

Special points of interest:

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Logical Times

"Monthly News You Can Count On"



Calling all Math Folks:

Many of you have expressed interest in starting an organized math club. We will hold an informal meeting on December 1, at 6 PM in Olin 215. Rumor has it that homemade Christmas cookies may be involved.



Wednesday FASt Talks:

The Wednesday FASt Talks are rolling along with an average attendance over 40.

On October 15, **Dr. Neal** explained how mathematics, specifically statisticians, are ruining baseball. This interesting talk explained how front offices of the major leagues are employing the services of statisticians to put together winning teams with very little money. Moreover, the sacrifice fly, the steal, and the bunt, things that fans enjoy, are statistically useless. He also eluded to a Little League injury which explains a lot.

On November 5, **Dr. Bressoud** shared a new concept in mobile computing. Even though technology is advancing by leaps and bounds, we still expect more. Dr. Bressoud explained that if his ideas are realized, we will be able to walk into a room and access our e-mail just as easily as flipping on a light. We also found that for a guy who works so

much, Dr. Bressoud has a lot of toys!

On November 19, **Dr. Hutson** will present "*WANTED: A Traveling Salesman with a Stable Marriage Who Knows How to Evacuate a Building.*"

After receiving a Master's degree in Operations Research, I worked for two years as an O.R. Analyst helping a company design and build a 1.2 million sq. ft. manufacturing/warehouse facility. This experience really helped me renew my interests in mathematics and its applications. It ultimately motivated me to return to finish a doctoral degree.

This talk focuses on the applied nature of my field, Combinatorial Optimization. I will use my experiences in industry as a stepping stone to a discussion of how mathematics can model and solve real-world problems. I will highlight the types of industrial/applied problems I encountered on the job and how I



MCURCSM

10/25/03



Tony Fressola, Elizabeth Ehret,
Stoyan Paunov and Todd Johnson



Jaymie Strecker, Brenton Bostick,
Kristin Briney, Atanas Vlahov,
Russell Meyers, Kishore
Subramanyam

Wednesday FAST Talks con't:

used these problems to find interesting research areas upon returning to school. Most of these problems are very easy to state and are accessible to undergraduates of all levels.

On December 3, computer science major **Adam Wu** will present “*Computerized Distorted Text Recognition—A Trial Against CAPTCHA.*”

The worst part of internet is that you never know if the user on the other end of the wire is a computer.

Nowadays, information security on computers is becoming a more and more important issue. Since computers are superior at speed, precision and memory, computer programs can easily take advantage of these properties to take harmful action towards services or users. For this reason it is often desirable for computers to be able to differentiate human users and other computer programs. One of the mechanisms that help to realize this is CAPTCHA.

CAPTCHA stands for Completely Automatic Public Turing test to tell Computers and Humans Apart. It takes advantage of human vision and/or hearing ability which computers do not have, to tell computer programs apart from human.

One category of the CAPTCHA tests, named Gimpy, focuses on the “disability” of computer programs on recognizing distorted text. My summer research with Dr. Feil aimed to solve Gimpy-r, a specific type of the Gimpy tests.

In this talk I will make a brief introduction to CAPTCHA tests, explain the difficulties we have encountered in solving our problem, and our approach to it and the outcome of the research. The level of this talk is accessible for any person who has experience with internet chatting and/or free email services like Hotmail or Yahoo.

Conferences and Meetings:

Mid-States Conference on Undergrad Research in Computer Science and Mathematics

On October 25, program chair’s **Dr. Bressoud** and **Dr. Krone** hosted the first Mid-States Conference on Undergraduate Research in Computer Science and Mathematics at Denison University. GLCA provided funding for the event which had about 50 people attend from a variety of colleges and universities. What made the conference unique is that the papers submitted by undergraduate students were rigorously reviewed by faculty at a variety of colleges in surrounding states. Only topics from papers with excellent ratings were chosen to be presented. Bruce Weide, a professor of Computer Science at the Ohio State University, was the keynote speaker. Plans are already underway for future conferences, and we have host volunteers for the next three years.

International Conference on Technology in Collegiate Mathematics

Dr. Ludwig, presented his paper “*Hands-on Learning in Calculus via Maple-based Projects*” at the Sixteenth Annual International Conference on Technology in Collegiate Mathematics in Chicago, IL. This 45 minute invited presentation was joint work with Keith Howard of Kenyon College and was

funded, in part, by the Mellon Foundation Collaboration with Technology Grant. Howard and Ludwig were invited to submit their collected works to the *Mathematical Sciences Digital Library*, a national database that provides online resources for both teachers and students of collegiate mathematics.

Faculty/Student Activities

The Big Show!

