

VADIM SOKOLOV

George Mason University
Dept of Systems Engineering and Operations Research
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November 2023

APPOINTMENTS

George Mason University Associate Professor, Department of Systems Engineering and Operations Research	Aug 2023 – present
George Mason University Assistant Professor, Department of Systems Engineering and Operations Research	Aug 2016 – 2023
University of Chicago Visiting Assistant Professor of Statistics, Booth School of Business	Dec 2018 – May 2021
University of Chicago Lecturer, Master of Science in Analytics Program and Fellow at Computation Institute	Dec 2014 – May 2017
Argonne National Laboratory Principal Computational Scientist, Transportation Research and Analysis Computing Center, Energy Systems Division	Nov 2008 – Aug 2016

EDUCATION

Northern Illinois University Ph.D. in Computational Mathematics; advisor: Biswa N Datta	Jan 2004 - Oct 2008
Rostov State University, Russia (now Southern Federal University) Diploma in Applied Mathematics; High Honors	Sep 1999 – Jun 2004

RESEARCH INTERESTS

Bayesian statistics, machine learning, deep learning, complex systems and simulation, numerical optimization, intelligent transportation systems

PROFESSIONAL AFFILIATIONS

- Member of Institute for Operations Research and Management Science (INFORMS)
- Member of International Society for Bayesian Analysis (ISBA)
- Member of American Statistical Association (ASA)
- Member of The International Society for Business and Industrial Statistics (ISBIS)

BOOK

N Polson and V Sokolov, "Data Science: Bayes, AI and Deep Learning", contract signed with CHAPMAN & HALL/CRC (Texts in Statistical Science Series), completion date is Dec 2023.

JOURNAL ARTICLES

Up to date list of publications: Google Scholar

1. Y Wang, N Polson, V **Sokolov**, "Data Augmentation for Bayesian Deep Learning," *Bayesian Analysis* (2022), 26 pages, accepted, available at <https://arxiv.org/pdf/1903.09668>
2. E Baker, P Barbillon, A Fadikar, R B Gramacy, R Herbei, D Higdon, J Huang, L R Johnson, P Ma, A Mondal, B Pires, J Sacks, V **Sokolov**, "Analyzing stochastic computer models: A review with opportunities," *Statistical Science* (2022), 37 (1), 64-89.
3. A O Sokolova, C H Marshall, R Lozano, R Gulati, E M Ledet, N De Sarkar, P Grivas, C S Higano, B Montgomery, P S Nelson, D Olmos, V **Sokolov**, M T Schweizer, T A Yezefski, E Y Yu, C J Paller, O Sartor, E Castro, E S Antonarakis, H H Cheng, "Efficacy of systemic therapies in men with metastatic castration resistant prostate cancer harboring germline ATM versus BRCA2 mutations," *The Prostate* (2021), 81 (16), 1382-1389.
4. M Zavareh, V Maggioni, V **Sokolov**, "Investigating water quality data using principal component analysis and granger causality," *Water* (2021), 13 (3), 17 pages.
5. H Fotouhi, N Mori, E Miller-Hooks, V **Sokolov**, S Sahasrabudhe, "Assessing the Effects of Limited Curbside Pickup Capacity in Meal Delivery Operations for Increased Safety during a Pandemic," *Transportation Research Record* (2021), 2675 (5), 436-452.
6. X Huang, B Li, H Peng, J A Auld, V **Sokolov**, "Eco-Mobility-on-Demand Fleet Control with Ride-Sharing," *IEEE Transactions on Intelligent Transportation Systems* (2020), 10 pages.
7. N Polson and V **Sokolov**, "Deep Learning: Computational Aspects," *WIREs Computational Statistics* (2020), 12 (5), available at <https://arxiv.org/abs/1808.08618>.
8. V **Sokolov**, "Discussion of Multivariate generalized hyperbolic laws for modeling financial log-returns — Empirical and theoretical considerations," *Applied Stochastic Models in Business and Industry* (2020), 36 (5).
9. M Polson and V **Sokolov**, "Deep Learning for Energy Markets," *Applied Stochastic Models In Business and Industry* (2020), 36 (1), 195-209.
10. J Warren, J Lipkowitz, and V **Sokolov**, "Clusters of Driving Behavior from Observational Smartphone Data," *IEEE Intelligent Transportation Systems Magazine* (2019), 11 (3), 171-180.
11. N Polson, V Sokolov, "Bayesian regularization: From Tikhonov to horseshoe," *WIREs Computational Statistics* (2019), 11 (4), 11 pages.
12. N Polson and V **Sokolov**, "Deep Learning," *Wiley StatsRef: Statistics Reference Online* (2019), 10 pages, published online, available at <https://arxiv.org/abs/1807.07987>
13. N Polson and V **Sokolov**, "Bayesian Particle Tracking of Traffic Flows," *IEEE Transactions on Intelligent Transportation Systems* (2018), 19 (2), 345-356, available at <http://arxiv.org/abs/1411.5076>
14. M Dixon, N Polson and V **Sokolov**, "Deep Learning for Spatio-Temporal Modeling: Dynamic Traffic Flows and High Frequency Trading," *Applied Stochastic Models In Business and Industry* (2019), 35(3), 788-807.
15. N Polson and V **Sokolov**, "Deep Learning: A Bayesian Perspective," *Bayesian Analysis* (2017), 12(4), 1275-1304, available at <https://arxiv.org/abs/1706.00473>

