Phone: +1-410-516-6411

Assistant Professor Contact

Department of Civil Engineering Information

Fax: +1-410-516-7473 Johns Hopkins University Email: siddiqui@jhu.edu 3400 N. Charles Street Web: www.ce.jhu.edu/sauleh/

Batimore, MD 21218 USA Office: Latrobe 109

Appointments

Jul'12-Present Assistant Professor

Department of Civil Engineering, Johns Hopkins University

Secondary Appointment: Department of Applied Mathematics and Statistics

Director, Mathematical Optimization for Decisions Lab (MODL)

Academic Director, Member of Leadership Council, Johns Hopkins Systems Institute

Core Team, Center for Systems Engineering in Health

May'15-Present RESEARCH FELLOW

Department of Energy, Transportation, and Environment, German Economic Re-

search Institute (DIW Berlin)

Sep'11-Jun'12 ASSOCIATE

Environmental Markets, ICF International

May'10-Jun'11 Consultant

Development Research Group, Environment and Energy Team, The World Bank

Education

Aug'07-Sep'11 University of Maryland, College Park, MD

Ph.D., Applied Mathematics & Statistics, and Scientific Computation

Dissertation: Solving Two-Level Optimization Problems with Applications to Robust

Design and Energy Markets

Applied Areas: Civil Engineering, Mechanical Engineering, Economics

Franklin & Marshall College, Lancaster, PA Aug'03-May'07

A.B., Mathematics and Corruption Studies

Jan'06-Jun'06 AMERICAN UNIVERSITY IN CAIRO, Cairo, Egypt

Study Abroad, International Law, International Development, Arabic

Honors

Sept'14 ALBRIGHT CHALLENGE PARTICIPANT

> Invited as one of 17 rising leaders from varied backgrounds to create a dynamic collaborative environment for solving problems in Big Data and its influx into Health-

care and Education.

MIT Collaborative Initiatives, Massachusetts Institute of Technology, Cambridge,

MA

May'10 DISTINGUISHED TEACHING AWARD

Center for Teaching Excellence, University of Maryland, College Park, MD

May'09 GOLD MEDAL IN TEACHING EXCELLENCE

Department of Mathematics, University of Maryland, College Park, MD

Teaching

Undergraduate

Courses

560.348 Probability and Statistics in Civil Engineering, Johns Hopkins University. Spring 2013 (54 Students), Spring 2014 (85 Students), Spring 2015 (97

Students)

MATH111 INTRODUCTION TO PROBABILITY, *University of Maryland, College Park*. Fall 2007 (33,31 Students), Fall 2008 (30,32 Students), Spring 2009 (31,29 Students)

MATH111 Elementry Calculus I, *University of Maryland, College Park.* Fall 2009 (28,34,29,30 Students)

Graduate Courses 560.442 Equilibrium Modeling in Systems Engineering, Johns Hopkins University. Fall 2012 (8 Students)

OPERATIONS RESEARCH 3, TU-Berlin and DIW, Berlin, Germany. Summer 2013 (7 Students), Summer 2014(13 Students)

OPERATIONS RESEARCH 2, TU-Berlin and DIW, Berlin, Germany. Winter 2014 (23 Students)

SHORT COURSES

OPTIMIZATION AND EQUILIBRIUM MODELING IN SYSTEMS ENGINEERING, Johns Hopkins University. Fall 2013 (9 Students)

EQUILIBRIUM PROBLEMS WITH EQUILIBRIUM CONSTRAINTS, TU-Berlin and DIW, Berlin, Germany. Summer 2013 (12 Students)

ADVANCED STATISTICS, Maryland Leadership Institute. Summer 2009 (9 Students), Summer 2010 (19 Students), Summer 2011 (14 Students)

External Service & Activities

COMMITTEE WORK CHAIR. Committee for Best Student Paper Award, Energy Natural Resources and the Environment (2015), INFORMS

PAPER COMMITTEE, MOPTA Annual Conference, Bethlehem, PA, August 2014 DISSERTATION COMMITTEE, Daniel Huppmann, Department of Economics. TU-Berlin

