CURRICULUM VITAE

Joost R. Santos, Ph.D.

1776 G Street, Suite 101
Washington, DC 20052
T 202-9994-1249
F 202-994-4606
joost@gwu.edu
http://www.seas.gwu.edu/~joost

PROFESSIONAL PREPARATION

Doctor of Philosophy (Ph.D.)   Sep 1999-May 2003
Department of Systems and Information Engineering
University of Virginia, Charlottesville, VA

- Dissertation: Interdependency Analysis and its Extensions to Demand Reduction
  Inoperability Input-Output Model and Portfolio Selection (Advisor: Prof. Yacov Y. Haimes)
- In my dissertation research, I developed an input-output methodology for analysis of
  infrastructure system interdependencies with extensions to portfolio optimization.
- As a Ph.D. student, I received the following awards:
  – Most Outstanding Ph.D. student (Department of Systems and Information Engineering)
  – Public Service Award (Center for Risk Management of Engineering Systems)
  – Teaching Assistant Award (Center for Risk Management of Engineering Systems)
  – Three Best Paper Awards from Society for Risk Analysis (SRA), see publications

Master of Science (M.S.) and Bachelor of Science (B.S.)   Jun 1989-March 1997
Department of Industrial Engineering
University of the Philippines (Diliman Campus), Quezon City, Philippines

- My research focused on analytical comparisons of optimization tools and documenting their
  best features in order to prototype of a new suite of operations research tools.

APPOINTMENTS

Assistant Professor   Sep 2009-Present
Department of Engineering Management and Systems Engineering
The George Washington University, Washington, DC

- Taught the following undergraduate and graduate level courses and currently advising five
  doctoral students
  – EMSE /6850 (101/201) Quantitative Models in Systems Engineering: Fall 2009, Fall 2010
  – EMSE 6020 (269) Elements of Problem and Decision Making for Managers: Spring 2010,
    Spring 2011
  – EMSE 6801 (283) Systems Engineering I: Fall 2011
  – EMSE 8998 (398) Advanced Reading & Research: Summer 2010, Spring 2011, Summer
    2011
  – EMSE 8999 (399) Dissertation Research: Spring 2010

- Recipient of several research grants (see Research Grants)
  - National Science Foundation: $153,006   Sep 2009-Aug 2012
  - American Society for Mechanical Engineers: $45,000   Sep 1999-Dec 2011
  - George Washington Institute of Public Policy: $10,000   Jul 2011-Aug 2011

- Research dissemination activities (see Presentations)
  - Organized, chaired, or presented sessions at conferences such as Society for Risk Analysis, International Input-Output Association, INFORMS
  - Invited as colloquium speaker at various universities such as University of Southern California, University of Oklahoma, University of the Philippines, John Hopkins University Applied Physics Laboratory, and also within George Washington University

- Outreach and service activities (see Professional Affiliations)
  - Active panelist to various research programs of the NSF, NASA, ASEE, SMART, NRC
  - Chair, Engineering and Infrastructure Specialty Group of the Society for Risk Analysis Dec 2010-Dec 2011
  - Vice Chair, Engineering and Infrastructure Specialty Group of the Society for Risk Analysis   Dec 2009-Dec 2010

Research Assistant Professor   Jul 2003-Aug 2009
Center for Risk Management of Engineering Systems
University of Virginia, Charlottesville, VA
(Promoted from previous positions of Research Associate and Research Scientist)

- Taught the following undergraduate and graduate level courses, advised/co-advised four MS students, and co-advised one Ph.D. student (Consistently received excellent student feedback in teaching and advising)
  - SYS 453 (Systems Design I, Team Teaching with Yacov Haimes): Fall 2005, Fall 2006, Fall 2007, Fall 2008
  - SYS 454 (Systems Design II, Team Teaching with Yacov Haimes): Spring 2006, Spring 2007, Spring 2008, Spring 2009
  - SYS 650 (Risk Analysis, Team Teaching with Yacov Haimes and Kenneth Crowther), Fall 2008
  - SYS 781 (Special Topics on Advanced Systems Engineering Models), Fall 2005
  - SYS 793 (Independent Study), Fall 2005   Spring 2009 [Note: Two of my MS student advisees received Student Merit Awards from SRA Engineering Infrastructure Specialty Group in December 2008]
  - SYS 898 (Thesis), Fall 2005   Spring 2009
  - SYS 603 (Mathematical Programming, Guest Lecturer), Fall 2006

- Project Manager to two research grants:
  - Virginia Department of Transportation. The goal is to conduct a comprehensive systems requirement assessment of traffic management systems in areas of integration and interoperability, configuration management, systems architecture, access and authentication, and systems lifecycle, among others.
  - Institute of Information Infrastructure Protection (I3P). The goal is to analyze vulnerabilities of oil and gas process control systems and to assess infrastructure interdependencies.