16. N Polson and V **Sokolov**, "Deep learning for short-term traffic flow prediction," *Transportation Research Part C* (2017), 79, 1-17, available at <https://arxiv.org/abs/1604.04527>
17. V **Sokolov**, J Larson, T Munson, J Auld, and D Karbowski "Maximization of Platoon Formation Through Centralized Routing and Departure Time Coordination," (2017), *Transportation Research Record: Journal of the Transportation Research Board*, 2667, 10-16.
18. J Auld, V **Sokolov**, and T Stephens, "Analysis of the Effects of Connected-Automated Vehicle Technologies on Travel Demand," (2017) *Transportation Research Record: Journal of the Transportation Research Board*, (2625), 1-8.
19. V **Sokolov**, "A Perspective on Deep Learning in Finance: Deep Portfolios," (2017) *Applied Stochastic Models in Business and Industry* 33(1), 16-18
20. V **Sokolov**, J Larson, T Munson, J Auld and D Karbowski, "Maximization of platoon formation through centralized routing and departure time coordination," (2017) *Transportation Research Record* (2667), 10-16, available at <https://arxiv.org/abs/1701.01391>
21. N Polson and V **Sokolov**, "Bayesian Analysis of Traffic Flow on Interstate I-55: The LWR Model," *The Annals of Applied Statistics* (2016), available at <http://arxiv.org/abs/1409.6034>
22. J Auld, M Hope, H Ley, V **Sokolov**, B Xu and K Zhang, "POLARIS: Agent-Based Modeling Framework Development and Implementation for Integrated Travel Demand and Network and Operations Simulations," *Transportation Research Part C* (2016)
23. V **Sokolov**, J Auld, D Karbowski and N Kim, "Assessing The Energy Impact Of Traffic Management and Vehicle Hybridization", (2016) *International Journal of Complexity in Applied Science and Technology* 1(1):107-24
24. J Auld, V **Sokolov**, A Fontes, R Bautista, "Internet-based stated response survey for no-notice emergency evacuations," *Transportation Letters: The International Journal of Transportation Research*, 4 (2012), no. 1 pp. 41-53
25. B Datta and V **Sokolov**, "A solution of the affine quadratic inverse eigenvalue problem," *Linear Algebra and Its Applications*, 434 (2011) pp. 1745-1760
26. B Datta, S Deng, D R Sarkissian and V **Sokolov**, "An optimization technique for damped model updating with measured data satisfying quadratic orthogonality constraint," *Mechanical Systems and Signal Processing*, 23 (2009), no. 6, pp. 1759-1772
27. B N Datta and V **Sokolov**, "Quadratic inverse eigenvalue problems, active vibration control and model updating," *Appl. Comput. Math*, 8 (2009), no. 2, pp. 170-191
28. L Krukier, O Pichugina and V **Sokolov**, "Numerical investigation of Krylov subspace methods for solving non-symmetric systems of linear equations with dominant skew-symmetric part," *International Journal of Numerical Analysis And Modeling*, 3 (2005), no. 1, pp. 115-124

