

CONTACT INFORMATION Tepper School of Business, Ph.D. Program
Carnegie Mellon University
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Pittsburgh, PA 15213-3890, USA

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RESEARCH INTERESTS My goal is to solve practical discrete optimization problems through the development of new models and theoretical and methodological tools. For example, I am interested in:

- Building general-purpose methods for solving mixed-integer programs, with prior research focusing on cutting plane theory and implementation
- Improving applications of discrete optimization, such as within computational social choice, including optimization of organ transplants (e.g., kidney exchange) and fair division of indivisible goods
- Analyzing stochastic models to incorporate data uncertainty, particularly to understand stability of solutions with respect to perturbations in underlying data

My future research agenda includes continued work on mixed-integer linear programming, but also to:

- Enhance methodology for non-linear optimization problems, especially utilizing valuable geometric insights obtained from the linear setting
- Integrate machine learning and optimization techniques to develop both novel theory and methods
- Use data-driven ideas to resolve practical problems while incorporating additional complexity relative to current models

EDUCATION **Carnegie Mellon University**, Tepper School of Business, Pittsburgh, PA, USA *August 2011–Present*

M.S. in Algorithms, Combinatorics, and Optimization

Candidate for Ph.D. in Algorithms, Combinatorics, and Optimization

Selected Course Work:

Linear Programming	Graduate Algorithms	Discrete Mathematics	Convex Analysis
Integer Programming	Machine Learning Theory	Performance Modeling	Real Analysis
Graph Theory	Algorithmic Game Theory	Random Graphs	Lebesgue Measure
Networks & Matchings	A Theorist's Toolkit	Mixed-Integer Nonlinear Programming	

Cornell University, College of Engineering, Ithaca, NY, USA

May 2011

B.S. in Operations Research and Engineering with Honors, *Magna Cum Laude*

Selected Course Work:

Engineering Stochastic Processes	Engineering Probability and Statistics I/II	Decision Theory
Simulation Modeling and Analysis	Heuristic Methods for Optimization	Game Theory

- PUBLICATIONS**
- [1] P.I. Frazier and A.M. Kazachkov, “Guessing Preferences: A New Approach to Multi-Attribute Ranking and Selection,” *Winter Simulation Conference*, 2011.
 - [2] J. Karp, A.M. Kazachkov, and A.D. Procaccia, “Envy-Free Division of Sellable Goods,” *AAAI Conference on Artificial Intelligence*, 2014.
 - [3] J.P. Dickerson, A.M. Kazachkov, A.D. Procaccia, and T. Sandholm. “Small Representations of Big Kidney Exchange Graphs,” *AAAI Conference on Artificial Intelligence*, 2017.

Also appears at:

- Workshop on AI and OR for Social Good (AIORSocGood), AAAI 2017
- Exploring Beyond the Worst Case in Computational Social Choice (EXPLORE) Workshop, AAMAS 2016