Congratulations to math majors Elizabeth Ehret '04, and Tony Fressola '04, for getting their papers accepted to the AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates at the Joint Mathematics Meet-

ing held in Phoenix, AZ in January. Each will present a twenty minute talk about their summer research findings. This is a very competitive national venue, so be sure to congratulate Tony and Elizabeth on this achievement.

On-line Math Contest for High School Students

We are pleased to announce the first successful month of the "On-line Math Contest" with 62 students from 18 schools competing. This contest, initiated by **Dr. Hristova**, is aimed at increasing high school students' interest in math and spe-

cifically math at Denison. Many thanks to **Tony Silveira** for maintaining the web page. For more information, see <http://www.denison.edu/mathsci/mathcontest/index.html>

Fruits of Our Labor

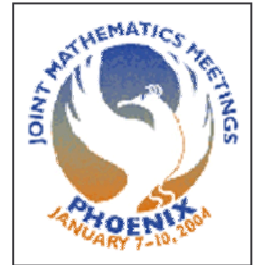
On December 7, at 1:00 p.m. come see 8 fellow Denisonians present their discoveries on various topics of mathematics. For the past semester, students in **Dr. Ludwig's Introduction to Proofs** course have been researching a mathematical topic new to them. They have

also been honing their presentation skills, so these talks will not only enlighten, but entertain. Many of the students plan to present their work this April at the MAA Ohio Section meeting in Cincinnati, OH.

Programming Competition

On 7-8 November, the Programming Team (Adam Wu, Evan Lewis, Dan Bucatanschi, Stoyan Paunov, Adam Hitchcock and Eric Eilberg) accompanied Todd Feil (chief judge) to Carnegie Mellon University for the 2003 ACM East Central Regional Programming Contest. Prior to the contest, the team visited the Andy Warhol Museum (pop art) and the

Carnegie Museum (dinosaurs) and had a delightful dinner at a great hole-in-the-wall Thai restaurant on Atwood Street, where Adam Wu demonstrated his prowess with the chop sticks. There were 128 teams of 3 students from Ohio, Michigan, Western Pennsylvania and Ontario competing.



Denison's team 1 (Wu, Lewis, Bucatanschi) placed 17th and team 2 (Paunov, Hitchcock, Eilberg) placed 67th.

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DENISON

Got noteworthy
news ideas?

Contact Dr. Ludwig

One Student's Perspective

By Nate Schmidt, '06

This past Saturday, October 25, not everyone was sleeping in late on the campus of Denison. Denison's math and computer science department hosted the Mid-states Conference for Undergraduate Research in Computer Science and Mathematics. There was a good turnout. There were people from Bard College, DePauw University, the College of Wooster, Wittenberg University, Northern Kentucky University, and Ohio State University. After having a quick breakfast, the show got on the road with a few welcoming remarks from Dr. Thomas Bressoud and Dr. Joan Krone. Next, an introductory talk was given by Dr. Bruce Weide from Ohio State University. Dr. Weide discussed the importance of undergraduate research in mathematics and computer science. Wanting to go into undergraduate research in computer science myself, I found his discussion to be very informative. Dr. Weide listed a number of people from OSU who had completed undergraduate research and won various awards from undergraduate research competitions. Dr. Weide also stressed the importance of students doing undergraduate research if they plan to attend graduate school.

After Dr. Weide's talk, the first computer science session began with Scott Thede and Atanas Vlahov presenting *PARE: An Automatic Text Summarizer*, followed by Jaymie Strecker presenting *The Simulated Annealing Group Assignment (SAGA) Application*, and lastly Stoyan Paunov presenting *An HTTP-Based Protocol for Access of Content Addressable Storage (CAS)*.

After the first session everyone took a walk over to Slayter Hall for lunch. The food was actually very good and much better than Curtis West, where I normally eat. After lunch, we all headed back over to Olin and started the mathematics session. First up was Anthony Fressola who presented *Integer*

Construction by Induction. Then, Brenton Bostick presented *On Two Mechanisms Related to the '3n+1' Problem*. Lastly, Elizabeth Ehret presented the research she did on *Cylindrical Geometry*.

The last group of presentations were from computer science. Kishore Subramanyam started things off with an interesting discussion about *Keyloggers: The Overlooked Threat to Computer Security*. Next, Russell Meyers showed us how to *Implement Your Own Cryptographic Provider Using the Java Cryptography Extension*. Last, but not least, was Kristin Briney who discussed *Implementing Units on a Virtual Reality Simulation of the ENIAC*.

Being a computer science major I tended to enjoy the research done on computer science more than mathematics, but all the presentations were insightful and thought provoking. Attending these presentations was not only interesting, but a good first step into the research field for myself. It was a good experience and I would strongly recommend anyone wanting to do undergraduate research in mathematics or computer science to go to MCURCSM 2004.

