
The Supernetwork Sentinel

The Newsletter of the Virtual Center for Supernetworks

Winter 2010



Welcome to the Winter 2010 edition of **The Supernetwork Sentinel**, the newsletter of the Virtual Center for Supernetworks at the Isenberg School of Management, UMass Amherst. **The Supernetwork Sentinel** is published in Fall, Winter, and Summer editions. Its purpose is to keep you informed of events, activities, and successes of the Virtual Center for Supernetworks, the Center Associates, and the Supernetworks Laboratory for Computation and Visualization. In this newsletter, we highlight the Spring 2010 Speaker Series and mark noted distinctions and awards received by Center Associates. In addition, we share news about past and upcoming events. As always, we include a list of our recent publications.

We wish everyone a Happy New Year!

Anna Nagurney
John F. Smith Memorial Professor
Director – Virtual Center for Supernetworks
<http://supernet.som.umass.edu>



Professor Patrick Qiang and Professor Anna Nagurney with their new book, *Fragile Networks: Identifying Vulnerabilities and Synergies in an Uncertain World*, which was displayed at the Wiley booth at the INFORMS Annual Meeting in San Diego



Dr. Mary Helander of IBM after her talk and lunch with some of the UMass Amherst INFORMS Student Chapter Officers and Professor Nagurney

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The Spring 2010 UMass Amherst INFORMS Speaker Series



The Spring 2010 UMass Amherst INFORMS Speaker Series lineup is now available; please see:

<http://supernet.som.umass.edu/informs/speakernew.html>. This Speaker Series is organized by the UMass Amherst Student Chapter of INFORMS (The Institute for Operations Research and the Management Sciences). Professor Anna Nagurney serves as the Faculty Advisor to the chapter and its Speaker Series. Funding is provided by the John F. Smith Memorial Fund, with additional support from the Isenberg School of Management and its Department of Finance and Operations Management plus INFORMS. This semester marks the twelfth semester of the continuous operation of this series.

The Spring 2010 lineup will begin with a presentation on February 19, 2010 by Professor Mzamo Mangaliso of the Isenberg School on scientific innovation and research with his personal experiences in South Africa. Professor Mangaliso served as the President of South Africa's counterpart of the US National Science Foundation.

On March 5, 2010, we will be hosting Mr. Richard Brooks of ISO - New England, who will be speaking on the development of the smart grid, a topic not only timely but extremely relevant to consumers and businesses.

On April 2, 2010, Professor Sheldon Jacobson of the University of Illinois will be sharing with us his research on pediatric vaccines, their pricing and stockpiling issues. Professor Jacobson's visit is co-sponsored by the INFORMS Speakers Bureau. For more information on INFORMS, and its elegant new website, please [click here](#).

Professor Dimitris Bertsimas of the Sloan School at MIT will be speaking on April 23, 2010. He is a member of the National Academy of Engineering and has garnered numerous awards

for his research. He will be speaking on robust optimization. His talk is co-hosted by the Finance Seminar Series at the Isenberg School.

On April 30, 2010, Professor Mehmet Gumus of McGill University in Montreal, Canada will be presenting his research on supply disruptions and the selection of optimal suppliers.

We may also have an additional speaker on March 26, 2010, from abroad, but are waiting for final confirmation.

All talks take place on Fridays at 11AM until noon in the Isenberg School of Management in Room 112. This series is open to the public.

We thank all our speakers in the Fall 2009 Speaker Series for their outstanding presentations that informed us all!

Professor Qiang Receives the 2009 Charles V. Wootan Award

Center Associate Professor Patrick Qiang of the Pennsylvania State University at Malvern is the recipient of the 2009 Charles V. Wootan Award in transportation planning and policy. Dr. Qiang received his PhD in Business Administration with a concentration in Management Science in May 2009. Professor Anna Nagurney was the dissertation committee chair.

The title of Dr. Qiang's doctoral dissertation was: **Network Efficiency / Performance Measurement with Vulnerability and Robustness Analysis with Application to Critical Infrastructure**. The other committee members were: Professor Ana Muriel of the Department of Mechanical and Industrial Engineering at UMass Amherst, Professor Sanjay Nawalka of the Department of Finance and Operations Management at the Isenberg School, and Center Associate Professor June Dong of the School of Business at SUNY Oswego.

