

# MSCS



# Mess

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

3 March 2011  
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## Weekly Colloquium

Title: **Practicum Presentations**  
Speakers: Students from the Practicum Interim  
Date & Time: Tuesday, March 8, 1:30pm  
Location: RNS 390

Two groups of students participated in the Practicum Interim this January.

### **The St. Olaf Toro Group Project:**

Water is one of the most precious resources on the planet and its availability is projected to be one of the largest resource issues of the century.

Golf courses can use up to one million gallons of water a night and are therefore scrutinized due to their recreational purpose. The Toro Company has created technology that measures and maps site attributes that directly affect water availability and plant growth on golf courses. Spatial data for these attributes can be analyzed to improve irrigation efficiency in order to conserve water and energy. This innovation could lead to more energy efficient golf courses with lower operating costs.

Our goal was to create a metric that quantifies irrigation performance based on the relationship between soil moisture and sprinkler head location.

In doing so, we also wanted to create a method for identifying individual sprinklers that were under-performing. We were able to come up with

three separate metrics to measure irrigation performance on an individual fairway. Also, we created two different metrics that quantify individual sprinkler performance based on the water content of the soil within a given radius. Lastly, we used linear regression that allowed us to control for natural variation such as elevation and soil content in order to isolate sprinkler variability and in doing so measured independent sprinkler performance in a much more detailed manner.

### **The Best Buy Team Project:**

The Best Buy Team researched possible new methods for forecasting revenue at Best Buy stores. Time series data, static data, and ARIMA modeling were used to refine the quality of Best Buy's projections and develop a streamlined method of forecasting at both an aggregate and individual store level.

### **Students in the St. Olaf Toro Group:**

**Mckenzie West** is a mathematics major. Her interests include photography and spending time with her friends. After receiving her bachelor's degree, Mckenzie will attend graduate school to work towards a Ph.D. in Pure Mathematics. From there, she hopes to teach mathematics at an undergraduate institution.

**Andy Lithio** is majoring in mathematics and economics. He enjoys learning new sports, such as rugby and Gaelic football, and spending entirely too much time working on his computer. Next year, he plans on entering a Ph.D. program in Statistics.

**Steffen Docken** studies math and physics. He is a captain of the St. Olaf Swim Team and also enjoys other physical activities like Ultimate Frisbee and rock climbing. Next year, Steffen plans to volunteer with an abroad service program like the Peace Corps. Afterwards, he hopes to either go to graduate school in mathematics or work as a mathematician in the private sector.

**Jonathan Christensen** studies math and physics. He is a captain of the Ultimate Frisbee team at St. Olaf, and he enjoys traveling and learning languages. Next year, Jonathan hopes to teach English in Taiwan or elsewhere in East Asia. After his teaching is complete, he plans to attend graduate school in physics or engineering.

**Sean Callister** is a mathematics major and statistics concentrator. Upon graduation, he plans to stick around the Midwest and obtain his master's degree in statistics and become a practicing statistician, but is currently undecided on a particular field.

### **Students in the Best Buy Team:**

**Lauren Arnesen, '11**, is a Math major and pre-med student from Stillwater, MN. She is currently investigating year-long opportunities in both the business and medical sectors, and plans to attend medical school the following year. At St. Olaf Lauren plays on the Women's Ultimate Frisbee team and is president of the Global Awareness Honor House. In her free time she enjoys riding horses, swimming, and the opportunity to spend large amounts of time with her friends. Lauren also has the travel bug, and spent one interim in Budapest for math and the beginning of her Junior year on Global.

**Micah Buuck, '12**, is a Physics, Mathematics, and Statistics Major. After graduation he will attend graduate school for physics. At St. Olaf, Micah plays trombone in the St. Olaf Band and in jazz band, and works as a physics tutor and in the scenery shop in the theatre department.

**Drew Penz, '11**, is a Mathematics and Physics major from Rochester, MN. Drew is currently investigating job opportunities where he can apply his mathematics and physics problem-solving mind in the business world. At St. Olaf, Drew was a member of the St. Olaf football team, and was a team captain this past fall. Drew enjoys watching and playing sports, being with his family and friends and indulging in the occasional video game. Drew also loves to travel, as he has studied in Budapest and Italy on two separate interim trips during his time at Olaf.

**Bjorn Wastvedt, '12**, is a Mathematics and Philosophy major. After graduation, he plans to continue his mathematics study and research at the graduate level, anticipating a job in academia. At St. Olaf, Bjorn sings in the Chapel Choir, participates in the juggling club, and works as a math tutor and tour guide. When not thinking about math or philosophy, Bjorn spends extended periods of time outdoors, reading nonfiction, and having wonderful conversations with fellow Oles.

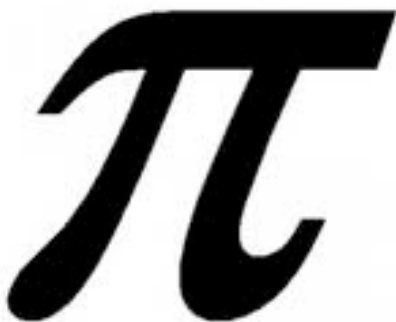
**Sarah Widder, '11**, is a Math major with a concentration in Management Studies from Wauwatosa, WI. After graduation she will start an entry-level position with Liberty Mutual at their regional company Indiana Insurance, headquartered in Pewaukee, WI. At St. Olaf, Sarah sings with Bjorn in the Chapel Choir and works as a kitchen manager in the Lion's Pause. In her free time, she enjoys piano, running, spending time with family and friends, and watching the Green Bay Packers.

### Part-time Summer Job with MSCS

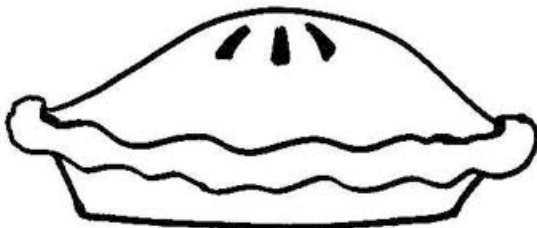
Are you a Northfield or Twin Cities resident who might be interested in working for the MSCS Department Chair for a few hours a week this summer doing odd jobs (e.g. working on the web page, doing some research on issues of importance to the department, organizing electronic files, converting Maple worksheets to Mathematica, etc.)? If so, email Prof. Jill Dietz ([dietz@stolaf.edu](mailto:dietz@stolaf.edu)) and let her know.

### Pi Day!

This year Pi Day is on Monday, March 14. We will be celebrating Pi Day in RNS 210 at 4:00pm. We will eat pie, watch *Donald Duck in Math Magicland*, and enjoy each other's math-y company. Professor Mckelvey will be bringing cheesecake and Professor Berliner is making a pie. First come, first served! Everyone is welcome!



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### Problem of the Week

Below is this week's Problem of the Week. Remember to send solutions to Professor Zorn ([zorn@stolaf.edu](mailto:zorn@stolaf.edu)). Correct solutions may be published in an upcoming edition of the MSCS Mess.

Four horses --- Al, Bob, Charlie, and Dan --- compete in the Alphabet Derby. How many different finishing orders are possible if no ties are allowed? What if ties are allowed?

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*If you would like to submit an article or math event to be published in the MSCS Mess, e-mail [holmc@stolaf.edu](mailto:holmc@stolaf.edu)*