
Department of Mathematics, Statistics and Computer Science
Macalester College
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Saint Paul, MN 55105

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I. EDUCATION

PhD in Mathematics 1992-1997
Yale University (New Haven, CT)
Dissertation: Stopping Rules and Time Reversal for Finite Markov Chains
Advisor: László Lovász

MS in Mathematics 1992-1994
Yale University (New Haven, CT)

BA with Honors in Mathematics 1987-1991
Williams College (Williamstown, MA)
Magna Cum Laude, Phi Beta Kappa, Sigma Xi

II. ACADEMIC APPOINTMENTS

Associate Professor 2013-present
Assistant Professor 2007-2013
Department of Mathematics, Statistics and Computer Science
Macalester College (Saint Paul, MN)

Director's Mathematician-in-Residence Summer 2016
Budapest Semesters in Mathematics
Budapest, Hungary

Long-Term Visitor 2014-2015
Institute for Mathematics and its Applications
Thematic Year: Discrete Structures and their Applications
University of Minnesota (Minneapolis, MN)

General Member 2011-2012
Institute for Mathematics and its Applications
Thematic Year: Mathematics of Information
University of Minnesota (Minneapolis, MN)

Eugene P. Shelly Visiting Assistant Professor 2005-2007
Department of Mathematical Sciences
Carnegie Mellon University (Pittsburgh, PA)

Richard J. Duffin Visiting Assistant Professor 1997-1998
Department of Mathematical Sciences
Carnegie Mellon University (Pittsburgh, PA)

III. NON-ACADEMIC EMPLOYMENT

| | |
|--|-----------|
| Database Architect Information Resources and Technology Stanford University School of Medicine (Stanford, CA) | 2005 |
| Senior Software Engineer NorthStar Software (San Francisco, CA) | 2002-2005 |
| Software Engineer Extricity Software (Redwood Shores, CA) | 1998-2002 |

IV. PUBLICATIONS

Mathematics co-authors are always listed alphabetically. A star () denotes an undergraduate co-author. Publications resulting from work since tenure (2012) are bolded and annotated.*

Books edited

1. A. Beveridge, J. Griggs, L. Hogben, G. Musiker and P. Tetali, *Recent Trends in Combinatorics*, IMA Volumes in Mathematics and its Applications, Springer, 2016.

Articles published in conference proceedings

1. A. Beveridge, M. Cao, A. Redlich and L. J. Cowen, *Designing exit frequency distance measures for biological networks*, In: SIAM Workshop on Network Science (2016), 35-36.
2. A. Beveridge, V. Isler and D. Ozsoyeller, *Symmetric rendezvous search on the line with an unknown initial distance*, IEEE Transactions on Robotics, Vol 29, No. 6 (2013), pp. 1366–1379.

Articles published in peer reviewed journals

1. A. Beveridge, Y. Cai, *Pursuit-Evasion in a Two-Dimensional Domain*, Ars Mathematica Contemporanea, Vol. 13 (2017), 187-206.
2. A. Beveridge, *A Science of Networks*, The Skeptic Magazine, Vol. 6, No. 2 (2016), pp. 18-21.
3. A. Beveridge, V. Isler, N. Noori, *Pursuit-Evasion: A Toolkit to Make Applications More Accessible*, Robotics and Automation Magazine Vol. 23, No. 4 (2016), pp. 138-149.
4. A. Beveridge, J. Youngblood* (Macalester 2012), *The Best Mixing Time for Random Walks on Trees*, Graphs and Combinatorics, Vol. 32, No. 6 (2016) pp. 2211-2239.
5. A. Beveridge, J. Shan*, *Network of Thrones*, Math Horizons Magazine, Vol. 23, No. 4 (2016) pp. 18-22.
6. A. Beveridge, *A Hitting Time Formula for the Discrete Green's Function*, Combinatorics, Probability and Computing, Vol. 25, (2016) pp. 362-379.
7. B. Ames, A. Beveridge, C. Djang* (Oberlin 2013), R. Carlson* (Harvey Mudd 2013), V. Isler, S. Ragain* (Pomona 2014), M. Savage* (Macalester 2013), *A Leapfrog Strategy for Pursuit-Evasion in Polygonal Environments*, International Journal on Computational Geometry and Applications, Vol. 25, No. 2, (2015) pp. 77-100.