Dr. Qiang will receive the \$2,000 award at the CUTC banquet to be held in Washington DC on January 9, 2010. He was notified of his selection for the award by Robert H. Plymale, President of the Council of University Transportation Centers, and Laura Spitz, the Member Services Program Manager of the American Road & Transportation Builders Association in Washington DC. CUTC was founded in 1979 by major transportation research centers and institutes in the United States. It serves as a forum for the universities and centers to interact with government and industry. Its members number over 70 of the

nation's premier university-based transportation research and education programs.

We congratulate Dr. Qiang on this national dissertation award!

Professor Ding Zhang Receives the SUNY Chancellor's Award for his Scholarship

Center Associate Professor Ding Zhang of the School of Business at SUNY Oswego was recognized for his outstanding scholarship and research on December 19, 2009 at a university convocation.

Dr. Ding Zhang "has a reputation as a world-class scholar and as an expert in transportation science and supply chain management," President Stanley of SUNY Oswego wrote in a tribute. In addition, she stated that "He inspires students by serving as a role model for high achievement through persistence and hard work."

Professor Zhang has published over 25 articles in top journals such as *Transportation Science* and the *Journal of Optimization Theory and Its Applications*. He also co-authored the book, *Projected Dynamical Systems and Variational Inequalities*, with Professor Anna Nagurney, and contributed chapters to several others.

Dr. Zhang previously received both the Oswego President's and Provost's Awards for Scholarly and Creative Activity. He has received major grants from the National Science Foundation of China. We congratulate Professor Zhang on this major achievement,

Professor Anna Nagurney Interviewed by Barry List for INFORMS Podcast on Supernetworks

INFORMS Podcasts: Anna Nagurney on Supernetworks

Why did closing New York's Time Square to cars improve traffic? How are energy and finance like large networks? Can biologists learn from operations researchers? Anna Nagurney, Director of the Virtual Center from Supernetworks at UMass Amherst shares fascinating insights about networks in the latest INFORMS podcast. Tune in at www.scienceofbetter.org/podcast.



While at the INFORMS Annual Meeting in San Diego, Professor Nagurney was interviewed by Barry List, the Communications Director of

INFORMS. The interview, *Supernetworks: Building Better Real and Virtual Highways*, is now available as [a podcast](#). Other INFORMS podcasts on timely topics can be found [here](#).

Additional podcasts and videos can be accessed on the Supernetworks site under [media](#).

Center Associates Shine at the INFORMS San Diego Annual Meeting

Center Associates were well-represented at the Annual INFORMS Meeting, which took place in San Diego, October 11-14, 2009. In addition to presenting papers, they engaged in several very memorable activities.

Center Associate Professor Patrick Qiang was recognized with the Judith Liebman Award of INFORMS for his outstanding contributions to the UMass Amherst INFORMS Student Chapter.



Dr. Patrick Qiang receiving the Judith Liebman Award from Professor Nagurney, who is serving on the INFORMS Subdivisions Council

One of the highlights of the INFORMS National Meeting in San Diego was the WORMS (Women in Operations Research and the Management Sciences) luncheon, for which support was provided by, among others, the Isenberg School of Management and the College of Engineering at UMass Amherst.

Professor Anna Nagurney chaired the 2009 WORMS Award of INFORMS and was delighted to be able to present the award to the recipient, Professor Alice Smith of Auburn University.

The WORMS website can be accessed at: <http://worms.forum.informs.org/>



Center Associate Professor Tina Wakolbinger with other WORMS Officers at the WORMS luncheon at INFORMS San Diego



Professor Nagurney giving the 2009 WORMS Award plaque to Professor Smith

In her remarks, Professor Nagurney included quotes from the nomination letter and letters of support for Dr. Alice Smith, which highlighted the breadth and depth of her accomplishments as a female role model in operations research and the management sciences.

The Chair of the 2010 WORMS Award committee is Dr. Candace Yano of the University of California at Berkeley.



