

Missouri University of Science and Technology

Department of Computer Science

Spring 2009 Newsletter

<http://cs.mst.edu> email: csdept@mst.edu

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National Center for Academic Excellence in Information Assurance Research

Missouri S&T is among the first to be designated as a National Center of Academic Excellence in Information Assurance Research (CAE-R) for academic years 2008-2013. This certification is jointly sponsored by the National Security Agency (NSA) and the Department of Homeland Security (DHS). The goal of the CAE-R program is to proactively increase our understanding of robust Information Assurance (IA) technology, policy, and practices that will enable our nation to effectively prevent and respond to a catastrophic cyber event. This program will contribute significantly to the advancement of state-of-the-art IA knowledge and practice. Missouri S&T is recognized as a school with programs that integrate research activities into the curriculum and into the classroom setting. As an IA research center, Missouri S&T will have the opportunity to drill deeper into much needed solutions for securing critical information systems and networks. This certification will build closer ties with NSA, DHS, and other federal agencies with insight into academic IA programs (with their reach into industry) that can support advanced academic, research, and development capabilities. The certification also allows Missouri S&T to participate in government-academia researcher exchanges.

This certification adds to Missouri S&T's certification as a National Center of Academic Excellence in Information Assurance Education.

A ceremony recognizing the certification was held at an awards dinner on Wednesday, June 4, 2008, during the annual conference of the Colloquium for Information Systems Security Education.



PHONATHON
DATES:
Feb.
2,3,4,5,8,
9,10,11,12, 2009



CHAIR'S MESSAGE

Greetings from the Computer Science Department at Missouri S&T and welcome to the spring 2009 edition of the CS Newsletter. This is my first formal and direct communication with you and I am looking forward to continuing this communication in years to come. The past year has been an exciting period and a milestone for the CS department and me as its chair. Throughout this message I will share the highlights with you.

During the past year, on many occasions I was confronted with two questions: (1) why did I make a career shift and (2) why did I choose Missouri S&T? Let me share my answers with you. First of all. Why did I make a career shift? After 28 years of service as a professor, a career shift was long overdue. However, because of personal reasons I was not in a position to act on it. About two years ago, when my son graduated from high school, this personal barrier was removed and with the encouragement of several close colleagues, I decided to take action by seeking an administrative position.

Secondly, why did I choose Missouri S&T? To lead a department, I was looking for a dynamic environment with strong commitment to excellence and motivated faculty members. I found those at Missouri S&T. So, in spite of several more financially rewarding offers, I decided to come to Rolla. I am proud of my new colleagues and I am confident that together we will be able to drastically improve the CS department's national and international standing. This past year we made much progress on a variety of fronts. Ranging from an overhaul of our undergraduate as well as graduate curriculums, more systematic student advising, remodeling of a number of offices, a new state-of-the-art copier to new faculty hires, etc. In this newsletter, you will read about many of these developments:

- A. **New Administrative Paradigm:** Students are the highest priority in our mission. To fulfill this goal, the department is shifting towards a student centered platform that serves our students in a better and more efficient way (the department administrative structure can be found at <http://cs.mst.edu/facultystaffandfacilities/facultyresources.html>).
1. To be more efficient, more consistent, and more responsive and sensitive to the academic needs of our undergraduate students, the advising procedure has been modified as follows: Mr. Clayton Price continues to serve as the freshman and transfer advisor, but after that first year, students no longer will be distributed randomly among the faculty members for advising. Instead, Mr. Matt Buechler will be the default advisor for sophomore, junior, and senior students. Matt is also our undergraduate research coordinator and in that capacity acts as a match maker between students interested in engaging in undergraduate research and the most suitable faculty mentor for their particular research interests. Once a successful match has been made, the research faculty mentor becomes the student's academic advisor.
 2. To be more sensitive to the general student body's needs, particularly students belonging to under represented groups such as women and minorities, a new committee called the "Diversity Committee" was formed with the charge to raise sensitivity regarding the needs of under represented groups in the department and improve the recruitment of women and minority students.
 3. To improve our teaching practices and ultimately to serve our students more effectively, I formed the "peer teaching evaluation committee" charged with periodically visiting classrooms, observing the teaching effectiveness of the instructors, and providing constructive feedback based on their observations to the instructors. The peer teaching evaluation form and peer teaching evaluation schedule for the 2008-'09 academic year can be found at http://cs.mst.edu/facultystaffandfacilities/Computer_Science_Dept_Forms.html and <http://cs.mst.edu/facultystaffandfacilities/facultyresources.html>, respectively.
- B. **New Hires:** This past year, three outstanding junior faculty members have joined the department (see later in this newsletter for their photos; detailed information on all faculty members is available at: <http://cs.mst.edu/facultystaffandfacilities/facultydirectory.html>).
1. Dr. Dan Lin joined us as a Tenure Track Assistant Professor from National University of Singapore. Her research interest is in the areas of database systems and information security. More specifically, she is interested in spatial-temporal databases and access control policy analysis. Prior to joining Missouri S&T, Professor Lin was a visiting professor at Purdue University.
 2. Dr. Wei Jiang joined us as a Tenure Track Assistant Professor from Purdue University. His research interests lie at the crossroads of Privacy, Security, Data Mining and Databases.
 3. Dr. Huzefa Kagdi joined us as a Research Assistant Professor from Kent State University. Dr. Kagdi's research interest is in the area of software engineering with a specific focus on mining software repositories, source code analysis, and soft-

ware visualization to support the evolution of large-scale systems.