- Co-PI to critical infrastructure protection (CIP) projects for various agencies such as:
  - National Science Foundation
  - Department of Homeland Security (DHS)
  - High Altitude Electromagnetic Pulse (HEMP) Commission
  - Virginia Department of Transportation (VDoT) and Virginia Transportation Research Council (VTRC)
  - Science Applications International Corporation (SAIC)
  - U.S. Department of Defense
  - Defense Threat Reduction Agency

- Miscellaneous research activities (Team Member):
  - Conducted interoperability and cost-benefit analysis studies associated with increased alert levels in the Homeland Security Advisory System (HSAS)
  - Conducted studies on the interdependencies of electric power, transportation and critical infrastructure systems in California, Virginia, Colorado, and New York economic regions
  - Worked on databases developed by Bureau of Economic Analysis (BEA) and Regional Input-Output Modeling System (RIMS II) in conjunction with state and federal agencies to produce policy plans

Graduate Research Assistant   May 2000-May 2003
Center for Risk Management of Engineering Systems
University of Virginia, Charlottesville, VA

- Received Best Paper Awards from the Society for Risk Analysis (SRA) for systems engineering and infrastructure interdependencies research (see publications)
- Received provisional patent from U.S. Patent and Trademark Office for genetic algorithm-based portfolio optimization
- Led a team of students for developing a risk management roadmap for NASA's Faster, Better, Cheaper space missions
- Provided major contributions to the book "Risk Modeling, Assessment, and Management" by Y. Haimes

Graduate Teaching Assistant   Aug 1999-May 2000
Department of Systems and Information Engineering
University of Virginia, Charlottesville, VA
- Provided student mentoring support for three courses (i) differential equations, (ii) probability, (iii) simulation using ARENA, and (iv) risk analysis

Assistant Professor   Jun 1995-Sep 1999
Department of Engineering Sciences
University of the Philippines (Diliman Campus), Quezon City, Philippines
- Received the College of Engineering's Most Outstanding Instructor Award in November 1996
- Designed and instructed engineering courses such as computer programming, mechanics, and differential equations

Industrial Engineering (IE) Program Specialist   Dec 1997-Apr 1998
Department of Education, Culture, and Sports
Manila, Philippines
- Documented curricular programs of IE-offering universities and institutions in the Philippines to determine qualified recipients of "Centers for Excellence" grant from the government

Corporate Planner   Jan 1995-May 1995
Philippine National Oil Company
Makati City, Philippines
• Support Staff for the Senior Vice President of the Corporate Planning Division, provided
  insights on drafting strategic plans for the nation's largest oil producer and distributor

RESEARCH GRANTS

Awarded while in George Washington University

• Collaborative Research: Modeling the Efficacy of Inventory for Extreme Event Preparedness
  Decision Making in Interdependent Systems
  – Sponsor: National Science Foundation
  – Dates of Contract Period: 09/01/09   08/31/12
  – Joost R. Santos (PI, George Washington University), Kash Barker (PI, University of
    Oklahoma), Dan O'Hair (co-PI, University of Oklahoma)
  – Amount: $153,006

• Enhancing Communities' Capability to Evaluate Investments in Resilience
  – Sponsor: American Society of Mechanical Engineers (ASME) Innovative Technologies
    Institute, LLC
  – Date of Contract Period: 01/01/11 - 12/31/11
  – Joost R. Santos, Principal Investigator
  – Amount: $45,000

• TITLE: Collaborative Disaster Policymaking across Critical Infrastructure and Key Resource
  (CI/KR) Sectors
  – Sponsor: George Washington Institute of Public Policy
  – Date of Contract Period: 07/01/11 - 08/31/11
  – Joost R. Santos, Principal Investigator
  – Amount: $10,000

Awarded while in University of Virginia

• Assessment and Management for IT Security of VDOT Regional Operation Centers, Part II
  – Sponsor: Virginia Transportation Research Council
  – Dates of Contract Period: 8/1/07-5/31/08
  – Co-PIs: J.R. Santos (Project Manager), Y.Y. Haimes (PI), J.H. Lambert, and B.M. Horowitz
  – Amount: $230,000

• Assessment and Management for IT Security of VDOT Regional Operation Centers, Part I
  – Sponsor: Virginia Transportation Research Council
  – Dates of Contract Period: 12/20/06-05/31/07
  – Co-PIs: J.R. Santos (Project Manager), Y.Y. Haimes (PI), J.H. Lambert, and B.M. Horowitz
  – Amount: $180,000

- Unifying Stakeholders & Security Programs to Address SCADA Vulnerability
  - Sponsor: Institute for Information Infrastructure Protection (I3P) at Dartmouth College
  - Dates of Contract Period: 3/01/05-2/25/07
  - PI: Y.Y. Haimes, Co-PIs: B.M. Horowitz, J.H. Lambert, J.R. Santos (Note: I served as the Project Manager to the 'Metrics' task)
  - Amount: $1,235,000