- SUBMITTED** [4] A.M. Kazachkov, S. Nadarajah, E. Balas, and F. Margot. “Partial Hyperplane Activation for Generalized Intersection Cuts,” submitted.
- WORKING PAPERS** [5] “ \mathcal{V} -Polyhedral Cuts,” in preparation.
 [6] “Cutting Planes by Tilting,” in preparation.
- CONFERENCE PRESENTATIONS** NemFest 2017, Poster, “ \mathcal{V} -Polyhedral Cuts”
 Aussois Combinatorial Optimization Workshop 2017, “From Final Point Cuts to \mathcal{V} -Polyhedral Cuts”
 INFORMS 2016, Invited Talk, “Final Point Generalized Intersection Cuts”
 EURO 2016, “Final Point Generalized Intersection Cuts”
 MIP 2016, Poster, “Cutting Planes by Tilting”
 IOS 2016, “Final Point Generalized Intersection Cuts”
 INFORMS 2015, Invited Talk, “Feasible Versus Infeasible Intersection Points for Cut Generation”
 ISMP 2015, “Partial Hyperplane Activation for Generalized Intersection Cuts”
 INFORMS 2014, Invited Talk, “Computational Investigation of Generalized Intersection Cuts”
 MIP 2014, Poster, “Computational Investigation of Generalized Intersection Cuts”
- TEACHING EXPERIENCE** Instructor, 70-460 Mathematical Models for Consulting, business undergraduate elective, CMU 2014
 Teaching Assistant, CMU
 • 47-861 Convex Polyhedra, Ph.D. elective 2016
 • 47-836 Networks and Matchings, Ph.D. core course 2015
 • 47-830 Integer Programming, Ph.D. core course 2015, 2017
 • 21-366 Combinatorial Optimization, mathematics undergraduate elective 2014
 • 45-750 Probability and Statistics, MBA core course 2013
 • 47-831 Advanced Integer Programming, Ph.D. core course 2013, 2015, 2017
 • 47-835 Graph Theory, Ph.D. core course 2012, 2015
 Recitation Leader, 45-751 Optimization, MBA core course, CMU 2012–2013
 Teaching Assistant, Operations Research Core Courses, Cornell 2010
 Facilitator, Academic Excellence Workshop for Calculus I for Engineers, Cornell 2008
- PROFESSIONAL EXPERIENCE** **Operations Research Intern** Summer 2010
ZS Associates, Princeton, NJ, USA
 • Evaluated downsizing and restructuring a company’s sales force based on cost savings, minimizing disruption to past account relationships, and constructing a balanced and practical alignment
 • Established models for accurate, fair, and motivational sales goals for a 300 person sales force
 • Created and maintained an online portal to assist target planning by tracking account information
- IES Abroad Intern** Spring 2009
Office of International Relations, Siena, Italy
 • Translated official documents from Italian into English and Russian
 • Provided guidance to foreign students and processed study abroad applications for Italian students
- Program Assistant & Resident Advisor, Internship for Building Community** Summer 2008
Columbia University, New York, NY, USA
 • Graded assignments and led class discussions as teaching assistant for two thirty-student classes
 • Assisted development of student community and led trips around New York for high school students
 • Oversaw and provided daily guidance for eight resident students

**SELECTED
HONORS AND
AWARDS**

Chapter Award: Summa Cum Laude Recognition to the CMU INFORMS Student Chapter	2016
Honorable Mention Poster Prize at the Mixed Integer Programming Workshop 2016	2016
Most Visionary Paper Award for “Small Representations of Big Kidney Exchange Graphs” (with Dickerson, Procaccia, and Sandholm) at the EXPLORE Workshop at AAMAS 2016	2016
Best Poster Prize at the Mixed Integer Programming Workshop 2014	2014
Student Travel Support Award at the Mixed Integer Programming Workshop 2014	2014
Zoltners Fellowship	2011–2013
William Larimer Mellon Fellowship	2011–2016
Omega Rho Honor Society	2010
Engineering Global Fellow	2009
Robert C. Byrd Scholarship	2007
The New York State Society of Professional Engineers Scholarship	2007
Toshiba ExploraVision National Competition Honorable Mention	2004

SERVICE

Program Committee: EXPLORE Workshop at AAMAS 2017	
Reviewer: Mathematical Programming Computation (2016), CPAIOR (2015)	
INFORMS Student Affairs Committee	2016–2017
INFORMS Chapters/Fora Committee	2016
INFORMS Subdivision Council, Student Chapter Representative	2015–2016
• Subcommittees: Diversity (2015), INFORMS Connect (2016), Chapter Health (2016)	
ISMP Conference in Pittsburgh, PA, Session Chair	2015
ISMP Conference in Pittsburgh, PA, Volunteer	2015
CMU INFORMS Student Chapter, Founder	
• President (2014–2015), Consulting Board (2015–Present)	
Cornell Omega Rho Honor Society, President	2010–2011
Cornell Jewish-Russian Club, Treasurer	2008–2011
Net Impact Conference at Cornell University, Volunteer	2009

OTHER

Technical Skills: C++, Java, Matlab, Mathematica, Python, Excel RiskSolver, AMPL, C, R
Languages: Fluent in English, native speaker in Russian, advanced in Italian, beginner in French
Professional Societies: INFORMS, MOS, SIAM
Citizenship: USA

REFERENCES

Egon Balas
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François Margot
fmargot11@gmail.com

Ariel Procaccia
arielpro@cs.cmu.edu