OUTREACH

STEM ACHIEVEMENT IN BALTIMORE ELEMENTARY SCHOOLS. Faculty Volunteer, August 2014 - July 2015

ENGINEERING INNOVATION SUMMER PROGRAM. Guest lecturer and activity coordinator for game theory. Summer 2013, Summer 2014

Workshops

Co-Organizer, Workshop on Global Vaccination, Berlin, Germany, June 12-13, 2014

Conferences

SESSION CHAIR, *INFORMS Annual Conference*, San Francisco, CA, November 2014 SESSION CHAIR, *IFORS Conference*, Barcelona, Spain, July 2014 SESSION CHAIR, *Transatlantic Infraday Conference*, Washington, DC, November

2010, 2012, 2013, 2014

Journal Reviewer Journal of Infrasructure Systems

Risk Analysis

Computers & Operations Research Applied Mathematical Modeling

Structural & Multidisciplinary Optimization

Energy Economics

Natural Hazards Review

INFORMS Journal on Computing

Computer-Aided Civil and Infrastructure Engineering

IIE Transactions

Optimization and Engineering

The Energy Journal

Member The Institute for Operations Research and the Management Sciences (INFORMS).

2010-Present

Society for Industrial and Applied Mathematics (SIAM), 2007-Present

American Mathematical Society (AMS), 2005-Present

JHU Service & Activities

ACADEMIC Civil Engineering Class of 2017. Advisor for the 12 undergraduate students in the

Advisor 2017 class

Invited $Hopkins\ Engineering\ Sampler\ Seminar.$ September, 2014

LECTURES Second Annual Green Research Sustainability Symposium. April, 2014

Students for Environmental Action Debate on Nuclear Energy. December, 2013

WORKSHOPS ORGANIZER, Systems Institute Symposium, Baltimore, MD, October 2014

Committee Future of Technology in Education at Homewood Committee, Johns

WORK Hopkins University, 2015

MEDICAL SCHOOL APPLICANTS COMMITTEE, Johns Hopkins University, 2014 Systems Institute Leadership Council, Johns Hopkins Systems Institute, 2012-

Present

Graduate Studies, Department of Civil Engineering, 2014

Undergraduate Studies, Department of Civil Engineering, 2012-Present Student Recruitment (Chair), Department of Civil Engineering, 2012-Present

Graduate Board Oral and Dissertation Committee, Andrew Gaynor, Civil

Engineering, Olufolajimi Oke, Civil Engineering, Nan Zhou, Economics

GRADUATE BOARD ORAL, Zhang Liu, Civil Engineering, YueLing Loh, Applied Mathematics & Statistics, Yang Yang, Civil Engineering, Julie Shortridge, DOGEE,

Andrea Staid, DOGEE, Hao Jiang, Applied Mathematics & Statistics

REVIEWER Center for Global Health Pilot Grant, JHSPH, November 2014

JHU Institute Johns Hopkins Systems Institute

Membership Center for Systems Engineering in Health

Environment, Energy, Health, and Sustainability Institute

Research Advisor

Post-Doc Daniel Huppmann, Department of Civil Engineering, 2015

Felipe Feijoo, Department of Civil Engineering, 2015

PhD Olufolajimi Oke, Department of Civil Engineering

Wei Jiang, Department of Civil Engineering

Saleh Satti, Department of Earth and Planetary Scienses (Co-advised with B.