arXiv ARTICLES

1. S Parker Y Zha, J Foster and V **Sokolov**, "Urban Housing Market Demand Index with Home Showings Events," (2022)
2. Yu Lin Hsu, Chu Chuan Jeng, Pavithra Sripathanallur Murali, Mohammadreza Torkjazi, Jonathan West, Michaela Zuber, Vadim Sokolov, "Bayesian Learning: A Selective Overview," (2021)
3. D Li, J Liu, N Park, D Lee, G Ramachandran, A Seyedmazloom, K Lee, C Feng, V **Sokolov**, R Ganesan, "Solving Large-Scale 0-1 Knapsack Problems and its Application to Point Cloud Resampling," (2019), available at <https://arxiv.org/abs/1906.05929>
4. V **Sokolov**, M Polson, "Strategic Bayesian Asset Allocation," (2020), available at <https://arxiv.org/pdf/1905.08414>

5. L Schultz, V **Sokolov**, "Deep Reinforcement Learning for Dynamic Urban Transportation Problems," (2019), available at <https://arxiv.org/abs/1806.05310>
6. L Schultz, V **Sokolov**, "Practical Bayesian Optimization for Transportation Simulators," (2019), available at <https://arxiv.org/pdf/1810.03688.pdf>

PAPERS UNDER REVISION

1. L Schultz, and V Sokolov, "Deep Learning Gaussian Processes For Computer Models with Heteroskedastic and High-Dimensional Outputs," *Technometrics* (first revision)
2. L Schultz, J Auld, and V Sokolov. "Bayesian Calibration for Activity Based Models," *Transportation Research Part C* (submitted)
3. M Nareklishvili, N Polson, V Sokolov, "Deep Partial Least Squares for IV Regression," *Applied Stochastic Models in Business and Industry* (submitted)
4. Farnaz Behnia, Dominik Karbowski, Vadim Sokolov, "Deep Generative Models for Vehicle Speed Trajectories," *IEEE Transactions on Intelligent Transportation Systems* (submitted)
5. A Bhadra, J Datta, N Polson, V Sokolov, J Xu, "Merging Two Cultures: Deep and Statistical Learning," *JASA* (second revision)
6. N Polson, V Sokolov, J Xu, "Deep Learning Partial Least Squares," *Statistical Science* (second revision)

PEER-REVIEWED PROCEEDINGS

1. V **Sokolov**, M Imran, D Etherington, D Karbowski and A Rousseau, "Effects of Predictive Real-Time Traffic Signal Information," *IEEE International Conference on Intelligent Transportation Systems* (2018)
2. L Schultz and V **Sokolov**, "Bayesian Optimization for Transportation Simulators," *Procedia Computer Science* (2018), 130, pp.973-978.
3. J Larson, T Munson and V **Sokolov**, "Coordinated Platoon Routing in a Metropolitan Network," *SIAM Workshop on Combinatorial Scientific Computing (CSC16)*, available at <http://www.mcs.anl.gov/papers/P6010-0516.pdf>
4. E Jacquier, N Polson and V **Sokolov**, "Bayesian Filtering and Learning in Finance: Application to the Jump Stochastic Volatility Model", (2017), arxiv preprint, available at <https://arxiv.org/abs/1610.09750>
5. Q Luo, J Auld and V **Sokolov**, "Addressing Some Issues of Map-Matching for Large-Scale, High-Frequency GPS Data Sets," *TRB Annual Meeting* (2016)
6. J Auld, D Karbowski, N Kim and V **Sokolov**, "A Disaggregate Model System for Assessing the Energy Impact of Transportation at the Regional Level," *TRB Annual Meeting* (2016)
7. N Polson and V **Sokolov**, "Bayesian Particle Tracking of Traffic Flows," *TRB Annual Meeting* (2016)
8. V **Sokolov**, J Auld, D Karbowski and N Kim, "POLARIS: A General Purpose Agent-Based Modeling Framework for Transportation Simulation," *ITS World Congress* (2015)
9. V **Sokolov**, D Karbowski and N Kim, "Energy Impact Of Traffic Management and Vehicle Hybridization," *ITS America Annual Meeting*, (2015)
10. V **Sokolov**, J Auld, D Karbowski and N Kim, "A Disaggregate Model System For Assessing The Energy Impact Of Traffic Management and ITS Technologies," *14th International Conference on Travel Behaviour Research (IATBR)* (2015)
11. J Auld, M Hope, V **Sokolov**, B Xu, and K Zhang, "POLARIS: Agent-Based Modeling Framework Development and Implementation for Integrated Travel Demand and Network and Operations Simulations", *TRB (Transportation Research Board) Annual Meeting*, (2015)

