MSCS Mess

Department of Mathematics, Statistics and Computer Science
St. Olaf College
Northfield, MN 55057

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Upcoming Colloquia

Title:	Introduction to Likelihood
Speakers:	Professor Katie Ziegler-Graham
Time:	1:30 pm Tuesday, April 3rd (Treats at 1:15)
Place:	SC 182

Abstract: Statistics aims to answer questions using data. Depending on the question we are asking, we need different statistical tools. If we are interested in answering the question "what do the data say?" likelihood and the evidential paradigm provide the proper tools. Using distributions as building blocks, we define and explore the likelihood ratio, the law of likelihood, the likelihood function and the probability of observing misleading evidence. Graphical displays of likelihood functions allow us to explore parameter support based on observed data and distributional assumptions (a working model). We explore additional likelihoods from the evidential perspective: specifically, marginal likelihoods for several important parameters including the coefficient of variation, the one and two sample effect size, the overlapping coefficient, and the area under an ROC curve. The graphical display of parameter support and uncertainty provide clean alternatives to typically computationally intensive confidence interval calculations.

About the presenter: Professor Ziegler got her B.A. at the College of Wooster in Mathematics. She went on to get her Masters in Applied Mathematics and Statistics at The Johns Hopkins Whiting School of Engineering. She finished with a Ph.D. in Biostatistics at The Johns Hopkins Bloomberg School of Public Health. Prior to coming to St. Olaf, she taught Biostatistics in Helsinki, Finland. She currently teaches Statistics 212 and 272 at St. Olaf. She and her husband had their first child, a girl, in December. Lucy occupies the majority of her time now.

Title:	How math can help save the planet, or at least prevent extinctions
Speakers:	Professor Urmila Malvadkar
Time:	1:30 pm Tuesday, April 10th (Treats at 1:15)
Place:	SC 182

Abstract: Millions of species are at risk of extinction due to climate change, pollution, habitat destruction and overharvesting. Mathematical modeling can provide important insights into critical conservation issues and many other scientific problems where experiments would be too costly or otherwise impractical. In this talk, I will show

how to derive equations that describe population dynamics in a marine protected area (a part of the ocean that is off-limits to fishing) and nearby habitat patches. We will also see what these models tell us about the minimum size of reserve needed for the population to persist. Results like these can be used to design marine protected areas that benefit both fish populations and human populations.

About the presenter: Urmila Malvadkar loves mathematics, is passionate about the planet, and is happy she gets to think and talk about both every day. In her spare time, she edits the MSCS Mess and plays with her 3-year old.

Congratulations Elizabeth!

Elizabeth Jensen '07 has won a Fulbright Scholarship! Elizabeth is St. Olaf's first CS major to win such an award.

Elizabeth will spend the year 2007-08 working with Prof. Otto Anshus as a member of the High Performance Distributed Computing Group at the University of Tromsø, Norway. Her project is to design and build a distributed system of robots that can carry out their cooperative work on their own when communications with a central control system are interrupted. She will also analyze how her system compares to an existing system that relies entirely on centralized control. She will construct her autonomous robots using the Lego Mindstorms system, a technology she has taught to high school students in Vermont for years, and which the existing robot system at Tromsø employs.

Calling All Talents...

Mark your calendars! The focal point of the MSCS spring social season, the annual Math Recital, is scheduled for 7:00pm on Wednesday, April 18th in Ytterboe Lounge. All employees and students of the MSCS are invited, as well as anyone who knows an employee or student of the MSCS. Performers, start practicing. Questions? See (or email or phone) Steve McKelvey.

Jokes for Geeks

A math professor is talking to her little brother who just started his first year of graduate school in mathematics.
"What's your favorite thing about mathematics?" the brother wants to know. "Knot theory."
"Yeah, me neither."

Putnam Results and Congratulations

3640 students from 508 colleges and universities in the U.S. and Canada competed in the 67th annual William Lowell Putnam Mathematics Competition on December 2, 2006, an extremely difficult individual problem solving competition. The best possible score was 120; the highest score this year, out of all 3640 competitors, was 101. Congratulations to Paul Tveite, who scored 31.7, Joey Paulsen, who scored 20, and Thomas McConville, who scored 11. Paul was 196th among all competitors, and Joey was in the top 500! Congratulations also to our 3-member Putnam team consisting of Paul Tveite, Joey Paulsen, and Matthias Hunt, who gave St. Olaf a rank of 36 among all schools competing! This is quite an impressive accomplishment. If you're interested in competing in the Putnam next year, or

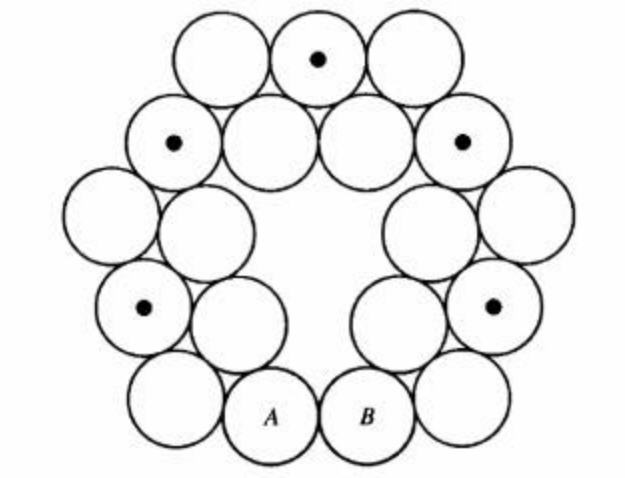
would like to hear more about it, contact Josh Laison.

Problem of the Week (POW)

A Short Interval. Let S be the union of k disjoint closed intervals in the unit interval [0,1] such that for all numbers d in [0,1], there are two points in S at distance d. Prove that the sum of the lengths of the intervals in S is at least 1/k.

Submit all solutions before the appearance of the next problem to Josh Laison in person, by e-mail (laison@stolaf.edu), or by skywriting. The first correct solution gets a prize; all correct solutions get fame and glory. Preference for the prize goes to problem-solvers who haven't won one yet.

Solution to Painted Pennies. Congratulations to Joey Paulsen, who submitted the first correct solution and won a set of "Mag Tiles" and to Thomas McConville and Reid Price, who also submitted correct solutions. The arrangement of pennies shown requires four colors. To see this, we try to color them with only three colors. Pick one of the pennies with dots in them, and color it red. Then every penny with a dot must be red, and pennies A and B must both be red, which is a contradiction. Note that the four-color theorem says, in part, that every arrangement of pennies can be colored with four colors, but the best-known proof of this theorem uses 633 cases. Find a short proof and gain fame and fortune!



If you would like to submit an article or math event to be published in the Math Mess, e-mail meyerm@stolaf.edu or dolank@stolaf.edu.

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