8. A. Beveridge, S. Wagon, *The Sorting Hat Goes to College*, Mathematics Magazine, Vol 87, No. 4 (2014) pp. 243–251.
9. A. Beveridge, A. Dudek, A. Frieze, T. Müller, M. Stojaković, *Maker-Breaker Games on Random Geometric Graphs*, Random Structures and Algorithms, Vol 45, No. 4 (2014), pp. 553-607.
10. W. Baird, A. Beveridge, A. Bonato, P. Codenotti, J. MacCauley* (Haverford 2011), A. Maurer* (Carleton 2011), S. Valeva* (Mount Holyoke 2011), *On the minimal order of k -cop-win graphs*, Contributions to Discrete Mathematics, Vol 9, No. 1 (2014), pp. 1–15.
11. M. Axenovich, A. Beveridge, J. P. Hutchinson and D. West, *Visibility Number of Directed Graphs*, SIAM Journal on Discrete Mathematics, Vol 27, No. 3, (2013), 1429–1449.
12. A. Beveridge and M. Wang* (Macalester 2009), *Exact mixing times for random walks on trees*, Graphs and Combinatorics, Vol. 29, No. 4, (2013), pp. 757-772.
13. A. Beveridge, A. Dudek, A. Frieze, T. Müller, *Cops and robbers on geometric graphs*, Combinatorics, Probability and Computing, Vol. 21, No. 6, (2012), pp. 816-834.
14. A. Beveridge, V. Isler and D. Ozsoyeller, *Symmetric rendezvous on planar and rectilinear environments*, in: Proceedings of AAAI Conference on Artificial Intelligence 2012, AAAI Press (2012), 2046–2052.
15. A. Beveridge and S. Cooke* (Macalester 2009), *The Mathematical Sorting Hat*, UMAP journal, Vol. 33, No. 2 (2012), pp. 99-118.
16. A. Beveridge and M. Bradonjić, *On the mixing time of geographical threshold graphs*, Discrete Mathematics, Vol. 311, No. 23-24 (2011) , p. 2637-2649.
17. A. Beveridge, *Connectivity of random cubic sum graphs*, SIAM Journal on Discrete Mathematics, Vol. 24, Issue 3 (2010), 895-909.
18. A. Beveridge and L. Lovász, *Exit frequency matrices for finite Markov chains*, Combinatorics, Probability and Computing 19 (2010), pp. 541–560.
19. A. Beveridge, T. Bohman, A. Frieze and O. Pikhurko, *Memoryless rules for Achlioptas processes*, SIAM Journal on Discrete Mathematics, Vol. 23, Issue 2 (2009), pp. 993–1005.
20. A. Beveridge, *Centers for random walks on trees*, SIAM Journal on Discrete Mathematics, Vol. 23, Issue 1 (2009), pp. 300–319.
21. A. Beveridge, T. Bohman, A. Frieze and O. Pikhurko, *Game Chromatic Index of Graphs with Given Restrictions on Degrees*, Theoretical Computer Science, 407 (2008), 242–249.
22. A. Beveridge and O. Pikhurko, *On the connectivity of extremal Ramsey graphs*, Australasian J. of Combinatorics, 41 (2008), 57–62.
23. A. Beveridge, T. Bohman, A. Frieze and O. Pikhurko, *Product rule wins a competitive game*, Proc. AMS, Vol. 135, No. 10 (2007), 3061-3072.
24. A. Beveridge, A. Frieze and C. McDiarmid, *Random minimum length spanning trees in regular graphs*, Combinatorica 18 (1998), 311-333.
25. A. Beveridge and L. Lovász, *Random walks and the regeneration time*, J. Graph Theory 29 (1998), 57-62.

Articles to appear

26. A. Beveridge and M. Chemers, *The Game of “Game of Thrones”: Fractal Dramaturgy and Networked Concordances*, in: Narrative Ecosystems: Reading Contemporary Serial Television Universes (P. Brembilla and I. A. De Pascalis, Eds.), 2018 (forthcoming).

Articles submitted to peer reviewed journals

27. L. Berry* (U. Texas 2015), A. Beveridge, J. Butterfield, V. Isler, Z. Keller* (U. Minnesota 2016), A. Shine* (Pomona 2014), J. Wang* (Macalester 2014), *Line-of-Sight Pursuit in Strictly Sweepable Polygons*, submitted (36 pages).