12. M Hope, J Auld, H Ley, V **Sokolov**, B Xu, and K Zhang, "POLARIS: A general purpose agent-based modeling framework specialized for transportation simulations," *4th Transportation Research Board Conference on Innovations in Travel Modeling* (2014)
13. J Auld, M Hope, H Ley, V **Sokolov**, B Xu, and K Zhang, "POLARIS: A fully integrated agent-based simulation model of activity travel behavior and network operations," *4th Transportation Research Board Conference on Innovations in Travel Modeling* (2014)
14. V **Sokolov**, D Karbowski and N Kim, "Assessing Energy Impact of Traffic Management and ITS Technologies," *The 21st World Congress on Intelligent Transport Systems* (2014)
15. V **Sokolov**, J Auld, M Hope, H Ley, B Xu and K Zhang, "Modelling framework for regional integrated simulation of transportation network and activity-based demand (Polaris)," *Proc. of International Symposium for Next Generation Infrastructure* (2013)
16. V **Sokolov**, J Auld and M Hope, "A flexible framework for developing integrated models of transportation systems using an agent-based approach," *Procedia Computer Science*, **10** (2012), pp. 854-859
17. Y Park, M E, H Ley and V **Sokolov**, "Fuzzy Rule-base approach for evacuation trip demand modeling," *TRB (Transportation Research Board) Annual Meeting* (2010)
18. S Are, P Dostert, B Ettinger, J Liu, V **Sokolov**, A Wei and K Wiegand, "Reservoir model optimization under uncertainty," *IMA Preprint Series* (2006)
19. V **Sokolov** "Investigation of eigenvalue distribution of a matrix arising from a central difference approximation of the two dimensional convection diffusion problem," *Proc. of the Conference on Numerical Methods for Solving Linear and Non-linear Boundary Problems, Kazan', Russia* (2003), pp. 216-221 (Russian)
20. V **Sokolov** and L Krukier, "Investigation of eigenvalue distribution of transition operators of iterative methods for solution strongly non-symmetric systems," *Proc. of the Workshop on Contemporary Problems in Mathematical Modeling, Durso, Russia* (2003), pp. 206 - 212 (Russian)

RESEARCH FUNDING

George Mason University

1. 2021-2023 ONR via Metron Inc for *Spatio-temporal deep learning model interpretability*, PI, El-Amine co-PI
2. 2016-2023 US Department of Energy via Argonne National Laboratory for *Calibration of Large-Scale Urban Transportation Models*, sole PI.
3. 2017-2022 US Department of Energy via RPI for *Collaborative Approaches to Energy Efficient Logistics in the Albany - New York City Corridor*, PI
4. 2018-2022 National Science Foundation for *Data-enabled Decision-Making in Emerging Co-opetitive Transportation Markets with Ambiguity*, co-PI with Elise Miller Hooks (PI)
5. 2016-2018 US Department of Transportation via U Chicago for *Coordinated Transit Response Planning and Operations Support Tools for Mitigating Impacts of All-Hazard Emergency Events*, PI

