MSCS Mess

This Week's Colloquium

Title:	What It Was Like: 2007 Summer Research in Computer Science
Speakers:	Spencer Debenport '10 Daniel Edwins '08 Todd Frederick '09 Thomas McConville '09
Time:	1:30 pm Tuesday, October 30th

Abstract: How would you like to spend the summer with friends, doing work in a field you really like, interacting and collaborating with students and faculty in other fields, and ending up with some results to be proud of? That's what seven students did last summer as undergraduate researchers in computer science (CS). They made progress in stereo visualization, made the Beowulf cluster usable by others, teamed up with folks in other fields toward interdisciplinary research advances in Biology, Environmental Science, Physics, and Neuroscience – and had a great time doing it! Four of these CS student researchers will talk about what they did during Summer 2007 in this talk.

Spencer Debenport, now a sophomore majoring in biology and computer science, is fascinated with just about anything biological or computational.

Daniel Edwins is a senior math major who likes to creatively combine his passion for math, computer science and art.

Junior mathematics and computer science major **Todd Frederick** is always looking for innovative ways to use computing.

Thomas McConville is a junior mathematics and computer science major who is interested in problem solving and abstract board games.

Statistics and War

During World War II the British wanted to determine if German bombs being dropped on London were falling at random or possessed an accurate guidance system.

If the bombs were falling randomly, then spreading security installations throughout the area would decrease the likelihood of their being hit. If the Germans could target their bombs, then protecting security installations would be much more difficult. To analyze the situation, R. D. Clarke, a British actuary, divided a 144 square kilometer area of London into 576 sections, each ¼ square kilometer. Over the period in which the analysis took place 537 bombs were dropped on the area, and the number of bombs that hit each of the 576 sections was recorded. Using the Poisson

distribution, Clarke computed the number of sections in which you would expect to have 0, 1, 2, 3, 4, and 5 or more bombs if the bombing was random. Since the actual counts corresponded closely to the predicted counts, Clarke concluded that the bombing was random.

Reference: "An Application of the Poisson Distribution," by R. D. Clarke at http://www.actuaries.org.uk/files/pdf/library/JIA-072/0481.pdf

Upcoming Course: Math 266 Operations Research

Operations Research (Math 266) is an introductory course in the mathematics of modeling all types of systems with the goal of making optimal decisions. OR is used by companies to manage factories, inventories, schedule transportation and workers. Airlines are a huge consumer of OR techniques, using OR tools to schedule airplanes for flights and maintenance, assigning crews to flights and assigning planes to specific routes. OR is also used to manage wildlife refuges and national parks and just about any other system where decisions can affect the desirability of the system's operation.

Saint Olaf is one of relatively few undergraduate institutions to offer OR. Our course focuses on the techniques of linear programming, network flows, game theory, decision trees and dynamic programming, all exceptionally powerful optimization techniques. The prerequisite for the course is linear algebra. Experience with probability is helpful, but by no means required.

To learn more about OR at Saint Olaf, or OR in general, please contact Steve McKelvey (mckelvey@stolaf.edu).

The Real Analysis Exchange Needs You!!

Are you a first year student, interested in mathematics, not computer phobic and would like a solid, good paying job for your next three years at St. Olaf? Then does Humke have the deal for you!!! The Real Analysis Exchange is a journal that he edits, and he needs help. This job will pay for your training and then 3-4 hours of editing type work per week. If you think you might be interested, drop Humke an email note at analysis@stolaf.edu. Hey, what can you lose? This could be great!

Problem of the Week (POW)

An arrow is placed on each square of a tic-tac-toe board, pointing vertically or horizontally to one of its neighbors with equal probability. That is, the arrow in the upper-left square has a 50% probability of pointing right and a 50% probability of pointing down. The arrow in the middle square of the top row has a 1/3 probability of pointing left, right or down. The arrow in the central square has a 25% probability of pointing left, right, up or down. A marker is placed on the central square and moves according to the arrows.

What is the probability that the marker will return to the central square?

Further Problems: What is the probability if the board is 5x5? $(2n+1)$x$(2n+1)$? infinite?

Solutions to the Problem of the Week should be submitted to Mike Weimerskirch's mailbox in OMH 201.

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