- Business Rationale for Cyber Security
  - Sponsor: Institute for Information Infrastructure Protection (I3P) at Dartmouth College
  - Dates of Contract Period: 04/01/07-03/31/09
  - PI: B.M. Horowitz; Co-PIs: Y.Y. Haimes; J.R. Santos; K.G. Crowther, J.H. Lambert
  - Amount: $400,000

- Virginia Transportation Critical Infrastructure Protection and Resilience
  - Sponsor: Virginia Department of Transportation
  - Dates of Contract Period: 8/1/06-7/31/07
  - PI: Y.Y. Haimes, Co-PIs: B.M. Horowitz, J.H. Lambert and J.R. Santos
  - Amount: $ 140,000

- Critical Infrastructure Risk Management (Army) Asset Identification and Criticality Determination
  - Sponsor: Booz Allen & Hamilton, Inc.
  - Dates of Contract Period: 4/01/05-9/1/08
  - PI: Y.Y. Haimes, Co-PI: B.M. Horowitz, J.H. Lambert, J.R. Santos
  - Amount: $380,841

- Protecting Accessibility
  - Sponsor: Virginia Transportation Research Council
  - Dates of Contract Period: 10/01/06 - 11/30/07
  - PI and all co PI's: PI: J.H. Lambert, Co-PI: Y.Y. Haimes; J. R. Santos
  - Amount: $114,000

- Input-Output Risk Model of Critical Infrastructure Systems
  - Sponsor: National Science Foundation
  - Dates of Contract Period: 5/1/03 8/31/07
  - PI: Y.Y. Haimes, Co-PIs: B.M. Horowitz, J.H. Lambert, W. Li , and (J. Santos   Senior Personnel)
  - Amount: $467,750

- Critical Infrastructure Resilience for the Hampton Roads Region
  - Sponsor: Virginia Department of Transportation
  - Dates of Contract Period: 11/2/06 - 3/31/08
  - PI: Y.Y. Haimes; Co-PIs: B.M. Horowitz; J.R. Santos; J.H. Lambert; K.G. Crowther
  - Amount: $396,000

- Analytical Deployment and Testing of the Adaptive Multi-Player HHM Game for Highly Sensitive Site or Event
  - Sponsor: Virginia Department of Transportation
  - Dates of Contract Period: 9/7/05-1/31/06
  - PI and all co-PIs: PI: Y.Y. Haimes, Co-PI's: B.M. Horowitz, J. Lambert, and J.R. Santos
  - Amount: $100,000

- Virginia's Critical Transportation Infrastructure Protection: A Risk Assessment Study
  – Sponsor: VDOT / VTRC
  – Dates of Contract Period: 7/1/04 - 07/31/05
  – PI and all co PI's: PI: Y.Y. Haimes, Co-PIs: B.M. Horowitz, J.H. Lambert, J.R. Santos
  – Amount: $285,000

PUBLICATIONS

Journals

Dickey BD, Santos JR, 2011. Risk analysis of safety service patrol systems in Virginia, Risk Analysis (forthcoming, DOI: 10.1111/j.1539-6924.2011.01631.x).

Orsi MJ, Santos JR, 2010. Probabilistic modeling of workforce-based disruptions and input-output analysis of interdependent ripple effects, Economic Systems Research, 22(1): 3-18, Recipient of Leontief Memorial Prize Best Paper, July 2009, Sao Paulo, Brazil.

Barker KA, Santos JR, 2010. Measuring the efficacy of inventory with a dynamic input-output model. International Journal of Production Economics, 126(1): 130-143

Barker KA, Santos, JR, 2010. A risk-based approach for identifying key economic and infrastructure systems, Risk Analysis 30(6): 962-974.

Orsi MJ, Santos JR, January 2010. Incorporating time-varying perturbations into the dynamic inoperability input-output model. IEEE Transactions on Systems, Man, and Cybernetics, Part A: Systems and Humans, 40(1): 100-106.

Orsi MJ, Santos JR, March 2010. Estimating Workforce-Related Economic Impact of a Pandemic on the Commonwealth of Virginia, IEEE Transactions on Systems, Man, and Cybernetics, Part A: Systems and Humans, 40(2): 301-305.

Santos JR, Orsi MJ, Bond EJ, December 2009. Pandemic recovery analysis using the dynamic inoperability input-output model. Risk Analysis, 29(12): 1743-1758.

Horowitz BH, Santos JR, 2009. Runway Safety: A Systematic Approach for Implementing Ultra-Safe Options, Journal of Air Transport Management, 15(6): 357-362.

Santos JR, Barker KA, Zelinke PJ, 2008. Sequential Decision-making in Interdependent Sectors with Multiobjective Inoperability Decision Trees, Economic Systems Research, 20(1): 29-56.

Santos JR, 2008. Inoperability Input-Output Model (IIM) with Multiple Probabilistic Sector Inputs, Journal of Industrial Management and Optimization, 4(3): 489-510.

Jung J, Santos JR, Haimes YY, 2009. International Trade Inoperability Input-Output Model (IT-IIM): Theory and Application, Risk Analysis, 29(1): 137-154.

