

MSCS MESS

Department of Mathematics, Statistics, and Computer Science
St. Olaf College, Northfield, MN 55057
November 4, 2016 Volume 45, No. 8

Next Friday's Research Seminar

Title: RIVET: Software for
Topological Data Analysis
Speaker: Matthew Wright
Time: Friday, November 11, 3:40pm
Place: RNS 204

This talk will follow-up on the November 4th seminar—if you enjoyed Prof Wright's previous talk, learn more, and if you missed the talk, redeem yourself this week!

About the talk: Persistent homology is a recently-developed tool for using topology to analyze the structure of complex data. At a basic level, persistent homology is sensitive to outliers in the data. However, a variant called multidimensional persistent homology is robust in the presence of outliers, but is much more difficult to compute and visualize. In this talk, I will describe current work with Michael Lesnick (Princeton University) to efficiently compute and visualize multidimensional persistent homology. This work has produced in the Rank Invariant Visualization and Exploration Tool (RIVET) and offers many directions for research projects.

About the speaker: Matthew Wright understands the difference between topology and topography, and he appreciates both. He completed his Ph.D. in mathematics at the University of Pennsylvania, was a Postdoctoral Fellow for two years at the Institute for Mathematics and its Applications, and is now a Visiting Assistant Professor at St. Olaf College. In his 32 years, he has visited 32 US states and 12 other countries.

Next Monday's Colloquium

Title: Spatial Data. What is it and
what can we do with it?
Speaker: Lyndsay Shand
Time: Monday, November 7, 3:30pm
Place: RNS 210 (not 310!)

About the talk: In this talk, I will give an overview of spatial analysis and its application to environmental and disease data. I will introduce some common questions researchers want to address with such data and present some more complex spatial problems that I deal with in my research.

About the speaker: Lyndsay Shand is a 5th year PhD candidate in statistics at the University of Illinois, Urbana Champaign whose research interests include spatial analysis, spatio-temporal analysis, and biostatistics. She is particularly interested in applications of statistics to public health, energy resources, and other life sciences.

Math Movie Night

Math Club is showing the film *The Man Who Knew Infinity* on Thursday, November 10th at 7:30 pm in the 6th-floor lounge of RMS. The movie is a biographical drama about Srinivasa Ramanujan, a real-life mathematician who after growing up poor in Madras, India, gained admittance to Cambridge University during WWI and ultimately made major contributions to the mathematical field. One of the movie's producers, Ken Ono, will be speaking at Math Across the Cannon this spring, so this is a great opportunity to see the movie

before hearing Ken speak. There will also be popcorn and s'mores to roast, and assorted beverages!

MSCS T-shirt design contest

Calling all creative math lovers! The MSCS department is looking to create yet another cool math-related t-shirt, but we need your help! We are looking for creative t-shirt designs that relate to mathematics. Please submit your radical t-shirt designs to Miranda Tilton (tiltonm@stolaf.edu) by Monday, November 14th 2016, for the chance to win a free t-shirt and free pause pizza!

Summer opportunities

Unsure of your summer plans or don't know where to look to find math-related internships, programs, or jobs? The list below includes some good places to start your search. Keep an eye out in future issues of the MSCS Mess as new opportunities continue to crop up!

Research Experience for Undergraduates (REU): Each summer, the National Science Foundation (NSF) funds a slew of summer research programs at institutions across the country and abroad. In the course of these programs (usually six weeks long), undergraduates work on research projects with a small group of peers and a faculty mentor, often culminating in talks, poster sessions, or publication. Funding typically covers housing and travel, and stipends are generally

available for US citizens. To browse through a list of programs which the NSF will continue to update in the coming months, visit <https://www.nsf.gov/crssprgm/reu/>

Research in Industrial Projects for Students (RIPS): The RIPS program, running this year from June 19th to August 18th, offers an opportunity for students to grapple with real-world research projects in a collaborative team environment with guidance from both an academic mentor and an industry mentor. Specific project sponsors will be announced in March, but all projects synthesize math, statistics, data, and computing and culminate in written and oral presentations. Funding covers housing (in UCLA campus residence halls), meals, travel expenses, and a stipend of \$3,500. For more information, visit <http://www.ipam.ucla.edu/programs/student-research-programs/research-in-industrial-projects-for-students-rips-2017/?tab=overview>

Summer Research Experiences (SRE) at NIMBioS: SRE offers undergraduates the opportunity to collaborate on mathematical biology research projects in teams with University of Tennessee-Knoxville professors and NIMBioS researchers. This year the program will run from June 5th to July 28th, and funding includes housing, travel, and a stipend. For more information, visit <http://www.nimbios.org/sre/>

To submit an article or event for publication in the Mess, email brooke@stolaf.edu; to receive the Mess digitally each Friday, email freking@stolaf.edu; visit <http://wp.stolaf.edu/mscs/mscs-mess/> for a digital archive of previous MSCS Mess issues.

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