V. PRESENTATIONS

Invited research seminars at colleges and universities

1. To Catch a Thief: Pursuit-Evasion in Two Dimensions September 2016
Macalester College, St Paul, MN
2. To Catch a Thief: Pursuit-Evasion in Two Dimensions July 2016
Budapest Semesters in Mathematics, Budapest, Hungary
3. Scotty Macalester and the Mathematical Sorting Hat February 2013
St Olaf College, Department of Mathematics, Northfield, MN
4. The Game of Cops and Robbers on Graphs September 2011
Macalester College, Department of Mathematics, Statistics and Computer Science
Saint Paul, MN
5. Visibility Number for Directed Planar Graphs and Tournaments May 2011
Math Department Colloquium, Iowa State University, Ames IA.
6. Randomization and Strategy on Graphs March 2011
Computer Science Department Colloquium, University of Minnesota,
Minneapolis MN.
7. Scotty Macalester and the Mathematical Sorting Hat February 2010
Macalester College, Department of Mathematics, Statistics and Computer Science
Saint Paul, MN
8. Random Cubic Sum Graphs April 2007
Carnegie Mellon University, Department of Mathematical Sciences,
ACO Seminar, Pittsburgh PA
9. Random Walks and Stopping Rules January 2007
Bard College, Department of Mathematics
10. Random Walks and Stopping Rules January 2007
Macalester College, Department of Mathematics and Computer Science
11. On the Connectivity of Extremal Ramsey Graphs March 2006
Carnegie Mellon University, Department of Mathematical Sciences,
Undergraduate Math Colloquium, Pittsburgh PA
12. Random Walks and the Regeneration Time December 2005
Carnegie Mellon University, Department of Mathematical Sciences,
ACO Seminar, Pittsburgh PA
13. Disorientation and Amnesia: Stopping Rules for Finite Markov Chains May 1998
Carnegie Mellon University, Department of Mathematical Sciences,
Department Colloquium, Pittsburgh PA
14. Stop in the name of π : Stopping Rules and Finite Markov Chains March 1997
Williams College, Department of Mathematics, Williamstown MA
15. Propp-Wilson's Exact Mixing via Coupling from the Past January 1996
Yale University, Department of Mathematics,
Discrete Math Seminar, New Haven, CT

16. Somebody Stop Me: Random Walks and Stopping Rules October 1995
 University of Rhode Island, Department of Mathematics,
 Department Seminar, Kingston, RI

Invited research presentations at conferences and workshops

17. To Catch a Thief: Pursuit-Evasion in Two Dimensions November 2016
 Keynote Address
 Undergraduate Research Symposium
 Midstates Consortium for Math and Science
 Washington University, St Louis, MO
18. A Hitting Time Formula for the Discrete Green's Function October 2016
 AMS Sectional Meeting,
 University of St Thomas, Minneapolis, MN
19. Combinatorial Games in Discrete Math April 2016
 MAA North Central Section Meeting
 Macalester College, St Paul MN
20. A Hitting Time Formula for the Discrete Green's Function July 2015
 17th International Workshop on Random Structures and Algorithms,
 Carnegie Mellon University, Pittsburgh, PA
21. A Hitting Time Formula for the Discrete Green's Function June 2015
 Connections in Discrete Mathematics
 Simon Fraser University, Vancouver, BC, Canada
22. Maker-Breaker Games on Random Geometric Graphs September 2014
 AMS Sectional Meeting
 University of Wisconsin, Eau Claire
23. Line-of-Sight Pursuit in Sweepable Polygons June 2014
 SIAM Conference on Discrete Mathematics
 Minneapolis, MN
24. Maker-Breaker Games on Random Geometric Graphs January 2014
 Workshop on Probability and Graphs
 Eurandom (European Institute for Statistics, Probability, Stochastic Operations
 Research and their Applications)
 Eindhoven Technical University, Eindhoven, the Netherlands
25. Maker-Breaker Games on Random Geometric Graphs October 2013
 (Plenary Speaker)
 Science Atlantic Special Session on Mathematics, Statistics and Computer Science,
 University of Prince Edward Island, Charlottetown, Prince Edward Island, Canada
26. Maker-Breaker Games on Random Geometric Graphs September 2013
 Discrete Mathematics Day,
 Wesleyan University, Middletown CT
27. Maker-Breaker Games on Random Geometric Graphs August 2013
 16th International Workshop on Random Structures and Algorithms,
 Adam Mickiewicz University, Poznan, Poland
28. On the Minimum Order of k -cop-win Graphs September 2012
 MIGHTY LIII Conference
 Iowa State University, Ames, IA
29. Cops and Robbers on Geometric Graphs June 2012
 SIAM Conference on Discrete Mathematics,
 Dalhousie University, Halifax, Nova Scotia, Canada.