- C. Revised Undergraduate Program: Our bachelor of science degree has always been recognized as a very strong program. However, in today's global market we have to keep reinventing ourselves to remain competitive. In pursuit of this goal, we revised our undergraduate program by no longer requiring some courses of decreased importance and increasing the number of CS elective courses. Moreover, to make sure that our undergraduate students are more exposed to recent advances in the field, the revised curriculum requires more upper level courses as CS electives. More detail can be found at: <http://cs.mst.edu/curriculumandcourses/cscurriculumby-discipline.html>
- D. Revised Graduate Program: The graduate program was revised to promote quality and excellence resulting in measurable outcomes of increased Ph.D. production, grants, and publications. Some key items:
1. new beefed up graduate admission requirements,
 2. creation of several new graduate courses, and
 3. beefed up Ph.D. qualifying examination.
- E. Remodeling: During the past summer, we remodeled the administrative offices and created a much larger and improved reception area. In addition, our conference room got a face-lift and received several hi-tech upgrades including a smart board.

F. Short Term Goals: The department is planning to launch three fund raising campaigns. The goals are:

NAMED DISTINGUISHED LECTURE SERIES

Endow a distinguished lecture series to bring in well known computer scientists to campus each year. This is intended to spark interest in computer science and keep the intellectual excitement growing over the latest in computer science research and technology. Not only would S&T students, faculty and staff benefit from outside distinguished lecturers, the influx of visitors would result in Missouri S&T's Computer Science Department being more well known throughout industry and academia.

NAMED DISTANCE LEARNING TECHNOLOGY SPACE

A Distance Learning Technology Space is an imperative for a computer science department in today's environment. Although instructional technology is still in its infancy, it is important that Missouri S&T, as a leading technological institution, provide the latest in distance learning concepts. The Technology Space could be used to bring in outside lecturers from remote locations and to offer computer science classes, certificate programs, and lectures to distance learners.

NAMED GRADUATE RESEARCH FELLOWSHIPS

An endowment for graduate student fellowships would allow the department to attract outstanding graduate students in areas of expertise within the department. Graduate students provide the backbone for research.

The Named Endowed Fellowship would allow the department to annually attract three outstanding incoming female and under represented Ph.D. students.

These campaigns expand our graduate program, allow us to offer more distance education courses, and enhance our certificate programs and distance master degree. The total budget for the aforementioned campaigns is estimated at \$1,000,000. We are heavily counting on our alumni and industrial partners to successfully conclude these campaigns.

Our research productivity continues to grow. Last year, the total amount of our funded research and publications roughly doubled in comparison to the 2007-'08 calendar year. Currently, our faculty members are involved with 19 funded research projects supported by the National Science Foundation (NSF), Department of Education (DOE), Air Force, Department of Defense (DOD), the Computing Research Association (CRA), and Boeing. In April, four outstanding alumni joined our CS academy and advisory board: John R. Hock, Randy Kerns, and Joan B. Woodard were inducted into the Computer Science Academy, and Lou Clark became a member of our Computer Science Advisory Board. We would like to welcome them and we are looking forward to their active contributions to the department. The 2008 CS academy meetings were held on April 17 and October 18, the CS award banquet was

held on April 24, the CS advisory board meeting was held on April 25, and the annual CS picnic was held on September 20.

In closing, on behalf of the CS department I would like to express my gratitude for the generous financial support of our alumni and corporate partners. As always, we are eager to hear from you. Please take a moment to complete the Alumni Survey at: http://cs.mst.edu/alumnicorporationsandpartners/Alumni_Survey.html. If you are an employer of our graduates, we would be pleased if you could fill out the Employer Survey at: http://cs.mst.edu/alumnicorporationsandpartners/Employer_Survey.html.



Department Chair, Professor

Three inducted into Missouri S&T's Academy of Computer Science

Three computer science alumni of the Missouri University of Science and Technology were inducted as members into the Missouri S&T Academy of Computer Science during the group's banquet and induction ceremony in Rolla on April 17, 2008.

The academy honors outstanding computer scientists for their contributions to the profession and their involvement with Missouri S&T students and faculty. The academy also serves as an advisory group to the computer science department. The web site for the Missouri S&T academy is: <http://web.mst.edu/~csacdm/>

New members are:



John Hock has been professionally involved in the computer industry for 40 years—the last 25 years being with IBM Corporation in development, systems engineering, technical sales, and IT consulting.

Currently with IBM Systems & Technology Group, his responsibilities include support of IBM Power™ Systems servers, and he is worldwide technical lead for the IBM Solution Assurance quality practice for Power Systems. John is a member of the IBM IT Specialist Professional Certification Board.

John earned a Bachelor of Science degree in electrical engineering from the University of Missouri-Columbia, and a Master of Science degree in computer science from Missouri S&T, where he has served on the Computer Science Advisory Board for 13 years.



Randy Kerns is the chief technology officer for Prostor Systems in Boulder Colorado. In his role as Chief Technology Officer, Randy drives the company's strategic direction for products and technology. As an industry veteran and former storage industry analyst, Mr. Kerns has spent over 30 years in the computer industry helping storage companies design and develop storage system products for their markets as well as advising technical professionals on how to build the best storage infrastructure to streamline their business processes.

Prior to joining ProStor Systems, Mr. Kerns served as an independent industry analyst covering storage and storage management software including SAN and NAS analysis. As a senior partner with the Evaluator Group, he was responsible for product analysis and company evaluation. While there, he became recognized in the storage industry for assisting major end-user clients in developing their storage strategies as well as supporting storage system vendors with their product and technology roadmaps.