Zaitchik)

MICHAEL ANGELO, Visiting Student, University of Hawaii Tom Brijs, Visiting Student, University of Leuven (KU Leuven)

MSE ASHLEY FELDMAN, Department of Civil Engineering, Class of 2015

LISSY LANGER, Visiting Student, DIW Berlin, Class of 2015

MPH Janice De Vito, School of Public Health, Class of 2014

Undergraduate Molly Van Doren, Department of Civil Engineering, Class of 2014

MAX MARSHALL, Department of Civil Engineering, Class of 2016
DANIEL TAKASH, Applied Mathematics & Statistics, Class of 2016
PACO TANTUICO, Department of Civil Engineering, Class of 2016
RICHARD POULTON, Department of Civil Engineering, Class of 2017
LARISSA SAKIYAMA, Visiting Student, Cornell University, Class of 2017

HIGH SCHOOL TENEE BLACKET, Baltimore Polytechnic Institute, Class of 2015

Publications

SUBMITTED
JOURNAL
PUBLICATIONS

- S. Siddiqui, A. Christensen (2015) "Determining Energy and Climate Market Policy Using Multiobjective Programs with Equilibrium Constraints," *Energy*, In 1st Review.
- D. Huppmann¹, S. Siddiqui (2015) "An exact solution method for binary equilibrium problems with compensation and the power market uplift problem," $Mathematical\ Programming\ A$, In 1st Review.
- O. OKE², K. Bhalla, D. Love, S. Siddiqui (2015) "Tracking global bicycle ownership patterns," *Journal of Transport & Health*, In 2nd Review.
- S. Siddiqui, E. Morse, S. Levin (2015) "Nurse Staffing in Perianesthesia Care Units Using Discrete Event Simulation," *Anesthesia and Analgesia*, In 1st Review.
- A. Christensen, S. Siddiqui (2015) "Fuel price impacts and compliance costs associated with the Renewable Fuel Standard (RFS)," *Energy Policy*, In 2nd Review.
- M. Toerper, E. Flanagan, S. Siddiqui, J. Appelbaum, E. Kasper, S. Levin (2014) "Cardiac Catheterization Lab Inpatient Forecast Tool: A Prospective Evaluation," *Journal of the Medical Informatics Association*, In 1st Review.

REFEREED
JOURNAL
PUBLICATIONS

- S. Barnes, M. Toerper, E. Hamrock, S. Siddiqui, S. Levin (2015) "Real-Time Prediction of Inpatient Length of Stay for Discharge Prioritization," *Jour*nal of the Medical Informatics Association, Accepted.
- L. Karp, S. Siddiqui, J. Strand (2015) "Dynamic climate policy with both strategic and non-strategic agents: Taxes versus quantities," *Environmental and Resource Economics*, DOI 10.1007/s10640-015-9901-5.