30. The Petersen Graph is the Smallest 3-cop-win Graph May 2012
Graph Searching in Canada Workshop,
Ryerson University, Toronto, Ontario, Canada.
31. Cops and Robbers on Geometric Graphs October 2011
AMS Central Section Meeting,
University of Nebraska, Lincoln NE.
32. Exact Mixing Measures for Trees May 2011
15th International Workshop on Random Structures and Algorithms,
Emory University, Atlanta Georgia.
33. Visibility Number for Directed Planar Graphs and Tournaments June 2011
Canadian Discrete and Algorithmic Mathematics Conference,
University of Victoria, Victoria BC.
34. A Simultaneous Random Walk Game March 2011
AMS Central Section Meeting,
University of Iowa, Iowa City IA.
35. Exit Frequency Matrices for Random Walks on Graphs April 2010
AMS Midwestern Sectional Meeting,
Macalester College, Saint Paul, MN.
36. Exit Frequency Matrices for Finite Markov Chains August 2009
14th International Workshop on Random Structures and Algorithms,
Adam Mickiewicz University, Poznań, Poland.
37. Extremal Mixing Times for Trees April 2009
MAA North Central Section Meeting,
Hamline University, Saint Paul, MN
38. Random Cubic Sum Graphs June 2008
SMALL Mini-Conference,
Williams College, Williamstown MA
39. Centers for Random Walks on Trees June 2007
Workshop on Markov Chain Monte Carlo,
DIMACS, Rutgers University, Piscataway, NJ

Other presentations

40. Networks of Ice and Fire December 2017
Conversations about our Scholarly Lives, Serie Center for Scholarship and Teaching
Macalester College, St Paul, MN.
41. Networks of Ice and Fire January 2017
THAW Workshop
Macalester College, St Paul, MN.
42. Networks of Ice and Fire August 2016
Ottawa Graph Meetup
Ottawa, ON, Canada
43. A Different Kind of Network: Merging Data Science May 2016
and Humanistic Inquiry
SPAW Workshop
Macalester College, St Paul, MN.
44. Research and Practice About Classroom Discussion (Panel Member) February 2016
Conversations on our Scholarly Lives, Serie Center for Scholarship and Teaching,
Macalester College, St Paul, MN.

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| 45. Math and Aftermath: Running an NSF Sponsored Summer REU Talking about Teaching, Serie Center for Scholarship and Teaching, Macalester College, St Paul MN | April 2015 |
| 46. The Catalan Chameleon Plenary Talk, MathPath Summer Camp, Macalester College, St Paul MN | July 2013 |
| 47. The Catalan Numbers Week-long breakout session, Math Path Summer Camp, Macalester College, St Paul MN | July 2013 |
| 48. Scotty Macalester and the Mathematical Sorting Hat Admissions Office Lunchtime Presentation Series, Macalester College, St Paul MN | February 2013 |
| 49. Scotty Macalester and the Mathematical Sorting Hat Conversations about our Scholarly Lives, Serie Center for Scholarship and Teaching, Macalester College, St Paul MN | October 2011 |
| 50. The Catalan Chameleon Twin Cities Math Circle, Blake School, Hopkins MN | February 2011 |
| 51. The Catalan Chameleon Plenary Talk, MathPath Summer Camp, Macalester College, St Paul MN | July 2010 |
| 52. The Catalan Numbers Week-long breakout session, Math Path Summer Camp, Macalester College, St Paul MN | July 2010 |
| 53. Real World Assessment in Math 135: Applied Calculus Talking about Teaching, Serie Center for Scholarship and Teaching, Macalester College, St Paul MN | October 2009 |

VI. GRANTS, AWARDS AND RECOGNITION

Awards

Trustees' Award September 2017
Macalester College

Presented annually to 4-5 Macalester faculty members who have made outstanding contributions to the College in the previous academic year.

Jim Hoppe Advisor of the Year Award April 2017
Macalester College

Presented annually to an advisor to a Macalester student organization.

Janet L. Andersen Lecture Award October 2016
Midstates Consortium for Math and Science

Presented annually to a Midstates Consortium faculty member with a vigorous research programs involving undergraduates, who is an exceptional mentor for undergraduate research students, who is an engaged and skilled teacher, or who creates interdisciplinary research opportunities for undergraduate students.

Carl B. Allendoerfer Award for Expository Excellence August 2015
Mathematical Association of America
Awarded for the article: "The Sorting Hat Goes to College" (co-awarded with Stan Wagon)

Awarded annual to an outstanding article published in Mathematics Magazine.

