Adam Rumpf

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Education

2020 Ph.D. in Applied Mathematics
Illinois Institute of Technology, Chicago, IL

Dissertation Title: Mathematics of Civil Infrastructure Network Optimization
Advisor: Hemanshu Kaul, Ph.D., Illinois Institute of Technology

2011 B.S. in Applied Mathematics for the Life and Social Sciences, Minor in Geological Sciences
Arizona State University, Tempe, AZ

Publications

2021 H. Kaul and A. Rumpf. Trilevel network interdiction game for the minimum cost flow problem with linear input dependence. In preparation.

H. Kaul and A. Rumpf. Public transit network optimization with social access objectives. In preparation.

H. Kaul and A. Rumpf. A linear input dependence model for interdependent networks. Submitted for publication. arXiv.2102.05248 [math.OC], https://arxiv.org/abs/2102.05248.

2011 J. Ames, A. Feiler, G. Mendoza, A. Rumpf, and S. Wirkus. Determination of Tuscon, Arizona as an Ecological Trap for Cooper's Hawks (Accipiter cooperii). https://mtbi.asu.edu/2011-2.

Poster session award recipient at the 2011 Ana G. Mendez University System (AGMUS) Research Symposium in Tuscon, AZ.

Research Talks and Presentations

2020 Departmental talk on public transit network optimization with social access objectives. Department of Applied Mathematics, Illinois Institute of Technology, Chicago, IL, March 12.

2017 Conference talk on linear input dependence model for interdependent civil infrastructure systems with network simplex based solution algorithm. 31st Midwestern Conference on Combinatorics and Combinatorial Computing, University of West Georgia, Carrollton, GA, October 20–22.

Departmental poster on linear input dependence model for interdependent civil infrastructure systems. Menger Day celebration 2017 poster session, Illinois Institute of Technology, Chicago, IL, April 24.

2016 Conference poster on network simplex based algorithm for the minimum cost flow problem with linear interdependencies. 2016 INFORMS Annual Meeting, Nashville, TN, November 12–16.

Departmental talk on network simplex based algorithm for the minimum-cost network flow problem with linear interdependencies. Department of Applied Mathematics, Illinois Institute of Technology, Chicago, IL, April 26.

Departmental talk on introduction to minimum cost flow and the network simplex algorithm. Department of Applied Mathematics, Illinois Institute of Technology, Chicago, IL, April 19.

Conference talk on network simplex based algorithm for the minimum cost flow problem with linear interdependencies. Chicago Area SIAM Student Conference 2016, University of Illinois at Chicago, IL, April 16.

Research Interests

Operations Research: civil infrastructure planning, public transit planning, disaster preplanning and recovery, vehicle routing problems
Optimization: linear programming, semidefinite programming, multilevel programming, stochastic programming
Graph Theory: network flows, interdependent networks, fractional graph theory, graph decomposition, spectral graph theory, network optimization
Mathematical Biology: dynamical systems models, population ecology, epidemiology, complex systems

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Teaching Experience

Art of Problem Solving Online
Introductory Algebra Instructor (2020 – present)
Precalculus Instructor (2020 – present)
Introductory Programming and Python Instructor (2020 – present)
Introductory Number Theory Instructor (2020 – present)
Mathematics and Python Teaching Assistant (2019 – 2020)

Illinois Institute of Technology, Chicago, IL
Applied Mathematics Teaching Assistant (2012 – 2017)
Introductory Calculus Instructor (2015)
Precalculus Instructor (2014)

Ferris State University, Big Rapids, MI
Mathematics and Science Tutor (2011 – 2012)

Community Involvement and Outreach

Illinois Institute of Technology SIAM Student Chapter, Chicago, IL
Student Chapter President (2016 – 2017)
Awarded a SIAM Student Chapter Certificate of Recognition (2017)
Chicago Area SIAM Student Conference Organizing Committee (2016 – 2017)
Student Chapter Vice President (2015 – 2016)

Related Professional Skills

Programming Languages: C++, Python, Java
Mathematical Software: Mathematica, CPLEX, MATLAB
Markup Languages: LaTeX, HTML

Professional Affiliations

Society for Industrial and Applied Mathematics
Member (2015 – present)