Mr. Kerns spent many years in executive level product planning and design positions. He was vice president of storage strategy and planning at Sun Microsystems; he developed disk and tape systems for mainframe attachment at IBM and Storage Tek; he designed disk systems for attachment to open systems and proprietary computer platforms at Fujitsu and Tandem Computers; and he developed tape and disk systems for two start-up companies.

Mr. Kerns earned a bachelor's degree in Computer Science from the Missouri S&T and a master's degree in Computer Science from the University of Colorado.

An educator and presenter, Mr. Kerns has written numerous industry articles and papers and is the author of "Planning a Storage Strategy," a new book that offers step-by-step guidance on how to build an information storage strategy as part of a larger business process and most recently is the author of "Information Archiving - Economics and Compliance", which is the first book of its kind to explore archiving of information in depth. Mr. Kerns has regularly taught classes on storage technology in the United States and Europe



Joan Woodard is Executive Vice President and Deputy Laboratories Director for the Nuclear Deterrent. Sandia's role is to support the nation's nuclear weapons stockpile, providing research, development, and testing services, and manufacturing of specialized non-nuclear products and components for national defense and security applications. The laboratories enable safe and secure deterrence through science, engineering and certification testing.

From 1999 to 2005, Joan served as Executive Vice President and Deputy Director, responsible for operational oversight of Sandia's programs, operations, staff and facilities; developing policy and assuring implementation; and strategic planning.

Joan joined Sandia in 1974 contributing to energy research and development as well as national security Programs. In 1990, she became the Director of the Environmental Programs Center. In 1995 she assumed the role of Vice President and Manager of the Energy & Environment Division, and in 1998 she was named Vice President of the Energy Information and Infrastructure Technologies Division.

Joan has been elected to the Phi Kappa Phi Honor Society and has served on numerous external panels and boards, including the Air Force Scientific Advisory Board, the National Academy of Sciences' Study on Science and Technology for Countering Terrorism, the Secretary of Energy's Nuclear Energy Research Advisory Council, the Congressional Commission on Electromagnetic Pulse, and the Intelligence Science Board. Joan has received many honors, including the Upward Mobility Award from the Society of Women Engineers, and was named as "One of Twenty Women to Watch in the New Millennium" by the Albuquerque Journal. She also received the Spirit or Achievement Award from National Jewish Hospital.

Joan earned a BS degree from Missouri S&T (1973) Applied Mathematics (with emphasis in computer science), a MS degree from Stanford University (1975) Engineering Economic Systems, and a PhD from University of California Berkeley (1982) Mechanical Engineering.

At Missouri S&T, Joan has served on the Dean's Board of Visitors for Arts and Sciences and the Dean's advisory Council for the School of Engineering and the Campaign Organizing Committee as well as the Board of Trustees. She received an Alumni Achievement Award in 1997 and Robert Y. Wolf Alumni Service Award in 2007. In 1999, she received a Professional Degree from Missouri S&T. Joan and her husband, James, joined the Order of the Golden Shillelagh in 2004.

The Woodard's have two sons, including one who is an Electrical Engineering graduate of Missouri S&T.

Computer Science Advisory Board

This year, the traditional CS Awards banquet and the Advisory Board meeting were held on April 24-25, 2008. During the banquet, many scholarships and a number of door prizes were awarded to students. We wish to extend thanks to our Advisory Board members and other alumni and corporations for sponsoring tables, and providing scholarships and door prizes for this event.

In addition, to the regular board members, Louis Clark Jr. from Monsanto Company was invited to attend the board meeting.

This year, the Board meeting had a full agenda ranging from improvement in curriculum to fund raising. The discussion topics included: (i) the strategic planning of the CS department, (ii) revision of the graduate and undergraduate curriculums, (iii) student recruitment and how to increase enrollment in CS, especially women and minorities; (iv) new faculty workload, (v) interdisciplinary program in pervasive computing, (vi) remodeling of administrative offices in the CS building and conference room, and (vii) fund raising. During the meeting, Dr. Thomas Weigert made a presentation about the future of the software engineering program. Drs. Ali Hurson, and Sriram Chellappan made presentations about their research in the areas of global information processing, and wireless computing. A decision was made to increase yearly interactions between the department and the CS advisory board. The board members made many practical suggestions to improve the CS curriculum and graduate programs. In addition, the issue of a common first year program for computer science, computer engineering, and information science and technology students was discussed and endorsed by the board. We appreciate the time and dedication of the Board members in contributing to our continuous efforts to improve the quality of education in the Department. Their perspectives provide valuable insights to the Department as we develop and revise our academic and research programs. If you are interested in serving on the CS Advisory Board, please send us an e-mail at csdept@mst.edu, along with a short bios.

CS Advisory Board Members (2008-09): Ken Brenneke (Boeing), John M. Brown (Purina), Robert Byrne (Boeing), Louis Clark Jr. (Monsanto), John Hock (IBM), Jeff Herzog (Maryville Technologies), Herb Krasner (Krasner Consulting), Jim Lahm (Accenture), Jim Leonard (Boeing), Bob Perrey (MasterCard International), David Schade (AT&T), Curt Schroeder (Lockheed Martin), Karen Squires (Pearson), John Stone (UIUC), and Juan Vargas (Google).