Haggerty MS, Santos JR, Haimes YY, 2008. A Transportation-Based Framework for Deriving Perturbations to the Inoperability Input-Output Model, Journal of Infrastructure Systems, 14(4): 293-304.

Santos JR, Haimes YY, and Lian C, 2007. A Framework for Linking Cyber Security Metrics to the Modeling of Macroeconomic Interdependencies, Risk Analysis, an International Journal, 27(5): 1283-1297.

Lian C., Santos, J.R., Y. Y. Haimes, 2007. Extreme Risk Analysis of Interdependent Economic and Infrastructure Sectors, Risk Analysis, an International Journal, 27(4): 1053-1064.

Leung MF, Haimes YY, Santos JR, 2007. Supply- and Output-Side Extensions to Inoperability Input-Output Model for Interdependent Infrastructures, Journal of Infrastructure Systems, 13(4): 299-310.

Haimes YY, Santos JR, Williams GM, 2007. Assessing and Managing the Inoperability of Virginia's Interdependent Transportation Systems, International Journal of Risk Assessment and Management, 7(6/7): 968-992.

Anderson CW, Santos JR, Haimes YY, 2007. A Risk-Based Input-Output Methodology for Measuring the Effects of the August 2003 Northeast Blackout, Economics Systems Research 19(2): 183-204.

Santos JR, 2006. Inoperability Input-Output Modeling of Disruptions to Interdependent Economic Systems, Systems Engineering, 9(1): 20-34.

Santos JR, Haimes YY, 2005. Portfolio Risk Partitioning with Leontief-Type Diversification, Finance Letters. 3(1): 117-123.

Haimes YY, Horowitz BM, Lambert JH, Santos JR, Lian C, Crowther KG, 2005. Inoperability input-output model (IIM) for interdependent infrastructure sectors: theory and methodology. Journal of Infrastructure Systems, 11(2): 67-79.

Haimes YY, Horowitz BM, Lambert JH, Santos JR, Crowther KG, Lian C, 2005. Inoperability input-output model (IIM) for interdependent infrastructure sectors: case study. Journal of Infrastructure Systems, 11(2), 80-92.

Santos JR, Haimes YY, 2004. Modeling the Demand Reduction Input-Output (I-O) Inoperability Due to Terrorism of Interconnected Infrastructures, Best Paper Award 2003 Society for Risk Analysis (SRA) Annual Meeting, Risk Analysis, An International Journal, 24(6):1437-1451.

Santos JR, Haimes YY, 2004. Applying the Partitioned Multiobjective Risk Method to Portfolio Selection, Best Paper Award 2002 SRA Annual Meeting, Risk Analysis, an International Journal 24(3): 697-713.

Leung MF, Santos JR, Haimes YY, 2003. Risk Modeling, Assessment, and Management of Lahar Flow Threat, Best Paper Award 2001 SRA Annual Meeting, Risk Analysis, an International Journal, 23(6): 1323-1335.

Book Chapters

Santos JR, Haimes YY, April 2010. Input-Output Modeling for Interdependent Infrastructure Sectors, Chapter 2.6 in Wiley Handbook of Science and Technology for Homeland Security, 4 Volume Set (J.G. Voeller, ed.). Wiley, Hoboken, NJ.

Haimes YY, Santos JR, 2009. Online Book Supplement to Y.Y. Haimes, Risk Modeling, Assessment, and Management 3rd ed., Wiley, NJ. Available online: ftp://ftp.wiley.com/public/sci_tech_med/_modeling

Haimes YY, Santos JR, Crowther KG, Henry MH, Lian C, Yan Z, 2007. Risk Analysis in Interdependent Infrastructures, in Critical Infrastructure Protection, Springer, NY.

Proceedings

Santos JR, 2011. An input-output framework for assessing hurricane impact on regional workforce productivity, Proceedings of the 19th International Input-Output Conference, Alexandria, VA. Available online http://www.iioa.org/Conference/19th-downable%20paper.htm.

Resurreccion JZ, Santos JR, 2011. Developing an Inventory-Based Prioritization Methodology for Assessing Inoperability and Economic Loss in Interdependent Sectors, IEEE Proceedings of Systems and Information Engineering Design Symposium, pp. 176-181.

Santos JR, 2010. Extension of Input-Output Analysis to Portfolio Diversification, Proceedings of the 18th International Input-Output Conference, Sydney, Australia. Available online http://www.iioa.org/Conference/18th-downable%20paper.htm

Barker KA, Santos JR, 2009. Measuring the efficacy of inventory with a dynamic input-output model, Proceedings of the 17th International Input-Output Conference, Sao Paulo, Brazil. Available online http://www.iioa.org/Conference/17th-downable%20paper.htm.