Argonne National Laboratory

1. 2016-2018 US Department of Transportation for *Coordinated Transit Response Planning and Operations Support Tools for Mitigating Impacts of All-Hazard Emergency Events*, co-PI with H. Ley, amount awarded \$2.9M
2. 2015-2018 US Department of Energy for *Energy Impact of Connected and Automated Vehicle Technologies*, co-PI with J. Auld \$900k
3. 2015- Department of Energy for *Plug-In Electric Vehicle-Infrastructure Systems Interactions and Optimization*, co-PI with Yan Zhou, amount awarded: \$200k

4. 2013-2016 Department of Energy for *Modeling Energy Consumption and Electricity Demand of a Transportation System using Behavioral Travel Demand and Vehicle Models*, co-PI with D. Karbowski, amount awarded: \$350k
5. 2015- Argonne National Laboratory for *Advanced Control Algorithms for Improving Energy Consumption of Connected and Automated Vehicles*, co-PI with Jeff Larson, amount awarded: \$180k
6. 2015- Argonne National Laboratory for *Data-Driven Multiscale Coupled Urban Systems Modeling*, lead investigator, Charlie Catlett (PI), amount awarded: \$220k
7. 2015- Argonne National Laboratory for *Vehicle as Sensor: Utilizing Vehicle Connectivity to Sense a Transportation System for Improved*, co-PI with Eric Rask, amount awarded: \$100k
8. 2015- Argonne National Laboratory for *Agent-Based Behavioral Modeling of Ebola Spread in Chicago*, team member with Charles Macal (PI)
9. 2014-2016 Argonne National Laboratory for *The Chemical Stockpile Emergency Preparedness Program - U.S. Army Pueblo Chemical Depot*, lead investigator, W. Metz (PI), amount awarded: \$130k
10. 2013-2016: McCaffery Interests and University of Chicago for *Computation-Enabled Design for the Chicago Lakeside Development*, lead investigator, C. Catlett and Leah Guzowski (PI)
11. 2014-2015: Federal Emergency Management Agency for *Analysis of Evacuation Induced Demand for Transit Services*, PI, amount awarded: \$30k
12. 2011-2014: US Department of Transportation Federal Highway Administration for *TRANSIMS Research and Deployment*, Lead Investigator with H. Ley (PI); amount awarded: \$3.5M
13. 2010-2011: Federal Emergency Management Agency Regional Catastrophic Preparedness Grant Program for *Regional Transportation Simulation Tool for Evacuation Planning*, co-PI with H. Ley, amount awarded: \$2M
14. 2008-2010: U.S. Department of Energy Office of Energy Efficiency and Renewable Energy for *The New GREET Model Development*, lead developer with A. Elgowainy, M Wang (PI); 2008-2014
15. Illinois Department of Transportation for *Chicago Metropolitan Evacuation Simulation Project*, team member, D. Weber (PI)
16. 2007-2011: US Department of Transportation Research and Innovative Technology Administration for *National User Facility to Meet US DOT Advanced Computation Needs*, team member, D. Weber (PI)
17. 2005-2008: National Science Foundation for *Quadratic Inverse Eigenvalue Problems for Model Updating in Science and Engineering: Theory and Computations*, research assistant under B. Datta (PI)

TALKS

Invited seminar & colloquium talks

- 2022 Alan Turing Institute
- 2018 University of New Hampshire: Data Science, University Seminar (Host: Tevfiv Aktekin)
- 2018 George Washington University: Decision Sciences (Host: Refik Soyer)
- 2017 George Mason University: Statistics
- 2016 University of California, Berkeley: Transportation (Host: Alex Bayen)
- 2015 University of California, Los Angeles: IPAM Traffic Program
- 2015 University of Chicago: Graham School
- 2014 George Washington University: Decision Sciences
- 2014 University of Chicago: Computation Institute
- 2014 Argonne National Laboratory: Material Science Division
- 2012 University of California, Berkeley: Civil Engineering

2012 University of California, Davis: Institute for Transportation Studies
2011 California Air Resources Board: Life-Cycle Assessment
2010 Turner-Fairbank Highway Research Center
2009 University of Illinois at Urbana-Champaign: Short course on *Transportation Networks Simulation* (4 lectures)