The Advisory board website is: <http://cs.mst.edu/alumnicorporationsandpartners/industryadvisorycomm.html>

2008 NEWCOMERS TO THE DEPARTMENT



Wei Jiang is an Assistant Professor in the department. He received his Bachelor's degrees in both Computer Science and Mathematics from the University of Iowa, Iowa City, Iowa, in 2002. He received his Master's degree in Computer Science and Ph.D. degree from Purdue University, West Lafayette, IN, in 2004 and 2008. His current research interests include privacy-preserving data mining and integration, privacy issues in federated search environment and text sanitization techniques.



Huzefa Kagdi is currently a Research Assistant Professor in the department. He earned his Ph.D. and M.S. in Computer Science from Kent State University, USA, and B.E. in Computer Engineering from Birla Vishwakarma Mahavidyalaya, India. His research interests are in mining software repositories, source code representations and analysis, and UML visualization for supporting evolution of large-scale software systems. Huzefa enjoys teaching courses in software engineering and computer programming the most. His most recent teaching experience includes courses in introductory programming and data structures at Kent State University. Besides research and teaching, Huzefa tries not to miss an opportunity to enjoy popular culture, cooking, traveling, company of friends, and light reading. He is looking forward to working with the faculty, staff, and students at Missouri S&T.



Dan Lin is an Assistant Professor in the department. She received the B.S. degree (First Class Honors) in Computer Science from Fudan University, China in 2002, and the Ph.D. degree in Computer Science from the National University of Singapore in 2007. She has been a postdoctoral research associate at Purdue University for one and a half years. Her main research interest covers many areas in the fields of database systems and information security. Her current research includes geographical information systems, spatial-temporal databases, location privacy, and access control policies.

2008 SCHOLARSHIP RECIPIENTS

Accenture Scholarship

Christopher Jones
David Oldroyd

Howard & Lois Cook Scholarship

Robert Mertens

John W. Hamblen Computer Science Scholarship

Chris Roush

Ellen M. Hodges Memorial Scholarship

Michelle Patz
Jasmine Glaese
Janet Guntly
Charissa Mathis

Rex Widmer - RWS - Software Archaeology Computer Science Scholar

Jacob Gardner

Daniel C. St. Clair Scholars & Fellows

Jon Blount

Mark X. Stratman Scholarship

Joseph Hawkes-Cates
Scott Follmer
Kyle Ellman

U.S. Steel Scholarship

Clayton Harper
Matthew Chittum

CS Alumni Scholarships

Joshua McCarville-Schueths
Daniel Hellwig
Josh Eads
Ben Murrell
Colin Stagner
Andrew Dunkman
Matthew Mitchell
Donald Halsted
Jacob Alyea
Alex White
Alex St. John
Phillip Ponzer

Incoming Freshman The Boeing Company Scholarship

Hilary Hamlin
Chelsea Sanders
Tiffany Werckmann
Roberto Murillo
Jessica Williams
Stewart Sanchez
Joanna Gonzalez
Samuel Goodfellow
Frank Keehn



2008 Special Award Recipients



CS Service Award

Tory Cheatham

CS Leadership

Travis Service



CS Mentor

Roberto Murillo

CS Ambassador

Steve Mues



Outstanding CS Graduate Assistant

Kate Holdener

CS Academic Achievement 4.0 GPA

Freshman

Tyler Biethman
Kyle Ellman
Nathanial Martin

Sophomore

Jeremy Davidson
Scott Follmer
Joseph Hawkes-Cates
Daniel Hellwig
Joshua McCarville-Schueths
Thomas Roth
Stewart Sanchez

Junior

Matthew Entrekin
Janet Guntly

Michael Hahorn

Senior

Joshua Eads
Clayton Harper
Thomas Szalapski
Evan Wright

Masters

Ekta Khudkhudia
Vikas Nahar
Adam Nichols
Andre Nwamba
Travis Service

Ph.D.

Ekaterina Holdener

COMPUTER SCIENCE AWARDS BANQUET

The Seventh Annual Missouri S&T Computer Science Department Awards Banquet held on April 24, 2008 brought students, faculty, staff, alumni, and friends together for an evening of food, fun, and awards. A short reception preceded the banquet. Following a delicious meal, Mr. Tom Wolf, Mastercard International, and a CS Alumni, presented a talk entitled "The Evolution of IT Careers (Who moved My Cheese)". The evening concluded with the distribution of fabulous door prizes donated by several of the banquet sponsors. In addition to door prizes, banquet sponsors purchased tables for the event. The money from table purchases made it possible for all Computer Science majors to attend the banquet free of charge. The 2009 Computer Science Awards Banquet is scheduled for April 23, 2009. If you are in the area, we would be delighted to have you join us. If you and/or your company would like to participate in the 2009 banquet, please contact Rhonda Grayson at rhondag@mst.edu or Dawn Davis at dawnd@mst.edu. Additional information about the banquet can be found at <http://cs.mst.edu/department/awards.html>.

