taught

• At University of Massachusetts, Amherst:

Random Signal Theory, Optimal Control of Dynamic Systems, Stochastic Control of Dynamic Systems, Random Processes, Systems Automation, Special Topics in Discrete Event Systems, Special Topics in Computer Networks

New courses created: Systems Automation, Stochastic Control of Dynamic Systems

• At Boston University:

Automated Manufacturing, Probability and Statistical Methods, Winning the Manufacturing War, Statistics and Quality Engineering, Probability Theory in Electrical and Computer Engineering

New courses created: Automated Design and Manufacturing Systems, Real-Time Production System Control (students manage a real-time simulated production system over three months), Discrete Event and Hybrid Systems, Sensor Networks and Cooperative Control