Orsi MJ, Santos JR, 2009. Probabilistic modeling of workforce-based disruptions and input-output analysis of interdependent ripple effects: application to a pandemic scenario, Proceedings of the 17th International Input-Output Conference, Sao Paulo, Brazil. Available online http://www.iioa.org/Conference/17th-downable%20paper.htm.

Gokey J, Klein N, Mackey C, Santos JR, Pillutla A, Tucker S, 2009. Development of a Prioritization Methodology for Maintaining Virginia's Bridge Infrastructure Systems, in IEEE Proceedings of the Systems and Information Engineering Symposium, Charlottesville, VA. Available online: http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=5166190

Santos JR, Barker KA, Zelinke PZ, 2008. Sequential Decision-making in Interdependent Sectors with Multiobjective Inoperability Decision Trees, Proceedings of the International Input-Output Intermediate Meeting, Seville, Spain. Available online http://www.iioa.org/Conference/intermediate2008-downable%20paper.html

Gagnon T, Kim D, Roseberry M, Tucker S, Santos JR, Haimes YY, 2008. Analysis of Preparedness and Recovery Strategies for Virginiaâ€™s Transportation Systems, in IEEE Proceedings of the Systems and Information Engineering Symposium, Charlottesville, VA. Available online: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=4559689

Bond E, Colavito A, Luong T, Park G, Haimes YY, Santos JR, 2007. Risk Analysis for the Security of VDOT Smart Traffic Centers, in IEEE Proceedings of the Systems and Information Engineering Symposium, Charlottesville, VA.
Available online: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=4374029

Santos JR, 2007. Probabilistic Input-Output Analysis, Proceedings of the 16th International Input-Output Conference, Istanbul, Turkey. Available online:
http://www.iioa.org/Conference/16th-downable%20paper.html

Santos JR, Haimes YY, 2005. Impact Assessment of Major Economic Disruptions using the Inoperability Input-Output Model. Proceedings of the 15th International Input-Output Conference, Beijing, China. Available online: http://www.iioa.org/Conference/15th-downable%20paper.htm

Glantz C, McIntyre A, Young M, Bodeau D, Stoddard M, O'Neill LR, Santos JR, Gennert B, 2007. Process Control System Security Metrics: Requirements for an Effective Program, International Federation for Information Processing, Dartmouth College, Hanover, NH.

Stoddard M, Bodeau D, Carlson R, Glantz C, Haimes YY, Lian C, Santos JR, Shaw J, 2005. Process Control System Security Metrics: State of Practice.

Santos JR, Haimes YY, 2004. Demand-Reduction Input-Output Analysis for Modeling Interconnectedness, Proceedings in Risk-Based Decisionmaking in Water Resources X.

Technical Reports

Haimes, Y.Y., J.R. Santos, J.H. Lambert, B.M. Horowitz, B.D. Dickey, M.J. Orsi, and K.A. Barker, 2008. "Compliance of the Traffic Management Centers with the Virginia Department of Transportation's (VDOT's) Information Technology Security Program Manual," Final Contract Report to Virginia Transportation Research Council, Center for Risk Management of Engineering Systems, University of Virginia, Charlottesville, VA.

Haimes, Y.Y., J.R. Santos, J.H. Lambert, B.M. Horowitz, K.A. Barker, B.D. Dickey, M.J. Orsi, and Z. Yan, 2007. "Risk Assessment and Management for Information Technology Security of VDOT's Smart Traffic Centers," Final Contract Report to Virginia Transportation Research Council, Center for Risk Management of Engineering Systems, University of Virginia, Charlottesville, VA.

Haimes, Y.Y., J.R. Santos, J.H. Lambert, B.M. Horowitz, K.G. Crowther, 2007, "Virginia Critical Transportation Infrastructure Protection and Resilience," Final Contract Report to Virginia Transportation Research Council (VTRC 05-CR6), Center for Risk Management of Engineering Systems, University of Virginia, Charlottesville, VA.

Crowther, K. G., R. Y. Dicdican, M. F. Leung, C. Lian, G. M. Williams, Y. Y. Haimes, J. H. Lambert, B. M. Horowitz, and J. R. Santos, October 2004. "Assessing and Managing Risk of Terrorism to Virginia's Interdependent Transportation Systems," Final Contract Report to Virginia Transportation Research Council (VTRC 05-CR6), Center for Risk Management of Engineering Systems, University of Virginia, Charlottesville, VA. Available online: http://virginiadot.org/vtrc/main/online_reports/pdf/05-cr6.pdf

Haimes, Y. Y., B. M. Horowitz, J. H. Lambert, J. R. Santos, K. Crowther, C. Lian, and A. Srinivasan, February 2, 2004. "Applying Inoperability Input-Output Model (IIM) to the Impact of High-Altitude Electromagnetic Pulse (HEMP) on Interdependent Infrastructure Sectors," Report to the Commission to Assess the Threat to the United States from Electromagnetic Pulse Attack, Center for Risk Management of Engineering Systems, University of Virginia, Charlottesville, VA.