Conferences

2022 INFORMS
2022 ISBIS Meeting (invited)
2022 JSM Annual Meeting (invited)
2019 ISI World Statistics Conference (invited)
2019 ISBIS Meeting (invited)
2019 Agent-Based Models for Exploring Public Policy Planning
2019 Bayesian Inference in Stochastic Processes BISP 11 (invited plenary)
2019 Sixth Symposium on Games and Decisions in Reliability and Risk (invited)
2019 Statistical and Applied Mathematical Sciences Institute (SAMSI) Model Uncertainty Workshop
2019 Statistical and Applied Mathematical Sciences Institute (SAMSI) Agent-Based Modeling Workshop (invited)
2019 TRB Annual Meeting
2018 Big Data and Information Analytics (invited)
2018 MORS Emerging Techniques Forum (invited)
2018 International Conference on Advances in Interdisciplinary Statistics and Combinatorics (invited)
2018 ISBIS Meeting on Statistics in Business and Industry (invited)
2018 American Statistical Association's Symposium on Data Science and Statistics (invited)
2018 TRB Annual Meeting
2017 International Workshop on Objective Bayes Methodology (O-Bayes17)
2017 BIRS Workshop on Synthesis of Statistics, Data Mining and Environmental Sciences in Pursuit of Knowledge Discovery (invited)
2017 INFORMS Annual Meeting (two invited talks)
2017 5th Symposium on Games and Decisions in Reliability and Risk
2017 International Workshop on Bayesian Inference in Stochastic Processes
2017 IMS/ASA Spring Research Conference
2017 TRB Annual Meeting
2016 TRB Annual Meeting
2015 ITS World Congress
2015 ITS America Meeting
2015 TRB Annual Meeting
2014 ITS World Congress
2014 TRB Automated Vehicles Symposium
2014 TRB Innovations in Travel Modeling Conference
2013 International Symposium for Next Generation Infrastructure
2012 Council of Energy Research & Education Leaders Annual Meeting (invited)
2010 American Mathematical Society Southern Section Meeting (invited)

2010 TRANSIMS Applications and Development Workshop
2009 Linear Algebra and Numerical Linear Algebra: Theory, Methods, and Application Conference
2008 XIXth International Workshop on Operator Theory
2008 Gene Golub Symposium at University of Illinois at Urbana-Champaign (*invited*)
2008 Conference on the Occasion of Richard Varga's 80th Birthday
2007 2nd International Conference on Matrix Methods and Operator Equations
2007 Numerical Linear Algebra in Signal, Systems, and Control Workshop (*invited*)
2006 X Mathematical Modeling in Industry - A Workshop for Graduate Students at University of Minnesota
2005 Wolfram Technology Conference
2003 Workshop on contemporary problems in mathematical modeling
2003 Conference on Numerical methods for solving linear and non-linear boundary problems
2002 Turkish-German Summer Academy in Izmir
2002 International Summer School on *Iterative Methods and Matrix computations*

TEACHING EXPERIENCE

George Mason University

Instructor

(Fall 2019, Spring 2018: SYST 468 Predictive Analytics; Fall 2018: OR750 Deep Learning Spring 2017, Fall 2016: OR568 Predictive Analytics; Fall 2017: OR750 Real-Time Analytics)

University of Chicago

Instructor

(Summer 2015: Time Series Analysis; Winter 2016: Optimization and Simulation, Time Series Analysis)

Northern Illinois University

Grader/Recitation Instructor, Department of Mathematical Sciences

(Spring 2004: Math 232 Calculus III; Fall 2004/Spring 2005: Math 211 Business Calculus)

Northern Illinois University

Course Assistant/Recitation Instructor, Department of Mathematical Sciences

(Fall 2005: Math 434 Numerical Linear Algebra; Sprint 2006: Math 435 Numerical Analysis)

Argonne National Laboratory

Student supervision

(3 master's students from Northern Illinois University Engineering working on Illinois Department of Transportation project; 1 master's and 1 doctorate student from Illinois Institute of Technology Engineering working on Regional Catastrophic Preparedness Grant Program project)