Recognition

Mathematical Moment: Dis-playing the Game of Thrones
American Mathematical Society
June 2016

Mathematical Moments are a series of posters that promote appreciation and understanding of the role mathematics plays in science, nature, technology, and human culture. I was also interviewed on the Math Moments podcast.

Media Coverage

Network of Thrones

My article with Macalester alumnus Jie Shan went viral in April 2016. The article went viral in Spring 2016, garnering significant attention around the world. My work was mentioned on Good Morning America, NPR's Weekend Edition, and spawned hundreds of articles, including Huffington Post, Popular Science, GQ, the AV Club, and many others. Discussion of our work made it to the front page of Reddit, meaning that, for a time, it was one of the most popular topics of discussion on the internet.

More recently, this work was featured in Biotechniques: The International Journal of Life Science Methods.

External grants

National Science Foundation: Research Experience for Undergraduates Grant
REU Site: Interdisciplinary Research Experience for Undergraduates
co-PI: Fadil Santosa, Institute for Mathematics and its Applications
\$244,125, funded June 2012 - May 2015.

National Security Association
Young Investigator Grant H98230-08-1-0064
\$30,000, funded Spring 2008 - Spring 2010.

Internal Macalester grants

Wallace Travel Grant
Travel support to attend the Workshop on *Probability and Graphs*,
Eurandom Institute, Eindhoven, The Netherlands
\$2,200, Spring 2014.

SFSR Grant from the Anderson-Grossheusch Interdisciplinary Summer Research Fund
Support for summer research by Hossein Alidaee (Macalester 2013)
\$4,400, Summer 2012.

Fellowships

Wimmer Fellowship
Eberly Center for Excellence in Teaching
Carnegie Mellon University

VII. TEACHING EXPERIENCE

MACALESTER COLLEGE

| Course No. | Course Title | Semesters |
|-------------------|--|-----------------------------------|
| MATH 479 | Network Science | S15, S17, S18 |
| MATH 469 | Combinatorial Optimization | F08 |
| MATH 394 | Topics in Graph Theory | F07 |
| MATH 379 | Combinatorics | F09, F11, F13, F15, F16 |
| MATH 379 | Complex Analysis | S18 |
| MATH 376 | Algebraic Structures | S08, S09, S10, S12, S13, S16 |
| MATH 279 | Discrete Mathematics | F16, S17 |
| MATH 236 | Linear Algebra | F09, S12, F12, S14, F17 |
| MATH 137 | Single Variable Calculus | F08 |
| MATH 136 | Discrete Mathematics: How to Be a Player | F12 |
| MATH 136 | Discrete Mathematics | S09, F11, S13, F13, S14, F15, S16 |
| MATH 135 | Applied Calculus | F07, S08, S10 |

CARNEGIE MELLON UNIVERSITY

| Course No. | Course Title | Semesters |
|-------------------|---------------------------------------|------------------|
| MATH 341 | Linear Algebra | S98 |
| MATH 320 | Symbolic Programming Methods | S07 |
| MATH 257 | Models and Methods for Optimization | S06 |
| MATH 241 | Matrix Algebra | F06 |
| MATH 228 | Discrete Mathematics | S98 |
| MATH 127 | Concepts of Mathematics | F05, S07 |
| MATH 126 | Introduction to Mathematical Software | F05, S06 |
| MATH 111 | Calculus I | F97 |

YALE UNIVERSITY

| Course No. | Course Title | Semesters |
|-------------------|--|------------------|
| MATH 120 | Calculus of Functions of Several Variables | S96, S97 |
| MATH 115 | Calculus of Functions of One Variable II | F94 |
| MATH 112 | Calculus of Functions of One Variable I | SU 97 |

VIII. ADVISING AND SUPERVISION

Honors Advisor

Tuyet-Anh Tran 2017-2018
 B.A. in mathematics and economics, 2018
 Building Chains of Separable Preferences

Ionatan Kuperwajs 2017-2018
 B.A. in mathematics, computer science and neuroscience, 2018
 Visualizing and Analyzing fMRI Datasets

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| Ian Calaway B.A. in mathematics and economics, 2016 Separating Interdependent Preferences | 2015-2016 |
| Hossein Alidaee B.A. in mathematics and economics, 2013 How Ideas Grow: Diffusion in Social Networks <i>Received Outstanding Presentation Award for this work at the 2013 Joint Math Meetings.</i> | 2012-2013 |
| Jeanmarie Youngblood B.A. in mathematics and education, 2012 The Best Mixing Time for Trees <i>Received Outstanding Presentation Award for this work at the 2012 Joint Math Meetings.</i> | 2011-2012 |
| Jorge Bañuelos B.A. in mathematics, 2011 A Simultaneous Random Walk Game | 2010-2011 |
| Meng Wang B.A. in mathematics and economics, 2009 Extremal Random Walks on Trees | 2008-2009 |

Capstone Talk Advisor

An asterisk (*) denotes that the student earned an Outstanding Capstone Award, given to the top 10% of presentations each year.

