

Zachary J. Smith

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Professional Focus: Operations Research, Industrial Engineering, Decision Analysis

EDUCATION & HONORS

Ph.D. Candidate in Operations Research & Industrial Engineering, University of Texas, Austin

Master of Science in Operations Research & Industrial Engineering (8/2016), University of Texas, Austin

- *Academic Standing:* Passed Ph.D. qualifying exams (8/2015) and research proposal defense (4/2018).
- *Academic Performance:* Completed all 17 required courses in graduate program with a GPA of 4.0.
- *Fellowships:* Received 4-year Graduate Fellowship from the Cockrell School of Engineering and a first-year Fellowship from the University of Texas Graduate School.

Bachelor of Science in Mathematics & Economics (5/2013), American University, Washington, DC

- *Honors:* Graduated with Honors and GPA of 3.89; awarded 4-year Presidential Scholarship.
- *Federal Competition:* Reached national finals in the *Federal Reserve's* 2012 economics competition.
- *Study Abroad:* Completed internship program in Belgium on the “European Union in Action.”

TECHNICAL EXPERTISE

Decision Making and Risk Analysis: Applied Probability, Stochastic Processes, Simulation Theory, Markov Decision Processes, Bayesian Statistics, Queueing Theory, Decision Analysis.

Optimization and Industrial Engineering: Linear Programming, Integer and Mixed Integer Programming, Convex Optimization, Scheduling Theory.

Theoretical Mathematics: Real Analysis (Measure Theory), Theory of Probability, Theory of Stochastic Processes (Martingales and Brownian Motion).

RESEARCH & PRESENTATIONS

- *Strictly Proper Scoring Rules: Properties and Applications.* Presentation on original research for Ph.D. dissertation committee, April, 2018 (Advisor: Dr. J. Eric Bickel). Based on articles in process: “Additive Proper Scoring Rules” and “Weighted Proper Scoring Rules and Convex Risk Measures.”
- *Additive Properties of Proper Scoring Rules.* Presentation at the annual conference of INFORMS (Institute for Operations Research and the Management Sciences), November, 2016.
- *A Markov Chain Model for Predicting Major League Baseball.* M.S. thesis report, August, 2016.

PROFESSIONAL HISTORY

LANL Student (Q Clearance), *Los Alamos National Laboratory* (6/2018 – Present)

Graduate Research Assistant, *LANL (Z# 312903) and University of Texas, Austin* (2/2016 – 6/2018)

- Developed and tested optimization model for scheduling of quality-control tests (working in collaboration with the UT Nuclear Engineering Department and Los Alamos).
- Authored the “Industrial and Systems Engineering Charter” for LANL SSE-2, laying out strategies to improve manufacturing efficiency at Los Alamos using Operations Research methodologies.
- Initiated and co-presented a seminar on “Introduction to Operations Research” for the Production Control group (formerly NPI-2), discussing potential applications for analytical techniques.

Research Assistant, Professor J. Eric Bickel, *University of Texas*, Austin, TX (6/2015 – 1/2016)

- Developed and programmed a win probability model for major-league baseball that makes game-specific predictions; enhanced the base-running model used in previous prediction models.

Research Assistant, Modeling & Simulation, *Evidera*, Washington DC (6/2013 – 6/2014)

- Worked with Health Economics Modeling Team to design, program, test, and troubleshoot mathematical models that evaluated the cost-effectiveness of biopharmaceutical products.
- Served as lead programmer for health-care models, including a Markov and Survival Partition Model for melanoma treatments, a Markov Individual Simulation Model for migraine treatments, and a budget-impact model for allergy medication.
- Drafted model specifications, technical reports, and presentations for delivery to clients.

Economics Intern, *US Department of Agriculture*, Washington, DC (6/2012 – 12/2012)

- Hired for summer to help research, create, and update key reports and databases that track issues in agriculture and transportation; continued by invitation through fall semester.
- Revised and improved a Congressionally mandated study of rural transportation issues, adding a “Cotton Transportation Profile” and gaining expertise in mapping software.

Research Intern, *EU Ukraine/Belarus Business Council*, Brussels, Belgium (9/2011 – 12/2011)

- Researched and wrote a guidebook describing the economic policies of the European Union; wrote technical summaries on energy policy in Ukraine (distributed to members of the EU Parliament).

Mathematics Tutor, *American University*, Washington, DC (5 semesters, 2010 – 2013)

- Tutored undergraduates in Calculus 1 to 3, Statistics, and other areas of mathematics.

ACTIVITIES & INTERESTS

- Member and student leader in UT graduate chapter of INFORMS (Institute of Operations Research and the Management Sciences): Community Service Chair (2016-18), Social Chair (2015-16).
- Guitar teacher and performer (classical, acoustic, and electric); AU select choir member.
- Host of weekly radio show for student-run station (WVAU at American University).

ADDITIONAL PROFESSIONAL SKILLS & TRAINING

Lean Six Sigma Green Belt: Completed on-line certification in managerial tools and techniques that help improve processes within an organization (July, 2017).

Production Control Training: Completed 3-day Oracle MRP training (August, 2017).

Communications: Excellent writing, editing, and speaking skills: advanced studies in Spanish language; demonstrated able to convey complex technical information to academic and professional audiences.

Computer: Excel, PowerPoint, Python, Java, VBA, ArcGIS, Stata, Matlab, R, Pyomo, Arena, COIN-OR.