A WORMS luncheon table with Center Associates Professors Qiang, Liu, Cruz, and friends: Professors McLay, Wernz, and Matsypura

The UMass Amherst INFORMS Student Chapter received the summa cum laude award for its activities at the meeting in San Diego. The chapter, subsequently, celebrated back in Amherst with a cake and treats. Congratulations to all the chapter officers for this great achievement. Center Associate Min Yu is serving as this year's President of the Student Chapter and Center Associate Amir Masoumi served as President last year. Mr. Masoumi has also been the Speaker Series coordinator both last year and this year and we acknowledge his extraordinary service!

For additional information on the student chapter and its activities click here:

[The UMass Amherst INFORMS Student Chapter](#)



The chapter's summa cum laude plaque and treats at an Isenberg School celebration

Hosting Visitors from Italy

On September 25, 2009, the Supernetworks center hosted the visit of Professor Giulia Rotundo and Professor Annamaria D'Arcangelis of Italy. Professor Rotundo was Professor Anna Nagurney's host at the NET2009 conference in Rome in May 2009 at which she gave a plenary lecture.



(l-r) Professor D'Arcangelis, Amir Masoumi, Professor Rotundo, and Min Yu in the Supernetworks Lab

Kudos and News

Congratulations to Center Associate Trisha Woolley, who is an Assistant Professor in Management at the School of Business Administration at Texas Wesleyan University in Fort Worth. She officially receives her PhD from UMass Amherst in February 2010! Professor Anna Nagurney was the chair of her dissertation committee. This is Professor Nagurney's 15th PhD student to graduate.

Congratulations to Center Associate, Dr. Jose M. Cruz of the School of Business at the University of Connecticut in Storrs! Professor Cruz's paper, **Corporate Social Responsibility in Supply Chain Management: Multicriteria Decision-Making Approach**, has been published in *Decision Support Systems* (2008), **48**, 224-236.

Congratulations to Professor Patrick Qiang, whose paper with Professor Anna Nagurney, **A Knowledge Collaboration Network Model Across Disciplines**, has been accepted for presentation at the 2010 International Conference on Social Computing, Behavioral Modeling, & Prediction, to take place at the National Institutes of Health in Bethesda, Maryland, March 29-April 1. The paper will also be published in the Springer *Lecture Notes in Computer Science*. The editors of the conference volume are Professor Sun-Ki Chai and John Salerno. Professors Qiang and Nagurney will also be giving a tutorial on Fragile Networks at this conference.

Professor Ladimer S. Nagurney of the University of Hartford presented the paper, **Software Defined Radio in the Electrical and Computer Engineering Curriculum**, at the 39th ASEE/IEEE Frontiers in Education Conference that took place in San Antonio, Texas, October 18-21, 2009. The paper was published in the Conference Proceedings.



Professor Ladimer Nagurney with Professor William Hornfeck of Lafayette College in San Antonio

Center Associate Professor Zugang Liu of the Pennsylvania State University at Hazleton had

the paper, **Stock Market Crashes, Firm Characteristics, and Stock Returns**, with J. Wang, G. Meric, and I. Meric published in the *Journal of Banking and Finance*, **33**, 1563-1574.

Congratulations to Center Associate Professor Lan Zhao of the SUNY College of Old Westbury! Her paper, **An Integrated Framework for the Design of Optimal Web Banners**, co-authored with Professors Lili Hai and Anna Nagurney, is now in press in the journal, *Netnomics*.

Center Associate Professor June Dong of the College of Business at SUNY Oswego gave an invited seminar this past Fall at Cornell University. She was hosted by Professor Kieran Donaghy of the Department of City and Regional Planning and spoke on supply chain disruptions. Also, Professor Dong was appointed an Oriental Scholar for a three year term by the Shanghai High Education Bureau. Congratulations to Professor Dong! This is a guest lecture professorship and she will be affiliated with the Shanghai University of Science and Technology.

Professor Anna Nagurney is organizing sessions for the upcoming Computational Management Science conference that will take place in Vienna, Austria. Center Associates Patrizia Daniele of the University of Catania in Italy and Professor Tina Wakolbinger of the Fogelman College of Business and Economics at the University of Memphis will be speaking in the sessions(s). Professor Nagurney will also be giving a plenary lecture at this conference. In addition, she will be giving an invited tutorial at the upcoming international INFORMS conference in Buenos Aires, Argentina in early June 2010.