2017

| | | |
|----------------|--|------|
| Anson Justi | How Long Does it Take to Win an Oscar? | AMS |
| Austin Kim | Computers and Obesity | COMP |
| Henry Fender | Puzzles to Prolog | MATH |
| Pradyut Bansal | Restauranteur or Bartender? | AMS |
| Pradyut Bansal | Through the Eyes of the Three-Eyed Raven | COMP |

2016

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| Ian Calaway | The Separability Problem: Understanding Preferences in Referendum Elections | MATH |
| Panchapol Chantarasereekul | Forecasting Transit Ridership in the Twin Cities | AMS |
| Scott Dixon* | Spreading Christendom via the Portuguese Missionary Network, 1550-1750 | MATH |
| Alex Frank | Metro vs. Bus Rapid Transit: A Comparison of Network Structures | AMS |
| Aidan Morzenti | Quantifying a Liberal Arts Education: A Network Analysis of Registration at Mac | AMS |
| Arie Slobbe | The Path Finding Problem | AMS |
| Tom Wakin | A Network of Samples: Understanding Musical Influence in Hip-Hop | MATH |

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| 2015 | | |
| Alexandra Boldin | Simulating Networks of Coupled Harmonic Oscillators | MATH |
| Benjamin Hillmann | Personalized Reviews: Sentiment Mining on Yelp | MATH |
| Kyla Martin* | Discovering the “Paul Revers” of Student Affairs @MAC | MATH |
| Marko Martinovic | Financial Networks and Contagion | AMS |
| Christian Smith | Homophily among Majors and Departments at Macalester | AMS |
| Nate Yordy | Bracketology and Math Madness | AMS |
| 2014 | | |
| Eric Biggers | A Bidirected String Graph Model for Genome Assembly | MATH |
| Adam Sirvinskas* | The Motzkin Puzzle | MATH |
| Jie Shan | Community Analysis of “Game of Thrones” | AMS |
| Junyi Wang | Benford’s Law for Leading Digits in Natural Data Sets | MATH |
| 2013 | | |
| Ellen Anderson-benge | Modeling Traffic Flow | MATH |
| Nick Brooks | A Generalization of the Catalan Numbers | MATH |
| Chanda Cheung | Marriage Survival in the United States | AMS |
| Yiran Dong | The Game of Yahtzee | AMS |
| Danlu Hu | The Effect of Unemployment Insurance Benefits on Unemployment Spells | AMS |
| Yaxi Li | Does Higher Dividend Lead to Faster Increase in Stock Price? | AMS |
| Jacob Rath* | The Genus of the n -Cube | MATH |
| 2012 | | |
| Michelle DeKenis | Phase Change Dynamics for Locust Swarms | MATH |
| Trevor McCalmont* | Time to Arrest: Survival Analysis of At-Risk Youths | AMS |
| Ryan Marshall | Catalan Numbers: From Mountain Ranges to Number Tableaux | MATH |

Capstone Project Advisor

Directed the following year-long independent research projects to fulfill the capstone graduation requirement. An asterisk (*) denotes that the student earned an Outstanding Capstone Award, given to the top 10% of projects each year.

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|--------------------|---|
| 2014 | |
| Adam Sirvinskas* | The Motzkin Puzzle |
| Jie Shan | Community Analysis of “Game of Thrones” |
| 2013 | |
| Nick Brooks | A Generalization of the Catalan Numbers |
| 2010 | |
| Michael Kapernaros | Exact mixing times for regular graphs |
| Nianwei Qiu | Benford’s Law |

2009
Casey Battaglinio Three Facility Location Algorithms and their Analysis using a Primal-Dual Schema
Peter Calhoun* Expanding the Board Game *Risk* using Markov Chains
Sean Cooke Why am I in that class? Analyzing Macalester's First Year Course Assignment Problem
Caroline Ettinger* Analyzing Legislative Voting Patterns
Stiliyana Stamenova Planning the Perfect Party: On the Connectivity of Extremal Ramsey Graphs

