

Special points of interest:

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Logical Times

"Monthly News You Can Count On"

After many interesting suggestions and much wailing and gnashing of teeth, the newsletter has been named. Many thanks to our anonymous donor (i.e. he or she declined the prize) for a name that conveys math, computer science, and the fact that this publication contains news.



Wednesday FASt Talks:

The first two FASt Talks each had over 40 attendees and were well received.

Dr. Kretchmar's dealt with image recognition and the difficulty of programming a computer to "find Waldo." We saw that even though we have a hard time distinguishing between two chocolate Labradors, humans are still years ahead of the best computer algorithms in the arena of image recognition.

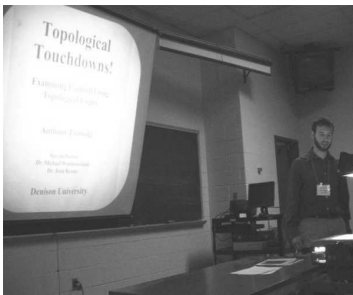
Senior **Elizabeth Ehret** presented her summer research findings on a new type of geometry. With her findings, Elizabeth illustrated two points: the field of mathematics has not been conquered – new ideas are still attainable **and** students **can** be researchers and get results! Well done Elizabeth.

On October 15, **Dr. Neal** presented "*Ruining Baseball with Mathematics.*"

Who are the best players in baseball? Which stats are good stats and which stats stink? What managerial strategies do the numbers really say are the best? Which teams have a clue? He answered these questions and explored the hidden mathematical world of baseball. He showed how good statistical analysis is the difference between winning and going bankrupt, long cherished truths are lies, and things are not what they seem to be.

On November 5, **Dr. Bressoud** will present "*Mobil Computing Without Mobile Hardware.*" Today, the term "mobile computing" evokes an image of a user with a laptop, handheld, or wearable computer. But a different interpretation is possible. The goal of enabling a user to compute anywhere and at any time could also be met by deploying infrastructure so ubiquitously that users are no longer required to carry hardware

MCURCSM
10/25/03



Attendees

Dr. Kevin Hutson, Dr. Lew Ludwig, Dr. Matt Neal, Robert Choudury, Laura Berger, Erin Davidson, Elizabeth Ehret, Tony Fressola, Bill Froehlich, Patricia Garmirian, Colleen, Hughes, Aaron Jackson, Ivan Orsic, Jason Salazer-Adams, Kaythi Soe, Chris Wehrenberg, and Nick Woods

Wednesday FASt Talks con't:

and resume their computing session at any other. ISR leverages advances in virtual machine (VM) technology and distributed file systems to encapsulate and transport execution state. This allows rapid personalization and de-

personalization of execution state on anonymous hardware and at the same time provides a much richer computing experience than any other mobile computing alternatives.

Conferences and Meetings:

Saturday, October 25, 2003

The First Mid-states Conference for Undergraduate Research in Computer Science and Mathematics at Denison University will be held. Computer Science and Mathematics students from three different states will present their original work. **Dr. Bressoud** is looking for interested students to help with organizing the final stages of the event. He is even willing to give you a title worthy of any student resume! If you plan to attend, please register <http://www.denison.edu/mathsci/mcurscm2003/index.html>.

Friday, November 7, 2003

Case Western University will hold its Annual open house of the Weather-

head School of Management, Department of Operations. **Dr. Kevin Hutson** will take interested students to this event to introduce them to the Case Western Master of Science in Management in Operations Research (MSM-OR), Master of Science in Management in Supply Chain (MSM-SC) as well as the PhD program.

TBA November

Unfortunately, the talk by author John Derbyshire on his new book, *Prime Obsession: Bernhard Riemann & the Greatest Unsolved Problem* has been postponed. Plans are in the works to reschedule it for sometime in November.

Faculty/Student Activities

31st Fall Mathematics Conference at Miami University

Seniors **Elizabeth Ehret** and **Tony Fressola** presented their summer research at the 31st Fall Mathematics conference at Miami University. Elizabeth's talk, "Cylindrical (or Periodic) Geometry," was the culmination of her summer work with **Dr. Westmoreland**. Tony's talk, "Topological Touchdowns: Examining Football Using Topological Lo-

gics" highlighted his joint work with **Stoyan Panov, Dr. Krone, and Dr. Westmoreland**.

Elizabeth and Tony were accompanied by **Dr. Hutson, Dr. Ludwig, Dr. Neal**, and 13 other Denison students. For more about the conference, please see **Bill Froehlich's** article in this newsletter.

Attack of the Swarm!

WASP'03

The 2003 Workshop on Agent and Swarm Programming was held at the new Dolan Science Center at John Carroll University on October 3 and 4. The workshop featured nine research papers and an active participation human swarm demonstration/experiment.

The highlight of the papers was a research group from Case Western that built insect inspired robots. They had a 3 foot long "cockroachbot" that used its 36 degrees of freedom per leg and sophisticated control algorithm to do many complicated tasks such as walking across a ladder without falling through. They also had a smaller "whegbot" that scurried around the

auditorium at high speed negotiating steps and other obstacles.

The human swarm demonstration involved 100 people who delivered empty pizza boxes to six different locations in a maze. Each person was bar-coded so that the numerous scanners in the maze could keep track of each person's position. People "learned" where the bottlenecks occurred and then adjusted their routes accordingly. At least that was the perception from those watching the chaos from high above.

See **Dr. Kretchmar** for more information about the conference or to hear about his research in multi-agent and swarm programming.



Banach Algebras Conference

Dr. Matt Neal "State spaces of JB*-triples" at the Great Plains Operator Theory Symposium at the University of Illinois in June and at the

Banach Algebras Conference at the University of Alberta in August. The paper was accepted for publication in *Mathematische Annalen* in June.