For information on these and other upcoming conferences, please [click on this link](#).

The UMass Amherst INFORMS Student Chapter celebrated the end of another semester of activities with a party held on December 11, 2009.



Chapter Officers with other students and faculty at the end of the semester chapter party

Recent Center Publications

Copies of these (and other) center articles are at: <http://supernet.som.umass.edu/dart.html>

Environmental Impact Assessment of Transportation Networks with Degradable Links in an Era of Climate Change, A. Nagurney, Q. Qiang, and L. S. Nagurney, *International Journal of Sustainable Transportation* (2010), **4**, 154-171.

Environmental and Cost Synergy in Supply Chain Network Integration in Mergers and Acquisitions, A. Nagurney and T. Woolley, in *Sustainable Energy and Transportation Systems, Proceedings of the 19th International Conference on Multiple Criteria Decision Making, Lecture Notes in Economics and Mathematical Systems* (2010), M. Ehrgott, B. Naujoks, T. Stewart, and J. Wallenius, Editors, Springer, Berlin, Germany, pp. 51-78.

A Knowledge Collaboration Network Model Across Disciplines, A. Nagurney and Q. Qiang, in *Proceedings of the 2010 International Conference on Social Computing, Behavioral Modeling, & Prediction, Lecture Notes in Computer Science* (2010), S.-K. Chai and J. Salerno, Editors, Springer, in press.

Modeling of Supply Chain Risk Under Disruptions with Performance Measurement and Robustness Analysis, Q. Qiang, A. Nagurney, J. Dong, in *Managing Supply Chain Risk and Vulnerability: Tools and Methods for Supply Chain Decision Makers*, (2009), T. Wu and J. Blackhurst, Editors, Springer, London, England, pp. 91-111.

A System-Optimization Perspective for Supply Chain Network Integration: The Horizontal Merger Case, A. Nagurney, *Transportation Research E* (2009), **45**, pp. 1-15.

Spatially Differentiated Trade of Permits for Multipollutant Electric Power Supply Chains, T. Woolley, A. Nagurney, and J. K. Stranlund, in *Optimization in the Energy Industry* (2009), J. Kallrath, P. Pardalos, S. Rebennack, and M. Schei, Editors, Springer, Berlin, Germany (2009), pp. 277-296.

Network Economics, A. Nagurney, in *Handbook of Computational Econometrics* (2009), D. Belsley and E. Kontoghiorghes, Editors, John Wiley & Sons (2009), pp. 429-486.

An Integrated Electric Power Supply Chain and Fuel Market Network Framework: Theoretical Modeling with Empirical Analysis for New England, Z. Liu and A. Nagurney, *Naval Research Logistics* (2009), **56**, 600-624.

A Relative Total Cost Index for the Evaluation of Transportation Network Robustness in the Presence of Degradable Links and Alternative Travel Behavior, A. Nagurney and Q. Qiang, *International Transactions in Operational Research* (2009), **16**, pp. 49-67.

Formulation and Analysis of Horizontal Mergers Among Oligopolistic Firms with Insights into the Merger Paradox: A Supply Chain Network Perspective, A. Nagurney, *Computational Management Science* (2009), in press.

Multiproduct Supply Chain Horizontal Network Integration: Models, Theory, and Computational Results, A. Nagurney, T. Woolley, and Q. Qiang, *International Transactions in Operational Research* (2009), in press.

Supply Chain Network Design Under Profit Maximization and Oligopolistic Competition, A. Nagurney, *Transportation Research E* (2010), in press.

An Integrated Framework for the Design of Optimal Web Banners, L. Hai, L. Zhao, and A. Nagurney, *Netnomics* (2010), in press.

The Center Director and the Center Associates thank you for your support!

Center Director

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John F. Smith Memorial Professor

Center Associates

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Dr. Tina Wakolbinger
Dr. Trisha Woolley
Dr. Ding Zhang
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