2008
Samuel Handler Attributed Subgraph Matching
Michael McNulty Spectral Analysis of Cayley Graphs through Representation Theory
Andrey Russinov Exact Sampling Using Coupling from the Past

Honors Project Review Committee

2017
Esha Datta (Mathematics) The Efficient Factorization of Diagram Algebras

2016
Lucas Gagnon (Mathematics) Bases for McKay Centralizer Algebras
Yan Jin (Mathematics) Sampling Theories for Graph Signals, with Applications to Critically Sampled Filter Banks

2014
Samuel Eklund (Philosophy) A Cardinal Sin: The Infinite in Spinoza's Philosophy

2013
Megan Naminski (Computer Science) An Analysis of Simultaneous Localization and Mapping (SLAM) Algorithms

2012
Carl Corcoran (Mathematics) A Measure of Compactness for Redistricting
Nathaniel Miller (Computer Science) Characterizing Conflict in Wikipedia

2010
Colin Welch (Computer Science) Measuring Balkanization in Wikipedia

2009
Stiliyana Stamenova (Computer Science) Solving the Maze: Robot Localization Using the Monte Carlo Localization Algorithm and Shape Context

2008
Owen Anderson (Computer Science) Compiler Optimizations for a Time-constrained Environment
Katherine Lim (Mathematics) Post-election audits: statistical power based methods and a trigger for further auditing

PhD Dissertation Committee

Narges Noori
Adversarial and Stochastic Search for Mobile Targets in Complex Environments
Computer Science
University of Minnesota, 2016

Reshma Ramadurai
On Induced Vertex Folkman Numbers
Mathematics (Algorithms Combinatorics and Optimization)
Carnegie Mellon University, 2011

Summer Research Advisor

Trung Nguyen 2017
Building Series-Parallel Voters

Nina Brim 2017
Fast Mixing for Motzkin Families

Signal Processing on Graphs 2015
Co-advised four Macalester students (with David Shuman)
Yan Jin (2016), Andre Archer (2017), Stefan Faridani (2017), Elle Weeks (2017)

MAXIMA Research Experience for Undergraduates 2012-2014
NSF sponsored program run jointly by Macalester and
the Institute for Mathematics and its Applications (University of Minnesota)
PI, Program Director and leader of a research group of four undergraduates
Pursuit-evasion games in polygonal environments

Hossein Alidaee 2012
Spread of Information in Social Networks

Jorge Bañuelos 2010
A Simultaneous Random Walk Game
Received Konhauser Award for outstanding math major

Interdisciplinary Research Experience for Undergraduates 2010
Institute for Mathematics and its Applications
University of Minnesota
Leader of a research group of three undergraduates
Pursuit-evasion games on graphs

Bernd Verst 2008
Representations of the Partition Algebra
Received Ezra Camp Award for contributions to the department

Summer Undergraduate Applied Mathematics Institute 2006
Carnegie Mellon University
Co-leader of research group of five undergraduates
A simultaneous Markov chain game

IX. SERVICE

Service to profession

Ad-hoc referee for *Ars Combinatoria*, *Ars Mathematica Contemporanea*, *American Mathematical Monthly*, *Australasian Journal of Combinatorics*, *Combinatorics, Probability and Computing*, *Discrete Mathematics* (Elsevier), *International Conference on Intelligent Robots and Systems*, *International Journal of Game Theory*, *Electronic Journal of Combinatorics*, *Journal of Combinatorial Theory (Series B)*, *Journal of Combinatorics*, *Journal of Theoretical Probability*, *Mathematics Magazine*, *Random Structures and Algorithms*, *Rose-Hulman Undergraduate Journal*, *SIAM Journal on Discrete Mathematics*, *SIAM Journal on Matrix Analysis and Applications*, *SIAM Symposium on Discrete Algorithms (SODA)*, *Statistics and Probability Letters*, and *UMAP Journal*.