Sponsors for the event included:

Accenture
 Alex's Pizza
 Applebee's
 Blossom Basket
 Cerner Corporation
 Coachlite Lanes
 Dairy Queen
 Dominos' Pizza
 El Maguay
 Garmin International
 General Motors
 Granny's Sawmill Café
 Huddle House
 IEEE
 Imo's Pizza
 Kent Jewelry
 Lambiel Jewelry
 Lee's Famous Recipe
 Chicken

Maid Rite
 Maryville Technologies
 Panera Bread
 Pizza Inn
 Purina
 Shoney's
 Sirloin Stockade
 Slice of Pie
 Something Special Florist
 Sonic
 Steak 'n Shake
 SunSation Tanning
 Sunny Wall Florist
 Tara Day Spa
 The Boeing Company
 Triad Office City
 Missouri S&T Bookstore



PHONATHON DATES:



Feb.
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2009



1st Annual Family and Friends Picnic

For many years the Boeing Company and the Computer Science Department have come together to offer a fall semester pizza party. The party would take place on a Wednesday evening at Schuman Park and it provided an opportunity for students, faculty, and Boeing employees to meet and relax. The event has always been considered a success because of the large number of student participants. Well, our new department chair apparently has ants in his pants and is no longer just satisfied with successful events; he needs amazingly successful events. So after much discussion with our Boeing sponsors, the Department decided to mix things up this year and on Saturday, September 20, 2008 the Computer Science Department held its first ever “Family and Friends Picnic!”

The goal of the “Family and Friends Picnic” is to expand upon the social successes of the pizza parties. For this event the department extended its guest list to include all of its students, faculty, alumni, corporate partners, AND their friends and families. This way we were creating an event that not only includes all of the people who help make our department successful, but also include all of the people who help to make our personal lives successful. In addition to all of the new guests, the event was moved from a weekday to a weekend to allow for more time where we could play games like kickball and volleyball. All of the old goats (faculty) and whipper snappers (students) joined teams and created a fun and competitive environment where the old folks could pretend that they still have it and the students could show off their giving nature by letting us faculty have a few points. Many muscles, joints, and backs were sore the next day.

It was a great time and we are looking forward to repeating its success. The Computer Science Department would like to thank everyone who came out to participate and personally make this event an AMAZING success. We would like to extend a special thanks to our friends at Cerner, Garmin, Maryville, and Microsoft for providing sponsorships that helped to fund the event.



Eating

Kickball



Volleyball



ALUMNI NEWS

Billy Earney CS '00, married Kim Gibson on December 15, 2007. The couple lives in Columbia, MO.

Vyas Sanzgiri CS '06, married Madhurima Bhutkar on March 2, 2008. The couple lives in Andover, Mass.

Neil Smith CS '68, our son Morgan, CE '02 was married in May 2008 in Washington, D.C. Our daughter Veronica, recently married a captain in the U.S. Marine Corps who is deployed in Iraq on his third tour. Life is good when you have a loving family.

John Wegman CS '75, was chosen as one of the first nine members of the Helias High School Hall of Fame for his service to the Jefferson City, MO, school since graduation.

Anne E. (Burton) Laufman CS '83, after 20 years with IBM in North Carolina, we retired to the Brainerd Lakes area in Minnesota. I'm loving retirement.

Joyce L. (Replogle) Wagner CS '88, we have expanded our computer system at Keith's veterinary clinic so now I get to be network administrator, too. Erin, 12 and Nathan, 9, are excelling at Bethlehem Lutheran School. Erin loves swimming and horseback riding; Nathan found his passion in basketball.

David Denney CS '03, and Genna Belt 66ph '05 were married on July 14, 2007. The couple lives in Peoria, Ill.

James Nelson CS '05, and Erin Schepker ME '05 were married on September 3, 2006. The couple lives in St. Peters, MO. James works for Reuters America and Erin works for Anheuser-Busch Inc.

Kim (Morrill) Simon CS '76, lives in Florissant, MO, and has 2 grown children, LaNae and Brett. Kim works at the Blanche M. Touhill Performing Arts Center at UMSL and is also a USTA tennis official. Mean while her husband Dennis, CE 76, was promoted to program manager in the engineering/planning division of the Metropolitan St. Louis Sewer District.

Catherine (Jabusch) Rafferty CS92, and her husband, Tom, had a boy Aidan Patrick, on February 15, 2007.

Jeffrey Dale White CS '93, I passed the course and test to become a Sun-certified network administrator for the Solaris 10 Operating System. Rochelle, my wife, is homeschooling our children Spenser, 10, and Whitney, 8. She is also worship leader at the Hutchinson (Kan.) Wesleyan Church.



2009 Computer Science Phonathon



This year's phonathon will be held February 2, 3, 4, 5, 8, 9, 10, 11, & 12, 2009. We will begin calling our alumni on February 4, 2008. When the phone rings, please take a moment to share some of your Rolla experiences with a current student. Taxpayer support accounts for **40%** of the university's revenue, making your contribution a vital ingredient in the revenue pie. Any amount you give will be appreciated.

Make your contribution today to help our students.

KEEPING IN TOUCH

MATT BUECHLER is excited to begin his second year of work for the Missouri S&T Computer Science Department. He has big plans for continuing the development of his online course content. Thanks to the purchase of a new tablet computer and Adobe content authoring software, Matt will be able to create interactive learning content that he claims will be better than the materials offered through Stanford's "Stanford Engineering Everywhere" and MIT's "Open Courseware". In addition, this new content should reduce student textbook expenditures while helping the department to cut back on the amount of tutoring needed to support the class. Outside of the University, Matt is thrilled to begin another season coaching for the Rolla Area Youth Soccer League.

DR. SRIRAM CHELLAPPAN is busy conducting research on various aspects of networking and security of Internet and Sensor Networks. He has published five papers since joining Missouri S&T. He is also busy advising his new Ph.D. and Masters students on various research topics. He has started to teach courses in Operating Systems, Computer Networking and Advanced Network Security.

DR. MAGGIE CHENG continues to teach CS385 and CS485 class in the Fall semester. This year she has served NSF as a panelist twice. Just recently, she was awarded an NSF grant as a single PI. She is now busy hiring students to fill the positions. She will be teaching Advanced Algorithms class in Spring 2009.