European Software Engineering Conference

Dr. Joan Krone presented a new way to estimate time duration for object oriented programs at the SAVCBS track of the European Software Engineering Conference held in Helsinki, Finland, during the first week in September. The new ap-

proach differs from the traditional big O, which bases estimates on functions over natural numbers, by considering functions over arbitrary domains, thereby taking into account not only the size of inputs, but the kinds of objects those inputs are.

Mt. Vernon Nazarene University Annual Programming Contest

Denison's teams placed 1st and 2nd out of 11 at the Mt Vernon Nazarene University Annual Programming Contest held Saturday, 11 October. The first team (**Evan Lewis, Adam Hitchcock, Rahul Parikh and Zhenyu Wu**) was the

only team to solve 4 problems (out of 5) and the second team (**Dan Bucantanschi, Stoyan Paunov, Eric Eilberg and Nate Schmidt**) solved 3. Congrats to all. *GOOD JOB!*



Department of Mathematics and Computer Science

Denison University
201 Olin Science Building
Granville, OH 43023

Phone: 740-587-6259
Fax: 740-587-5749

[http://www.denison.edu/mathsci/
index.html](http://www.denison.edu/mathsci/index.html)



Got noteworthy
news ideas?

Contact Dr. Ludwig

Carnegie Mellon University/Intel Research

Dr. Tom Bressoud was appointed as a Visiting Faculty at the Carnegie Mellon University / Intel Research collaboration in Pittsburgh, PA. This collaboration is a significant departure from the normal proprietary research that an industry player like Intel normally conducts. This unique collaborative model between academia and industry was highlighted in the January 2003 issue of IEEE Computer. **Dr. Bressoud** also presented two talks at DePauw University on July 25, 2003. The

talks were presented to the faculty of DePauw and to the group of undergraduate students working on research projects with their faculty mentors at DePauw's *Research Experience for Undergraduates* (REU) program. Appropriate to the setting, Bressoud gave a research talk entitled "*Internet Suspend/Resume for Mobile Computing*" and a talk about career possibilities entitled "*Research Careers in Computer Science ... A Spectrum of Possibilities.*"

Tenth Annual Consortium for Computing Sciences in Colleges

The *Tenth Annual Consortium for Computing Sciences in Colleges: Midwest Conference* was held at Denison University October 3 and 4, 2003. Presentations at the conference emphasized CS curriculum issues and the incorporation of current research results into coursework. There was a student programming contest on Saturday, and Denison students kindly hosted visiting students who were also in the contest. **Dr. Krone** presented a talk entitled "Multiple Implementations for Component Based Software Using Java Interfaces." Approximately 100 people attended the conference from various parts of the Midwest region and many of them remarked on

Denison's beautiful campus and the friendly atmosphere. Special thanks go to **Helen Viles** and **Tony Silveira** who handled logistics for the conference and to the CS faculty who participated, making the conference run smoothly. The website for the conference:

<http://www.denison.edu/mathsci/events/ccsc03/index.html>

Denison's team of **Zhenyu Wu**, **Dan Bucatanschi** and **Evan Lewis** won the CSCMW programming contest held Saturday, October 4. They correctly solved 5 of 6 problems. The second place team solved three.

Brain Teaser

Consider the card game Set (see **Dr. Kretchmar** who has a deck of cards and the rules). Imagine that you have removed cards from the deck one set at a time until there are just three cards remaining. Will these last three cards always form another set?

Can you prove your answer?

Kudos to **Annie Tita**, a freshman in FYS102: Mathematical Game Theory, who discovered a proof for this problem that will be published in the next issue.

One Student's Perspective

By Bill Froehlich, '06

October 10-11, Drs. Hutson, Ludwig, and Neal and 15 Denison students ventured to Miami University in Oxford for the thirty-first annual Mathematics and Statistics Conference. This year, the conference focused on discrete mathematics and its applications. After a cozy 3-hour van ride, a few rounds of "I spy," and a trip to a Chinese restaurant, we were given an in-depth look at perfect graphs, complements of Dr. Robin Thomas, a professor at Georgia Technological Institute. This was the first in a series of four one-hour presentations scattered throughout the weekend. Next, students and professors had the choice of attending multiple different sessions on topics ranging from topology to automorphisms. During these brief talks, students and faculty were given the opportunity to share their research and their interests with the audience. One clever talk, presented by a professor at Bluffton College entitled, "Mathematics to Solve a Word Puzzle," explained how to build matrices to solve a National Public Radio word puzzle.

During the second invited address, Dr. Charlie Colbourn, whose research lies in the application of combinatorial mathematics, discussed mobile networks. He left his audience with a realistic perspective on the possibility of spraying aerosol cans into humans to take measurements of the human body. The application was similar to what scientists do in the climax of the movie, "Twister," where nodes are used to

take measurements that could interpret the inner workings of a tornado. Following Dr. Colbourn's talk was another series of student talks, which included presentations by Denison's own Tony Fressola, who used football to discuss his work on Boolean and topological logics, and Elizabeth Ehret, who presented her summer research on cylindrical geometry.

The night closed out with a social gathering where students and faculty from different schools could talk and exchange ideas. It also gave attendees an opportunity to speak with the day's presenters. The next morning, we were enlightened by another collection of student talks. The final presentation of our trip was on the four-color theorem. We learned the mathematics behind why you only need 4 colors to fill any map where the same color never touches itself. The Miami conference was a great opportunity to be introduced to or learn more about a variety of different branches of mathematics. It was also exciting to see other undergraduate students presenting research and it has inspired many of the student attendees to work on their own talks for future conferences. I was enlightened and had fun at the same time. Not to mention some free food and hours of endless fun in those comfortable and spacious Denison vans!