Argonne National Laboratory

Three day TRANSIMS training course. Designed and taught sections on transportation networks modeling

(Apr 2008, Nov 2008, Dec 2009 and Jan 2011: Argonne National Laboratory; Jun 2008: Georgia Institute of Technology; Jan 2009: City of Moreno Valley; Jun 2009: University of Houston; Sep 2010: Turner Fairbank Highway Research Center; Apr 2011: South Carolina State University)

Argonne National Laboratory

One day GREET training-workshop. Designed and taught sections on mathematical models for life-cycle analyses

(Dec 2011 and Sep 2012)

Student Supervision

PhD in Systems Engineering and Operations Research at Mason

Laura Schultz, "Scalable Optimization for Agent Based Simulators", 2022 (defended)

PhD in Systems Engineering and Operations Research at Mason

Farnaz Behnia, "Generative Models for Spatio-Temporal Processes", 2022 (expected)

PhD in Civil Engineering at George Mason

Azadeh Gharibreza Yazdi, "Data-enabled Decision-Making in Emerging Co-opetitive Transportation Markets with Ambiguity", 2023 (expected)

MS in Analytics at Mason

Muhammad Imran, Naeem Khan, Salman Yousaf, Jamie Wheeler

MS in Systems Engineering and Operations Research at George Mason

Tuan Le, "Robust algorithms for real-time network flows estimation"

Tuan has transferred from PhD to MS

MS in CS at Mason

Prabhat Shankar

Undergraduate research projects at Mason

Randy Hanak (CS), "PolarisGL Transportation Visualization"

MS in Analytics at U Chicago

James Foster, Susan Parker, Yuanyuan Zha, Ashkon Farmand, Aria Farmand, Kayvon Ali, Jeff Lipkowitz, Josh Warren

PROFESSIONAL SERVICE

Committee Services

2018-present Member of Transportation Network Modeling Committee, Transportation Research Board, National Academy of Sciences

University Service at Mason

2019-present SEOR Organizeer of seminar series on AI in collaboration with Metron Science

2019 VSE Strategic hiring committee

2018-present SEOR Strategic planning committee

2016-present SEOR Seminar committee

2017-present SEOR/STATS Joint seminar series committee

2016-present SEOR undergraduate and graduate student academic advising

2017-present SEOR undergraduate students recruiting and orientation events

2019 Bioengineering PhD committee

2019 Civil PhD committee

2017-present Data Analytics curriculum committee

2018 CS PhD committee

2017 Civil PhD committee

2017 SEOR Hiring Committee (term faculty)

2016 SEOR Hiring Committee (tenure-track faculty and Postdoc)

Meetings Organized

2019 IMS/ASA Spring Research Conference, session on statistical analysis of Agent Based Models

2017 International Workshop on Agent-Based Modelling of Urban Systems (Program Committee)

2016 International Workshop on Agent-Based Modelling of Urban Systems (Program Committee)
2013 Special session on Transport Network Modeling at International Symposium for Next Generation Infrastructure
2012 Integrated Transportation Models Workshop at Conference on Innovations in Travel Modeling (with J. Auld)
2010 Workshop on TRANSIMS: Applications and Development, Argonne National Laboratory (with H. Ley and B. Gardner)
2009 Linear Algebra and Numerical Linear Algebra: Theory, Methods, and Application, Northern Illinois University (with B. Datta, G. Ammar, K. Datta, S. Deng, Y. Hong, L. Reichel, V Olshevsky, B. Shader and Q. Ye)

Referee

Bayesian Analysis
IEEE Transactions on ITS
Transportation Research Part C
Transportation Research Part B
Entropy
Mechanical Systems and Signal Processing
Australian & New Zealand Journal of Statistics
Applied Mathematics and Computation
Expert Systems With Applications
Lecture Notes in Electrical Engineering
Transportmetrica A: Transport Science
Transportation
SIMULATION: Transactions of The Society for Modeling and Simulation International
GeoInformatica
TRB Annual Meeting 2014-2019
IATBR Innovations in Travel Modeling Conference
TRB Innovations in Travel Modeling Conference
Grant Proposals Reviewer for Argonne LDRD Grants 2012, 2014, 2015
Grant Proposal Reviewer for DTRA, 2015
NSF panelist (ENG), 2017
NSF panelist (CISE), 2017
NSF panelist (CISE), 2018