DR. FIKRET ERCAL is collaborating with faculty from Biological Sciences and conducting research in the area of 'gene family identification in soybean'. He and his colleagues have published several papers in this area in respected Bioinformatics journals. Also proposals are submitted to obtain funding from NSF and the State. Dr. Ercal is also co-supervising a Ph.D. student in the area of "Secure and Adaptable Energy-efficient Sensor Networks for Infrastructure Monitoring" which is funded by DOE.

DR. ALI HURSON joined the department effective January 1st, 2008 as the department chair. Since then he devised a new workload formula for faculty members, took initiatives to revise undergraduate and graduate curriculums, took action to remodel the CS conference room and administrative offices, defined organizational structure of the department, and formulated the short and long term objectives of the department. He proposed two new courses; "Heterogeneous and mobile databases" and "Introduction to High Performance Computer Architecture" to be offered in spring and fall 2009, respectively.

He is also continuing to work with his students at Penn State University on his \$2,220,076 NSF Pervasively Secure Infrastructures project. One of his PhD students successfully defended his thesis entitled, "A SECURITY FRAMEWORK FOR MOBILE AD HOC NETWORKS". Finally, in fall 2008, he taught "New Trends in Massively Parallel Computing" course.

DR. JENNIFER LEOPOLD was promoted to the position of Associate Professor with tenure. She will be teaching the Programming Languages and Translators, and Bioinformatics courses this year. She also is continuing to be the faculty advisor for the ACM-W student group.

DR. FRANK LIU continues to work on an innovative consensus building and conflict resolution method based on intelligent computational argumentation technique. He has developed a web-based collaborative engineering design system based on this method. It may find applications in other domains, such as collaborative software development. He also works on a couple of sponsored projects in the area of software applications in advanced manufacturing. In addition to conducting research, he teaches software testing and quality assurance, software requirements engineering, and advanced software engineering classes.

DR. SANJAY MADRIA is directing the W2C (Web and Wireless Computing) Lab, and is currently supervising seven PhD students in the area of mobile and secure sensor networks. He continues to teach 238, 412 and 486 classes in the area of databases, web and wireless computing which continuously receiving overwhelming responses from graduate and undergraduate students. He has been invited for IEEE Distinguished Seminars, key notes and invited talks internationally. He was awarded Air Force Research Lab's summer faculty fellowship in the summer of 2008 where he spent 10 weeks in Rome, NY for the collaborative research project.

DR. BRUCE McMILLIN led the establishment of the NSA Center for Academic Excellence in Information Assurance Research at S&T (the first and only in Missouri). He also leads the computer science subthrust of the National Science Foundation Engineering Research Center, FREEDM system, a future vision for energy (see article). He continually serves on the University of Missouri Research Board which awards research investment funds to the UM system faculty and has been promoted to Sr. Investigator in the S&T Intelligent Systems Center leading the Cyber-Physical systems group. This year he will be leading an NSF-funded effort to bring together Computer Scientists, Engineers, and Social Scientists to develop and spawn new research areas of mutual interest.

DAVE MENTIS is still teaching the introductory C++ service course (CS 74). He also maintains a great interest in the Discrete Math (CS 158) course, though he has taken a break from teaching it for the last 12 years to allow time to teach the FORTRAN service course and lab (CS 73 and CS 77.)

Dave's wife, Doyle, has just retired from the public school system after 28 years of teaching (the last 24 with Rolla High School.) and is now part of the teaching faculty in Missouri S&T's Education department. Dave's daughter, Dava, has just started Missouri S&T as a freshman, pursuing a major in Chemistry with an emphasis in pre-med. Dave's daughter and grandson also still live with them on the farm, and all are doing fine.

DR. ANN MILLER, Cynthia Tang Missouri Distinguished Professor of Computer Engineering, holds a joint appointment with CS. Dr. Miller's Trustworthy Systems Laboratory gives students hands-on experience with high-speed routers, switches, and hubs in order to configure networks and subnets. The stand-alone network also allows students to work in attacker-defender teams. She is also Director of Missouri S&T's Center for Critical Infrastructure Protection and Associate Director of Missouri S&T's Systems Engineering Program. She continues to serve on several NATO committees and task groups which provide opportunities for international travel; on a personal note, the travel allows her the opportunity to savor many different cuisines.

CLAYTON PRICE is in the midst of his tenth year with the department. Time has passed swiftly, as it always does when you are having fun. And Clayton truly enjoys his job. Interacting with freshmen and transfers is an invigorating and rewarding job; meeting new students is the highlight of his days in the office. Teaching 53, 228, and 328 remains his instructional focus. Most efforts there are spent trying to dream up new and exciting exercises for the new students to program.

As usual, life on the farm is as fulfilling as usual. Clayton has spent most of his efforts this year on clearing land and improving pastures.

DR. CHAMAN SABHARWAL continues to teach Data Structures II (CS 253), Java GUI, Visualization (CS 342), Graphics (CS 343), and Analysis of Algorithms (CS 355). In the spring of 2007, he taught a new course: Modular Software Systems Design and Development (CS 332). He is the Multimedia & Visualization track Chair of ACM Symposium on Applied Computing 2008 in Brazil. Dr. Sabharwal still commutes back and forth from St. Louis.