¹PostDoc Advisee

 $^{^2{\}rm PhD}$ Advisee

- A. CHRISTENSEN, S. SIDDIQUI (2015) "A Complementarity Model of the US Biofuels Market," Biofuels, Bioproducts, and Biorefining, DOI: 10.1002/bbb.1545.
- [11] O. OKE², S. SIDDIQUI (2015) "Efficient automated schematic map drawing using multiobjective mixed integer programming," Computers & Operations Research, 61: 1-17.
- [10] S. Satti², B. Zaitchik, S. Siddigui (2015) "The Question of Sudan: A Hydroeconomic Optimization Model for the Sudanese Nile," *Hydrology and Earth System Sciences*, 19: 2275-2293.
- [9] S. SIDDIQUI, S.A. GABRIEL, S. AZARM (2015) "Solving Mixed-Integer Robust Optimization Problems with Interval Uncertainty Using Benders Decomposition," *Journal of the Operational Research Society*, 66: 657-663.
- [8] J. STRAND, S. MILLER, S. SIDDIQUI (2014) "Long-run carbon emission implications of energy-intensive infrastructure investments with a retrofit option," *Energy Economics*, 46: 308-317.
- [7] S.A. Gabriel, S. Siddiqui, A.J. Conejo, C. Ruiz (2013) "Solving Discretely-Constrained Nash-Cournot Games with an Applications to Power Markets," *Networks and Spatial Economics*, 13(3): 307-326.
- [6] S. SIDDIQUI, S.A. GABRIEL (2013) "An SOS1-Based Approach for Solving MPECs with a Natural Gas Market Application," Networks and Spatial Economics, 13(2): 205-227.
- [5] S.A. Gabriel, A.J. Conejo, C. Ruiz, S. Siddiqui (2013) "Solving discretely-constrained, mixed linear complementarity problems with applications in energy," Computers & Operations Research, 40(5): 1339-1350.
- [4] S. Siddiqui, S. Azarm, S.A. Gabriel (2012) "On improving normal boundary intersection method for generation of Pareto frontier," *Structural and Multidisciplinary Optimization*, 46(6): 839-852.
- [3] S.A. Gabriel, K.E. Rosendahl, R. Egging, H. Avetisyan, S. Siddiqui (2012) "Cartelization in gas markets: Studying the potential for a 'Gas OPEC'," *Energy Economics*, 34(1): 137-152.
- [2] S. Siddigui, S. Azarm, S.A. Gabriel (2011) "A modified Benders decomposition method for efficient robust optimization under interval uncertainty," *Structural and Multidisciplinary Optimization*, 44(2): 259-275.
- [1] D. MERRITTS, R. WALTER, M. RAHNIS, J. HARTRANFT, S. COX, A. GELLIS, N. POTTER, W. HILGARTNER, M. LANGLAND, L. MANION, C. LIPPINCOTT, S. SIDDIQUI, Z. REHMAN, C. SCHEID, L. KRATZ, A. SHILLING, M. JENSCHKE, K. DATIN, F. CRANMER, A. REED, D. MATUSZEWSKI, M. VOLI, E. OHLSON, A. NEUGEBAUER, A. AHAMED, C. NEAL, A. WINTER, S. BECKER (2011) "Anthropocene streams and base-level controls from historic dams in the unglaciated mid-Atlantic region," *Philosophical Transactions of The Royal Society A*, 369(1938): 976-1009.

²PhD Advisee

- Working Papers [3] D. Huppmann¹, S. Siddiqui (2015) "An exact solution method for binary equilibrium problems with compensation and the power market uplift problem," DIW Berlin Discussion Paper No. 1475.
 - [2] L. KARP, S. SIDDIQUI, J. STRAND (2013) "Dynamic climate policy with both strategic and non-strategic agents: Taxes versus quantities," World Bank Policy Research Working Paper No. 6679, October, 2013.
 - [1] J. STRAND, S. MILLER, S. SIDDIQUI (2011) "Infrastructure Investments under Uncertainty with the Possibility of Retrofit: Theory and Simulations," World Bank Policy Research Working Paper No. 5516, January, 2011.

BOOK CHAPTERS

- [3] S. Siddigui, S.A. Gabriel (2015) "Modeling Market Power in Natural Gas Markets," Optimization and Analytics in the Oil and Gas Industry, Springer (To Be Published).
- [2] W. Lucas, S. Siddiqui (2015) "Game Theory," Encyclopedia of Operations Research & Management Science 3rd Edition, Springer (To Be Published).
- [1] S. LEVIN, S. SIDDIQUI, P. SATJAPOT (2014) "SMART Vaccines Software Updates," Ranking Vaccines: Applications of a Prioritization Software Tool: Phase III: Use Case Studies and Data Framework, The National Academies Press.

Conference **Publications** [1] L. KARP, S. SIDDIQUI, J. STRAND (2013) "Dynamic climate policy with both strategic and non-strategic agents: Taxes versus quantities," Proceedings of The International Energy Workshop, Paris, France, June 2013.

