MSCS Mess

Department of Mathematics, Statistics and Computer Science — February 12, 2007
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This Week's Colloquium

Title: The Trouble with Trouble
Speaker: Professor Matt Richey
St. Olaf College
Time: 1:30 pm (Treats at 1:15)
Tuesday, February 13
Place: SC 182

Abstract: (Popomatic) Trouble is a delightfully simple family board game that uses a single die and markers that move around a (finite length) board. By mildly altering the rules, many interesting questions arise that challenge one's intuition about probability. In this talk, we'll look at several rule changes and their effect on game strategy. For each, the audience will be asked to put their probabilistic intuition on the line. Proofs, along with an actual Popomatic Trouble board, will be provided.

Matt Richey is celebrating his 20th year as a member of the department of mathematics, statistics, and computer science. His journey to St. Olaf began in the great state of Kentucky. Along the way he was an undergraduate at Kenyon College and a graduate student at Dartmouth College. His interests include all things computational. He especially enjoys analyzing the mathematics of games, e.g. baseball, Monopoly, and (of course) Trouble.

Special Seminar

Title: Iraq Mortality Since the US Invasion: When Counting is not as Easy as 1, 2, 3
Speaker: Professor Scott Zeger
Johns Hopkins University
Time: 4 pm
Monday, February 12
Place: SC 280

Abstract: The precision of the military fatality count in the current war is notable. In contrast, we know little about the number of Iraqi civilians who have died because of the invasion. Estimates vary from tens to hundreds of thousands.

This talk will discuss scientific issues related to estimating and communicating about the number of Iraqi civilians who have died due to the U.S. invasion. It will consider the definition of “cause”, the influence of prior beliefs on estimation, the value of expert opinion, and contending with significant uncertainty. Data from two mortality surveys published in the Lancet (2004, 2006) will be relied upon.

Scott L. Zeger is the Frank Hurley – Catharine Dorrier Professor and Chair in the Department of

Biostatistics at Bloomberg School of Public Health in The Johns Hopkins University.

Konhauser Problemfest

Announcing the 15th Annual Konhauser Problemfest team problem-solving competition! This competition, for students in teams of 3, will be held at St. Olaf College on the morning of Saturday, February 24. Teams of students from at least 3 other schools in the region will travel to St. Olaf, enjoy some early-morning pastries, participate in the competition, and then stick around for lunch while professors from St. Olaf and visiting schools grade the exams. The results are announced after lunch. The top three teams win a monetary prize, and the winning school gets the trophy! If you're interested in participating, contact Josh Laison (OMH 100, laison@stolaf.edu) for details.

Prepare your talents...

The MSCS Math Recital is quickly approaching. Warm up your vocal cords, practice your skits, and unleash those wacky human tricks. The recital is scheduled to be held at 7:00pm on Wednesday, April 18th in Ytterboe Lounge. Potential performers should contact Professor Steve McKelvey (mckelvey@stolaf.edu) to reserve a spot on the play list.

Will you be my valentine?

Are you the square root of two? Because I feel irrational when I am around you.

Honey, you're sweeter than 3.14.

I'm not being obtuse but you're acute girl.

I don't know if you're in my range, but I'd sure like to take you home to my domain.

If I were a function you would be my asymptote - I always tend towards you.

How can I know so many hundreds of digits of pi and not the digits of your phone number?

I don't like my current girlfriend. Mind if I do a you-substitution?

Problem of the Week (POW)

Quantity Time. Every day, a father drives to pick up his son after school. The route is easy, and the dad has it timed so well that he always arrives at the exact instant that school lets out. The boy wastes no time in hopping in the car, and they turn around and drive home. One day, school lets out an hour early. The boy wishes to save his father some time, so he starts walking home from school along the same route the father will take. On his way to the school, the father sees the son on the side of the road. The boy gets in the car, and they turn around and drive home. To their delight, they arrive home 20 minutes early. How long was the boy walking?

Submit all solutions before the appearance of the next problem to Josh Laison in person, by e-mail (laison@stolaf.edu), or by smoke signals.

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.

All Isosceles. Find 8 points in space so that for each of the 56 triples of points they determine, at least two of the three distances between them are equal.

Solution to All Isosceles. Here are eight points that work: The first five points are the vertices of a regular pentagon inscribed in the unit circle in the x-y plane. The remaining three points are (0,0,1), (0,0,0), and (0,0,-1). It's an open problem (as of 1996) to determine whether there are any other distinct sets of 8 points that work.

What's My Line? Given a set of points S in 3-space, define L(S) to be the set of all points on all lines determined by any two points in S. Suppose S={(1,0,0), (0,1,0), (0,0,1), (1,1,1)}. Then L(S) consists of six lines. Find L(L(S)).

Solution to What's My Line? L(L(S)) is every point in space except for the remaining four corners of the unit cube, (0,0,0), (1,1,0), (0,1,1), and (1,0,1). Reid Price submitted the following elegant solution. Let A and B be any two non-intersecting lines in L(S). L(A,B) consists of all of 3-space, minus the two parallel planes containing A and B (for the moment ignoring the points in A and B themselves). We can see this by considering each point to have a 'perspective'. If the point can 'see' A and B crossing (from a flattened perspective), then it will lie on a line constructed through those two points that appear to intersect. Two lines will intersect in this flattened two-dimensional plane if and only if they are not parallel, and the lines can only appear parallel if the point lies on the previously described planes. Since there are three pairs of non-intersecting lines in L(S), L(L(S)) consists of all of space minus the intersection of all three of these pairs of planes. Since none of the pairs of planes are parallel to other pairs, the intersection of two pairs will be four lines, and the intersection of those four lines with the remaining two parallel planes will be eight points. These points are the eight corners of the cube, and four of them are S, leaving (0,0,0), (1,1,0), (0,1,1), and (1,0,1).

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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