DR. JAGANNATHAN (JAG) SARANGAPANI Rutledge-Emerson Distinguished Professor of Electrical and Computer Engineering, holds a joint appointment with CS. Dr. Sarangapani's students work on the development of novel networking protocols for wireless ad hoc and sensor networks. He directs the Embedded Systems and Networking Laboratory and this laboratory gives students hands-on experience with high-speed networks and wireless ad hoc and sensor networks. His students have developed Missouri S&T Mote hardware for wireless ad hoc and sensor networks. These Motes have been successfully deployed and evaluated on a number of industrial applications. He is also Director of NSF Industry/University Cooperative Research Center Site at Missouri S&T where the Mote hardware and smart algorithms are used to detect and predict component and system failures. There are over 9 company members in the Center Site. He has a number of funded grants with CS faculty for the past 5 years and most recent ones are with Dr. Madria from NSF REU and GAANN. He has co-authored over 220 juried conference and journal publications, 3 text books (most recent one on wireless ad hoc and sensor networks in 2007), and holds 20 patents.

DR. DANIEL TAURITZ or just Dr. T as the students call him, has been promoted to Associate Professor of Computer Science with Tenure effective September 1st 2008, hooray!!! He is also the proud recipient of a Missouri S&T 2006-2007 Outstanding Teaching Award. Furthermore, he has finally completed the creation of one of the nation's few (only?) two-course sequences on Evolutionary Computing; both the introductory course (CS348) and the advanced course (CS448) have been very well received in terms of enrollment, teacher evaluations, and rate of flow-through to Dr. T's Natural Computation Lab (NC-LAB). One of Dr. T's new duties this calendar year is chair of the department's publicity committee. Working together with Dawn, he is in the process of overhauling the departmental website; he is particularly excited about his newest addition to the website: a comprehensive tentative two-year course schedule of all CS classes which should greatly facilitate long-term scheduling by students and their advisors. He is enjoying his seventh year as the Missouri S&T ACM Student Chapter SIG Security advisor (see article). Since December 2004 he has been the Missouri S&T coordinator for Sandia National Laboratories' Center for Cyber Defenders (CCD); during summer 2005 he brought a team of outstanding Missouri S&T students (three from CS, one from CpE) to the CCD as summer interns, and sent new teams every summer since. On the research front, Dr. Tauritz continues to lead the NC-LAB whose main focus is developing novel evolutionary algorithms and applying them to real-world problems from a diverse set of domains including Critical Infrastructure Protection, Automated Software Engineering, and Inverse Diffusion Analysis. He graduated his fourth Ph.D. student (first one without a co-advisor) and several Masters students. For the third consecutive year he received a CREU grant from the CRA-W for his Computer Science Recruitment for the 21st Century project (see article) and successfully completed the multidisciplinary Indoor Air Quality Simulator project (see article) which was funded with a MRO-W grant from the CRA-W.

DR. THOMAS WEIGERT this is his first year as Daniel St. Clair endowed chair with the Computer Science department of Missouri S&T. During this year, Thomas taught the required software engineering course, CS206, and hoped that students enjoyed the lessons and experiences he brought into this course from his 20 years leading software development organizations in the telecommunications industry. Jointly with members of the Advisory Committee, the Academy, and other faculty, he refreshed the content of our software engineering courses to ensure that these courses are reflecting the current state of practice and complement each other to give students a strong background in software engineering. Thomas forged a close alliance with Hengsoft L.L.C., a company focusing on advanced software development tools; Hengsoft agreed to fund several research projects within the department. Earlier this year Thomas led the successful search for 2 junior faculty positions. Thomas and his research team made excellent progress in requirements verification technologies and in transforming requirements specifications into high-level designs. He presented results in two conferences and a journal paper.

DR. RALPH WILKERSON

DR. DONALD WUNSCH, the Mary K. Finley Missouri Distinguished Professor and Director of the Applied Computational Intelligence Lab, was elected in August 2007 as Fellow of the International Neural Networks Society (INNS). He was subsequently elected the Senior Fellow, serving as leader of the INNS College of Fellows. He has been active in the society for two decades. He played a part in reshaping the annual meeting, increasing membership and reorganizing its leadership structure. Wunsch and his collaborators have contributed research in many areas including: optical neural networks, aerospace applications, fuzzy regression and fuzzy risk assessment, approximate dynamic programming, accelerating heuristic for the Traveling Salesman Problem (TSP), time-series prediction, bioinformatics and clustering.

This is the second society to honor Wunsch with Fellow status. The Institute of Electrical and Electronics Engineers (IEEE) selected him as a Fellow in 2005.

He has produced over 250 publications, 13 Ph.D. graduates and attracted \$5,810,313 in research funding to date. Among new projects funded in Summer 2007 are a three-year NSF grant to study computational intelligence approaches to the Game of Go, a Boeing contract to apply generalized TSP heuristic to heterogeneous robotic search problems, and a contract with 21st Century Systems to use clustering for data mining from suspected terrorist web sites.

Wunsch serves as Chair of the Information Technology & Computing Committee, Chair of the Computer Security Task Force, and Chair of the CIO Search Committee.

Wunsch earned a Bachelor of Science degree in applied mathematics from the University of New Mexico in 1984 before obtaining a Master of Science degree in applied mathematics from the University of Washington in 1987. He received a Ph.D. in electrical engineering from the University of Washington in 1991, and completed an Executive MBA at Washington University in St. Louis in 2006.