Haimes, Y. Y., B. M. Horowitz, S. Kaplan, J. H. Lambert, I. Pikus, J. R. Santos, and D. B. Kepner, March 21, 2003. "Analysis of Telecommunication Outage and its Impacts on Sector Interdependencies at National, Colorado, and Colorado Springs," Technical Report to Science Applications International Corporation, Center for Risk Management of Engineering Systems, University of Virginia, Charlottesville, VA.

Haimes, Y. Y., J. H. Lambert, J. R. Santos, and P. Jiang, December 22, 2000. "NASA Gap Analysis and Risk Management Roadmap," Technical Report to NASA, Center for Risk Management of Engineering Systems, University of Virginia, Charlottesville, VA.

SEMINARS AND CONFERENCES

Presentation ("An input-output framework for assessing hurricane impact on regional workforce productivity"), International Input-Output Conference, Alexandria, VA, June 16, 2011.

Presentation ("Developing an Inventory-Based Prioritization Methodology for Assessing Inoperability and Economic Loss in Interdependent Sectors"), IEEE Systems and Information Engineering Design Symposium, Charlottesville, VA, April 29, 2011 (led by PhD student Joanna Resurreccion).

Presentation ("Assessing Interdependent Economic Effects of Disasters on Nashville Metro Region"), ASME Offices, Washington, DC, April 20, 2011 [Note: I offered the same webinar to collaborators from Virginia Tech and University of Southern California, April 22, 2011].

Symposium Speaker, Chair, and Organizer ("Decision Analysis Tool for Predicting Hurricane Impact on Interdependent Workforce Sectors"), Society for Risk Analysis, Salt Lake City, UT, December 5, 2010.

Presentation ("Decision Analysis Tool for Assessing Hurricane Impact on Regional Workforce Productivity"), INFORMS, Austin, TX, November 10, 2010.

Seminar Speaker ("Interdependent Economic Impacts of Degraded Workforce Productivity"), University of the Philippines-Diliman, Quezon City, Philippines, July 2, 2010.

Presentation ("Extensions of Input-Output Analysis to Portfolio Diversification"), International Input-Output Association Conference, University of Sydney, Australia, June 25, 2010.

Seminar Speaker ("Systems architecting: Taking a system from concept to reality"), The George Washington University: SEAS Seminar Series on Engineering Challenges of the 21st Century, Washington, DC, April 20, 2010.

Invited Seminar Speaker ("Interdependent economic impacts of degraded workforce productivity"), Johns Hopkins University Applied Physics Laboratory, Laurel, MD, March 4, 2010.

Session Facilitator and Speaker ("The potential effects of climate change on California infrastructure: What can we do about risk?"), University of Southern California: Workshop on Climate Change, Los Angeles, CA, February 25-26, 2010.

Presentation ("Development of a prioritization methodology for maintaining Virginia's bridge infrastructure systems"), Society for Risk Analysis, Baltimore, MD, December 9, 2009.

Symposium Speaker, Chair, and Organizer ("Runway safety at airports: A systematic approach for implementing ultra-safe options"), Society for Risk Analysis, Baltimore, MD, December 8, 2009.

Colloquium Speaker ("Interdependent economic impacts of degraded workforce productivity"), University of Oklahoma, Norman, OK, September 18, 2009.

Plenary Speaker ("Probabilistic modeling of workforce-based disruptions and input-output analysis of interdependent ripple effects"), International Input-Output Conference, Sao Paulo, Brazil, July 16, 2009 (**Leontief Memorial Prize Best Paper**, co-authored with Mark Orsi)

Presentation ("Measuring the efficacy of inventory with a dynamic input-output model"), International Input-Output Conference, Sao Paulo, Brazil, July 14, 2009 (co-authored with Kash Barker)

Presentation ("Multi-Objective Network Optimization Method for Improving Incident Response of Safety Service Patrol via Route Configuration Modifications"), Society for Risk Analysis, Boston, MA, December 10, 2008 (**Student Merit Award**, Engineering Infrastructure Specialty Group Brett Dickey, MS Advisee)

Presentation ("Incorporating Time Varying Perturbations into the Dynamic Inoperability Input-Output Model for Pandemic Analysis"), Society for Risk Analysis, Boston, MA, December 10, 2008 (**Student Merit Award**, Engineering Infrastructure Specialty Group Mark Orsi, MS Advisee)

Presentation ("Sequential Decision-making in Interdependent Sectors with Multiobjective Inoperability Decision Trees"), Input-Output and the Environment, Seville, Spain, July 12, 2008.

Organized and chaired a session ("International Disasters"), Society for Risk Analysis (SRA) Congress, Guadalajara, MX, June 8-11, 2008.

Runner-up, Leontief Memorial Prize ("Probabilistic Input-Output Analysis"), 16th International Input-Output Conference, Istanbul Turkey, July 6, 2007.

Presentation ("Process Control System Security Metrics: Requirements for an Effective Program"), International Federation for Information Processing, Dartmouth College, Hanover, NH, March 20, 2007.