Presentations

Talks

- INVITED SEMINAR [12] S. SIDDIQUI (2014) "Modeling Policy Decisions in Energy Markets and Health Systems Using Multiobjective Programs with Equilibrium Constraints," Department of Civil and Environmental Engineering, University of Maryland, College Park, MD, April, 2014.
 - [11] S. Siddiqui (2014) "Modeling Policy Decisions in Energy Markets Using Optimization Problems with Equilibrium Constraints," International Council on Clean Transportation, Washington, DC, March, 2014.
 - [10] A. CHRISTENSEN³, S. SIDDIQUI³ (2014) "US Biofuel Market Model: Analysis of the Environmental Protection Agency's 2014 Recent Rulemaking Activities." Office of Transportation and Air Quality, Environmental Protection Agency, Washington, DC, March, 2014.
 - [9] S. Siddigui (2014) "Dynamic climate policy with both strategic and non-strategic agents: Taxes versus quantities," Mercator Research Institute on Global Commons and Climate Change, Technische Universitt Berlin, Berlin, Germany, January, 2014.
 - [8] S. Siddigui (2013) "New Algorithms for Solving Equilibrium Problems with Equilibrium Constraints," Energy, Transport, Environment Section, DIW Berlin, Berlin, Germany, July, 2013.
 - [7] S. Siddigui (2012) "Decomposition Methods for Two-Level Optimization Problems with Applications to Robust Engineering Design and Natural Gas Markets," Department of Applied Mathematics & Statistics, Johns Hopkins University, Baltimore, MD, November, 2012.

¹PostDoc Advisee

³Presenting Author

- [6] S. Siddigui (2012) "Solving MPECs with an Application to the US Natural Gas Market," Department of Geography and Environmental Engineering, Johns Hopkins University, Baltimore, MD, September, 2012.
- [5] S. Siddigui (2012) "Solving Two-Level Optimization Problems with Applications to Robust Engineering Design and Operations Research," *Department of Civil Engineering, Johns Hopkins University*, Baltimore, MD, March, 2012.
- [4] S. Siddiqui (2011) "Solving Two-Level Optimization Problems with Engineering Applications," American Air Liquide, Newark, DE, May, 2011.
- [3] S. Gabriel³, H. Avetisyan, S. Siddiqui (2010) "Using the World Gas Model to Link Global and Regional Energy Strategies," *Department of Energy*, Washington, DC, September, 2010.
- [2] S. Siddiqui³, H. Avetisyan³, S. Gabriel (2010) "World Gas Model Workshop," *Department of Energy*, Washington, DC, September, 2010.
- [1] S. Gabriel³, S. Siddiqui³, H. Avetisyan (2010) "World Gas Model Study on Shale Gas," *Department of Energy*, Washington, DC, September, 2010.

Conference Talks

- [24] S. Barnes³, M. Toerper, E. Hamrock, S. Siddiqui, S. Levin (2014) "Application of Supervised Machine Learning Methods to Predict Daily Hospital Discharges," *INFORMS Annual Conference*, San Francisco, CA, November, 2014.
- [23] S. Siddiqui³, R. Greenberg, C. Pio Roda, S. Levin (2014) "A Multiobjective Optimization Technique for CRNA Staffing," *INFORMS Annual Conference*, San Francisco, CA, November, 2014.
- [22] O. OKE^{2,3}, K. BHALLA, D. LOVE, S. SIDDIQUI (2014) "Global Bicycling Trends," *INFORMS Annual Conference*, San Francisco, CA, November, 2014.
- [21] S. Siddiqui³, A. Christensen (2014) "A Multiobjective Program with Equilibrium Constraints to Determine Volume Requirements for the RFS," *INFORMS Annual Conference*, San Francisco, CA, November, 2014.
- [20] O. OKE^{2,3}, K. BHALLA, D. LOVE, S. SIDDIQUI (2014) "Tracking Global Bicycle Availability," *INFORMS Data Mining and Analytics Workshop*, San Francisco, CA, November, 2014.
- [19] S. Siddigui³, A. Christensen (2014) "Equilibrium Model of the Biofuel Market to Determine Optimal Volumes for the Renewable Fuel Standard," *Transatlantic Infraday, FERC*, Washington, DC, November, 2014.
- [18] S. SIDDIQUI³, A. CHRISTENSEN (2014) "US Biofuel Market Model: Analysis of the Environmental Protection Agency's 2014 Recent Rulemaking Activities," MOPTA Conference, Lehigh University, PA, August, 2014.
- [17] O. OKE^{2,3}, S. SIDDIQUI (2014) "Multiobjective optimization for automatic schematic map drawing," *MOPTA Conference*, Lehigh University, PA, August, 2014.
- [16] S. SIDDIQUI³, A. CHRISTENSEN (2014) "US Biofuel Market Model: Analysis of the Environmental Protection Agency's 2014 Recent Rulemaking Activities," Conference of the International Federation of Operational Research Societies, Barcelona, Spain, July, 2014.