Session Chair

2019 SRC, GDRR, INFORMS
2018 INFORMS, TRB, ABMTRANS

SOFTWARE DEVELOPED

POLARIS GL
Lead Developer. 3D Visualization of Dynamic Urban Data. JavaScript
<https://polarisgl.vsokolov.org>
POLARIS

Designer. Developer. Transportation systems simulations framework. C++
<https://github.com/anl-polaris/polaris>

GREET

Designer. Lead Developer. An implementation of The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) Model. C#, .NET, SQLite
<http://greet.es.anl.gov/greet>
(more than 800 unique users within first year of release, 2013)

MATCOM

Contributor. Distributed on CD with Numerical Linear Algebra and Applications, Second Edition book By Biswa Nath Datta, SIAM MATLAB
<http://www.siam.org/books/ot116/>

TRANSIMS

Contributor. An agent-based forecast software for modeling regional transport systems.
<http://sourceforge.net/projects/transims>
(C++; 22,295 total downloads since 2006)

Advanced Numerical Methods II

Sole Developer. Package for solving large scale control problems. Mathematica
<http://library.wolfram.com/infocenter/Conferences/5787/>
(an experimental library that was not published)

SKILLS

Machine Learning

PyTorch, TensorFlow, Hadoop

Programming

Python, C/C++, MPI, OpenMP

Spatial Analysis

PostGIS, Spatialite, ArcGIS, QuantumGIS

Mathematical

R, Maple, Mathematica, MATLAB, L^AT_EX, Coin-OR SYMPHONY, AMPL, CPLEX

Soft Skills

Student supervision, project management, collaboration, proposal writing

Languages

English (fluent), Russian (fluent), German (basic)

AWARDS

ITS World Congress

Best Scientific Paper Award

(2015; given to three papers from three regions of the world, out of several thousand)

Northern Illinois University

Outstanding Graduate Student Award

(2007; nominated by faculty; awarded to an individual “who is distinguished in the area of scholarship”)

Northern Illinois University

Dissertation Completion Award

(2007; awarded to 8 graduate students every year, out of more than a hundred)

Travel Awards

(NIU Graduate School (2007), NIU Department of Mathematical Sciences (2007), NIU Department of Mathematical Sciences (2006), NIU School of Arts and Sciences (2006), Institute for Mathematics and its Applications (2006), DAAD and SIEMENS (2002))

OTHER APPOINTMENTS

Argonne National Laboratory Research Assistant	Sep 2007 - Oct 2008
Northern Illinois University Research Assistant	Sep 2006 - Sep 2007
Wolfram Research Summer Intern, Software Technologies Department (developed a Mathematic package for solution of large scale control problems; selectivity 6 offers out of 160 applicants)	May 2005 - Aug 2005
Northern Illinois University Teaching Assistant, Department of Mathematical Sciences	Jan 2004 - Sep 2006
Rostov State University Lab Assistant, High Performance Computing Center (responsible for installing and testing software, helped writing tutorials on linear algebra packages such as LAPACK, ScaLAPACK, ARPACK)	Dec 2002 - Dec 2003

MEDIA COVERAGE

Chicago Tribune
Argonne wins grant to help transit agencies cope with emergencies ([link](#))

The Detroit News
UM wins \$2.7M grant to study driverless cars [link](#)

Michigan News
U-M teams with Argonne, Idaho national labs to study potential energy savings of connected vehicles ([link](#))

University of Chicago News
Argonne, Fermilab, Marine Biological Laboratory and The University Of Chicago Discoveries That Changed The World (GREET project, [link](#))

WBEZ
Argonne will research how transportation systems should respond to natural hazards ([link](#))

Next City
What Happens When Developers, Scientists and Super-Computers Connect on Urban Design ([link](#))