Presentation ("Probabilistic Analysis of Disasters using Interdependency Analysis"), Western Regional Science, Newport Beach, CA, February 24, 2007.

Presentation ("Inoperability Input-Output Model (IIM) with Multiple Probabilistic Sector Inputs"), Society for Risk Analysis, Baltimore, MD, December 5, 2006.

Presentation ("Inoperability Input-Output Model (IIM) with Multiple Probabilistic Sector Inputs"), INFORMS, Pittsburgh, PA, November 8, 2006.

Presentation ("A Risk-Based Input-Output Methodology for Measuring the Effects of the August 2003 Northeast Blackout"), Pan Pacific Association of Input-Output Studies, Sendai, Japan, July 27, 2006.

Panel Speaker ("Risk Analysis of Interdependent Effects of Cyber Attacks to Oil and Gas SCADA Systems"), Western Economic Association Conference, San Diego, CA, July 2, 2006.

Colloquium Speaker ("Selected Applications of Risk Analysis"), Department of Systems and Information Engineering, University of Virginia, September 23, 2005

Received a **Travel Award** from the International Input-Output Association for an oral presentation ("Impact Assessment of Major Economic Disruptions using the Inoperability Input-Output Model"), Renmin University, China, June 30, 2005

Facilitated a breakout session for oil and gas owners and operators to identify cyber risks to their SCADA systems, hosted by the Institute for Information Infrastructure Protection, Houston TX, June 2-3, 2005.

Invited Speaker in Virginia Summit on Secure Computing Systems ("Effort to Model Risks Associated with Interdependent Sectors Supported by SCADA Systems"), University of Virginia, April 20, 2005

Invited Speaker on Consortium Meeting of Institute for Information Infrastructure Protection ("Analysis of Cyber Attacks to the Transportation Sector Using the Inoperability Input-Output Model"), University of Virginia, March 9, 2005.

Invited Speaker on Workshop on Organizational Responses to the Risk of Terrorism to Transportation Systems ("An Input-Output Economic Model for Interdependencies in Transportation Security"), ASCE Headquarters, Herndon, VA, February 23, 2005

Oral presentation ("Inoperability Input-Output Modeling for Disaster Risk Management"), Society for Risk Analysis, Palm Springs, CA, December 4, 2004

Systems Design Engineering Seminar ("Application of partitioned multiobjective risk method for portfolio selection"), University of Waterloo, Canada, August 30, 2004

Poster presentation ("Implementing Input-Output (I-O) Analysis for Portfolio Diversification"), Society for Risk Analysis, Baltimore, MD, December 9, 2003

Poster presentation ("Estimating the Economic Impact of Terrorism Using Interdependency Analysis"), Society for Risk Analysis, Baltimore, MD, December 9, 2003

Presentation ("Modeling the Psychological-Economic-Based Inoperability of Interconnected Infrastructures Due to Terrorism"), Society for Risk Analysis, New Orleans, LA, December 10, 2002

Presentation ("Applying Partitioned Multiobjective Risk Method to Portfolio Selection"), Society for Risk Analysis, New Orleans, LA, December 10, 2002

Presentation ("Risk Modeling, Assessment, and Management of Lahar Flow Threat"), Society for Risk Analysis, Seattle, WA, December 5, 2001

PROFESSIONAL AFFILIATIONS

- Society for Risk Analysis
  - Program Committee, 2011 Annual Meeting
  - Chair, Engineering and Infrastructure Specialty Group, Dec 2010 – Dec 2011
  - Vice Chair, Engineering and Infrastructure Specialty Group, Dec 2009 – Dec 2010
  - Member, Contributor, and Participant in Annual Meetings since 2002
  - Session Chair/Organizer in 2006, 2007, 2008, 2009, 2010
  - Assistant to Engineering Area Editor, Risk Analysis, January 2006 – August 2009

- National Science Foundation
  - Panelist, Graduate Fellowship Research Program, National Harbor, MD, February 2011
  - Panelist, Civil and Mechanical Systems (CMS) Program, Arlington, VA, December 18, 2009
  - Panelist, Graduate Fellowship Research Program, Arlington, VA, February 2008

- National Aeronautics and Space Administration (NASA)
  - Panelist, Aeronautics Scholarship Program, Arlington, VA, February 2010
  - Panelist, Aeronautics Scholarship Program, Washington, DC, February 2009
  - Panelist, Aeronautics Scholarship Program, Washington, DC, April 2008

- Emergent Risk Initiative (ERI), Old Dominion University
  - Member since 2009
  - URL: http://sites.google.com/site/emergentrisk/team-1

- International Input-Output Association
  - Member and conference participant since January 2005
  - Leontief Memorial Prize Recipient, June 2009

- American Society of Mechanical Engineers (ASME)
  - Sub-contractor to a grant (Enhancing Communities' Capability to Evaluate Investments in Resilience), January 2010 – December 2010

- American Society of Civil Engineers (ASCE)
  - Editorial Board, Journal of Infrastructure Systems, January 2009
  - Referee, Journal of Infrastructure Systems, acknowledged in Vol. 9, Issue 6, 2003
  - Contributor and Participant to Sta. Barbara, CA Conferences, 2000 – 2004

- The Science, Mathematics And Research for Transformation (SMART)
  - Panelist, Washington, DC, January 21-22, 2011

- Air Force Summer Faculty Fellowship Program (SFFP)
  – Panelist, Washington, DC, January 8, 2010.