²PhD Advisee

³Presenting Author

- [15] L. Karp, S. Siddiqui³, J. Strand (2014) "Dynamic climate policy with both strategic and non-strategic agents: Taxes versus quantities," World Congress of Environmental and Resource Economics, Istanbul, Turkey, June 2014.
- [14] S. Siddigui³, O. Oke² (2013) "Modeling Policy Decisions in Energy and Transportation Networks Using Multiobjective Programs with Equilibrium Constraints," Transatlantic Infraday, FERC, Washington, DC, November, 2013.
- [13] A. CHRISTENSEN³, S. SIDDIQUI (2013) "Dynamics of Renewable Identification Numbers used for Compliance with the Renewable Fuel Standard," *INFORMS Annual Conference*, Minneapolis, MN, October, 2013.
- [12] O. OKE^{2,3}, S. SIDDIQUI (2013) "A Mixed-integer Programming Tool for Creating Effective Schematic Urban Transit Maps," *INFORMS Annual Conference*, Minneapolis, MN, October, 2013.
- [11] S. Siddiqui (2013) "Improving the Normal Boundary Intersection (NBI) Method for Generation of Pareto Frontiers in Nonconvex Multi-objective Optimization Problems," 26th European Conference on Operational Research, Rome, Italy, July, 2013.
- [10] S. LEVIN³, S. SIDDIQUI, M. TOERPER, J. APPELBAUM, E. FLANAGAN, E. KASPER (2013) "Cardiac Catheterization Lab Inpatient Forecast," 26th European Conference on Operational Research, Rome, Italy, July, 2013.
 - [9] S. SIDDIQUI³, S. AZARM, S. GABRIEL (2013) "On improving normal boundary intersection method for generation of pareto frontier," World Congress on Structural and Multidisciplinary Optimization, Orlando, FL, May, 2013.
- [8] S. Siddiqui (2013) "A Decomposition Method for Solving Equilibrium Programs with Equilibrium Constraints," 10th International Conference on Computational Management, Montreal, QC, May, 2013.
- [7] S. Siddiqui (2012) "An Efficient Algorithm for Solving Equilibrium Programs with Equilibrium Constraints," *Transatlantic Infraday, Resources for the Future*, Washington, DC, November, 2012.
- [6] S. Siddiqui (2012) "A Decomposition Method for Solving Equilibrium Programs with Equilibrium Constraints," INFORMS Annual Conference, Phoenix, AZ, October, 2012.
- [5] S. Siddiqui³, S. Gabriel (2011) "Using Schurs Decomposition and SOS Type 1 Variables to Model Shale Gas Market Dynamics in the US," *INFORMS Annual Conference*, Charlotte, NC, November, 2011.
- [4] S. Siddigui (2011) "Using Schurs Decomposition and SOS Type 1 Variables to Solve MPECs and EPECs," INFORMS Northeast Conference, Amherst, MA, May, 2011.
- [3] S. Siddiqui³, S. Gabriel (2010) "Using SOS Type 2 Variables to Solve Mathematical Programs with Equilibrium Constraints," *INFORMS Annual Conference*, Austin, TX, November, 2010.
- [2] S. Siddiqui³, S. Gabriel, H. Avetisyan (2010) "Modeling Shale Gas Production In the US as a Mathematical Program with Equilibrium Constraints," *Transatlantic Infraday, Resources for the Future*, Washington, DC, November, 2010.

²PhD Advisee

[1] H. AVETISYAN³, S. SIDDIQUI (2009) "Natural Gas Pipeline Projects in Europe," *Transatlantic Infraday, Resources for the Future*, Washington, DC, November, 2009.

³Presenting Author