Spectrum Editorial Board member
Mathematical Association of America

September 2016-present

Project NExT Mentor
Mathematical Association of America

September 2016-present

Special Session Organizer
Extremal and Probabilistic Combinatorics
AMS Sectional Meeting
University of St Thomas, Minneapolis, MN

October 2016

Conference Co-Organizer
MAA North Central Section Meeting
Macalester College, St Paul, MN

April 2016

Judge, Undergraduate Poster Session
Joint Mathematics Meeting
San Antonio, TX

January 2015

Minisymposium Organizer
Pursuit Games on Graphs
SIAM Conference on Discrete Mathematics
Minneapolis, MN

June 2014

Session Chair
Workshop on Probability and Graphs
Eurandom (European Institute for Statistics, Probability, Stochastic Operations
Research and their Applications)
Eindhoven Technical University, Eindhoven, the Netherlands

January 2014

Judge, Undergraduate Poster Session
Joint Mathematics Meeting
San Diego, CA

January 2013

Logistical coordinator, Session on Extremal Combinatorics
American Mathematical Society Sectional Meeting
Macalester College, Saint Paul MN

April 2010

Session Chair and Judge for Outstanding Presentation
Young Mathematicians Conference
The Ohio State University, Columbus OH

August 2010

Service to Macalester College

Quantitative Thinking Assessment Panel (Spring 2018). Develop rubrics and assess student work to evaluate the effectiveness of a general education requirement.

Title IX and Bias Director Hiring Committee (Fall 2017). Faculty member on hiring committee for Title IX Coordinator.

Retirement Oversight Committee (Fall 2017-present). Faculty member on committee to provide feedback on faculty and staff retirement plans at Macalester.

Educational Policy and Governance Committee (Spring 2015-present). Member of elected faculty committee.

Benefits Advisory Committee (Spring 2015 - present, acting chair Fall 2017-2018). Faculty member on committee to provide feedback on faculty and staff benefits at Macalester.

Student Learning Committee (Fall 2016 - present). Evaluate progress on meeting student learning goals.

Short-Term Study Away Committee (Fall 2016-present). Develop institutional planning and guidelines around short-term trips led by faculty and staff.

Conduct Hearing Board, (Fall 2011-Spring 2016). Faculty member on committee which resolves cases of College policy violation.

Senior Speaker Committee (Spring 2016). Chose senior speaker for 2016 commencement.

HHMI Data Scientist Reviewer (Spring 2016). Reviewed student applications for summer research funding.

Macalester College Student Government Reviewer (Fall 2015). In 2015, MCSG performed a self study and requested a full review of its structure and effectiveness. I was the lone faculty member on the committee, which also included Macalester staff, external Camus Life/Student Life administrators, and current students.

Faculty Advisor, Macalester Contract Bridge Club (Spring 2015-present). Faculty sponsor and bridge tutor.

Founders' Day Committee, (Fall 2012-Spring 2015). Faculty member on committee for planning Founders' Day celebrations.

Community Recognition Committee (Spring 2010, Spring 2012). Faculty member on committee to determine campus awards for community service.

Midterm Course Interviews. Served as primary interviewer (5 times) and scribe (5 times).

First Year Course Assignment (2009-present). Along with Stan Wagon (MSCS) and Sean Cooke (Macalester 2009), developed and implemented a computer algorithm to find the optimal course assignment. Each year, I work with the Office of Academic Programs to determine the first year course assignments for the incoming class.

Talking about Teaching. Presented session on “Authentic Assessment,” October 2009.

Service to the Department of Mathematics, Statistics and Computer Science

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| <i>Member, STEM Working Group</i> | 2017-present |
| <i>Committee Member, Statistics Search [ongoing]</i> | 2017-2018 |
| <i>Committee Member, Statistics Search [unsuccessful search]</i> | 2016-2017 |
| <i>Organizer, Konhauser Problemfest</i> | 2007-present |
| <i>Competition Coordinator, MAA North Central Section Competition, Putnam Competition</i> | 2007-present |
| <i>Organizer and Founder, C*SM*S Scavenger Hunt</i> | 2009-present |
| <i>Faculty advisor, MACematics math club</i> | 2014-present |
| <i>Department Study Away Liaison</i> | 2016-present |
| <i>Organizer, Department Seminar</i> | 2008-2010, 2015-2016 |
| <i>Organizer and Instructor, MSCS Capstone Seminar</i> | 2012-2013 |
| <i>Committee Member, Computational Mathematics Search [hired David Shuman]</i> | 2012-2013 |
| <i>Committee Member, Statistics Search [hired Alicia Johnson]</i> | 2008-2009 |
| <i>Committee Member, Computer Science Search [hired Shilad Sen]</i> | 2007-2008 |
| <i>Organizer, Contributor, Problem of the Week</i> | 2008, 2010 |

Service to the Community

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| <i>Presenter, Capitol Hill Elementary School STEM Night</i> Organized a team of 4 undergraduates to lead math outreach activities | January 2012 |
| <i>Contributed Session on Catalan Numbers, Twin Cities Math Circle, The Blake School</i> | February 2011 |

X. MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Mathematical Society

Mathematical Association of America