- Center for Risk Management of Engineering Systems
  – Research Faculty 2004 – 2009
  – Graduate Research Assistant, 2000 – 2004

- Institute for Operations Research and Management Sciences (INFORMS)
  – Student Member, 1999-2003, Member 2010-Present
  – Session Chair in 2006.

- International Society on Multiple Criteria Decision Making
  – Member, since 2006

- National Research Council (NRC)
  – Evaluator for US-Wide Engineering Program Ratings, 2006 – 2007.

- Miscellaneous
  – Referee to journals such as: IEEE Journal on Systems, Man, and Cybernetics; IEEE
    Reliability; Journal of Infrastructure Systems; Systems Engineering; Risk Analysis; Journal
    of Industrial Management and Optimization, Economic Systems Research, Institute for
    Information Infrastructure Protection

COLLABORATORS

- Kash Barker, University of Oklahoma
- Jerry Brashear, American Society of Mechanical Engineers
- Frederick Krimgold, Virginia Tech Advanced Research Institute
- Adam Rose, University of Southern California
- Johan Rene van Dorp, The George Washington University
- Amanda Castel, The George Washington University
- Larissa May, The George Washington University
- Yacov Haimes, University of Virginia
- Barry Horowitz, University of Virginia
- James Lambert, University of Virginia
- Kenneth Crowther, University of Virginia
- Cesar Pinto, Old Dominion University
- Mark Orsi, Northrop Grumman
- Brett Dickey, Capital One
- Erik Dietzenbacher, Associate Professor at University of Groningen, Netherlands
- Michael Greenberg, Editor-in-Chief, Risk Analysis
- Richard Reiss, Former President, Society for Risk Analysis
- Ben Cook, Sandia National Laboratories
- Clifford Glantz, Pacific Northwest National Laboratories
- Stan Kaplan, Bayesian Systems, Inc. (Deceased)
- Irwin Pikus, Former Senior Executive of the Department of State, Department of Commerce
- Jiemen Guo, Bureau of Economic Analysis

STUDENT ADVISING

George Washington University

- Joanna Resurreccion (Ph.D. ongoing), Engineering Management and Systems Engineering, George Washington University
- Shweta Mulcare (Ph.D. ongoing), Engineering Management and Systems Engineering, George Washington University
- Rehman Akhtar (Ph.D. ongoing), Engineering Management and Systems Engineering, George Washington University
- Jalal Ali (Ph.D. ongoing), Engineering Management and Systems Engineering, George Washington University
- Amine El Haimar (Ph.D. ongoing), Engineering Management and Systems Engineering, George Washington University
- Elfine Tjio, B.S. (completed 2011), Engineering Management and Systems Engineering, George Washington University

University of Virginia

- Brett D. Dickey, M.S. (completed May 2008), Systems and Information Engineering, University of Virginia
- Mark J. Orsi, M.S. (completed May 2008), Systems and Information Engineering, University of Virginia
- Scott Tucker, B.S. (completed 2008), Systems and Information Engineering, University of Virginia
- Chenyang Lian, Ph.D. (completed 2006), Systems and Information Engineering, University of Virginia (co-advised with YY Haimes)
- Jeesang Jung, M.S. (completed 2006), Ph.D. (completed 2009), Systems and Information Engineering, University of Virginia (co-advised with YY Haimes)
- Matthew S. Haggerty, M.S. (completed 2006), Systems and Information Engineering, University of Virginia (co-advised with YY Haimes)

Service to Other Thesis/Dissertation Committees

- Kash Barker, Ph.D. (completed 2008), Systems and Information Engineering, University of Virginia
- Ping Guan (completed 2008), Systems and Information Engineering, University of Virginia
- John Hiltz, M.S. (completed 2008), Systems and Information Engineering, University of VA
- William Yan, Ph.D. (completed 2007), Systems and Information Engineering, University of Virginia
- Matthew Henry, Ph.D. (completed 2007 Systems and Information Engineering, University of Virginia
- Yvonne Baki, M.S., (completed 2007), Systems and Information Engineering, University of Virginia
- Kenneth G. Crowther, Ph.D. (completed 2006), M.S. (completed 2004), Systems and Information Engineering, University of Virginia
- Maria F. Leung, Ph.D. (completed 2006), Systems and Information Engineering, University of Virginia
- Abhinav Agrawal, M.S. (completed 2006), Systems and Information Engineering, University of Virginia