DAWN DAVIS is ending her 2nd year with the Computer Science Department. She still enjoys the challenges that come each day and says that she really enjoys working with the faculty, students, and everyone on the Missouri S&T campus. In her spare time (when she has any) she enjoys spending time with her husband, of 18 years, Rick, and her daughter, now 14, Kayla, camping, fishing, hunting, gardening, going to Antique Malls and being outdoors. Hope next year is as good as this year was.

RHONDA GRAYSON is ending her 5th year with the Computer Science Department and says the past year has brought a whirlwind of excitement with office renovations, new faculty members and a new department chair. Rhonda has enjoyed the new challenges and says that the changes have been good and she is looking forward to what the next year will bring. Since her son Coy, now 20 years old, has left home for college in Iowa. Rhonda and her husband, William, plan to do more fishing, camping, going to auctions and flea markets and of course they will still go to rodeos to watch Coy whenever possible.

Two faculty members of the Computer Science Department at Missouri University of Science and Technology received promotions and tenure effective Sept. 1, 2008.



Dr. Jennifer Leopold and Dr. Daniel Tauritz were promoted to associate professor of computer science with tenure.

Congratulations

Daniel St. Clair Endowed Chair in the Computer Science Department



This was the first year for Thomas Weigert as Daniel St. Clair endowed chair with the Computer Science department of MS&T. An important goal of this position is to increase the research potential of the CS department by creating additional means of funding research and student positions, in particular in collaboration with industrial partners. To this effect, Thomas forged a close alliance with Hengsoft L.L.C., a company focusing on advanced software development tools. Hengsoft agreed to fund several research projects in the area of requirements elicitation and modeling, advanced compilation techniques, as well as generation of highly optimized code for multi-core and other parallel platforms within the department through Ph.D. or post-doc positions. Suitable projects are

currently being defined by members of the software engineering and critical infrastructure protection teams. Thomas and his research team made excellent progress in requirements verification technologies and in transforming requirements specifications into high-level designs. He presented results in two conferences and a journal paper.

Indoor Air Quality Simulator research project

Computer science major Janet Guntly and chemical engineering major Amber Loftis, supervised by CS faculty mentor Daniel Tauritz and Environmental Engineering faculty mentor Glenn Morrison, have created a prototype Indoor Air Quality Simulator with two distinct interfaces, one designed for consumers and one for researchers. The project, called Indoor Air Quality Simulator with Interactive Consumer and Lab Interface, INDAQS for short, is aimed at empowering consumers to make informed decisions that impact their indoor air quality, as well as providing researchers a handy tool to improve their efficiency. The project was funded through a Multidisciplinary Research Opportunities for Women (MRO-W) grant from the Computing Research Association Committee on the Status of Women in Computing Research (CRA-W). The MRO-W program is funded in cooperation with the National Science Foundation.

Americans spend some 90% of their time indoors and health risks due to indoor air are ranked among the top five environmental health risks. However, residential air quality is not regulated in most parts of the United States. High indoor pollutant levels are caused by emissions from indoor sources, low air circulation, and chemical reactions generating toxic byproducts. Exposure to indoor air pollutants can result in minor to severe health hazards such as allergies, sick building syndrome, respiratory disease, and cancer. The INDAQS project ultimately hopes to address this problem by creating and freely distributing an easy to use software tool that will allow consumers to input information about their home and then, after some computation, inform the consumer which, if any, air quality standards are violated, along with links to relevant information so that consumers can take a proactive role in improving their home's indoor air quality. The core of the software tool is the simulation engine the students designed and implemented which computes the concentration of various pollutants in the air based on the provided input data. The engine employs a free software library called the GNU Scientific Library to solve systems of equations modeling particle concentrations in air.

One of the greatest challenges in this project was finding recommended value ranges for all the different particles and chemicals typically present in homes. Making the consumer interface simple enough to use by your typical consumer without compromising the accuracy of the model was also a big challenge. Janet and Amber presented their work at the 2008 Missouri S&T Undergraduate Research Conference, the 2008 University of Missouri System Undergraduate Research Day at the Capitol in Jefferson City, Mo., at the University of North Carolina at Chapel Hill, Nc., and at the US Environmental Protection Agency, Durham, Nc. Faculty mentors Daniel Tauritz and Glenn Morrison plan to recruit a new group of students to continue this project. To learn more about the INDAQS project, visit the project's website at <http://indaqs.mst.edu/>.



From left to right: Amber Loftis, Dr. Tauritz, Janet Guntly and Dr. Morrison.

Web and Wireless Computing Lab (Director: Dr. Sanjay Madria)



Dr. Sanjay Madria received three years NSF REU grant of 300K for Research and Training Experience for Undergraduates in the area of Wireless Sensor Computing

The main aim of this REU site proposal is to train undergraduate students from Computer Science in the area of wireless sensor computing. The development of effective strategies to handle potential threats to civilian infrastructure and for other applications relies on sensor computing. The reliability, security, and accuracy of these sensor data and wireless devices can affect timely access to information for decision-making. Limitations such as node power, signal propagation delay, and memory within sensor nodes are to be taken into consideration in the computing networking architecture. The students will be exposed to this new exciting area by means of systems, experimental and applications aspects of sensor computing and networking. They will be able to identify the key challenges in realizing such a network. By doing so, students will learn fundamental technology and techniques behind sensor computing to have a good grasp of current and emerging sensor networking applications such as monitoring nation's critical infrastructures and health-care monitoring.

Dr. Sanjay Madria awarded AFRL 2008 Visiting Summer Fellowship

Dr. Sanjay Madria, Associate Professor of Computer Science has been awarded Air Force Research Lab (AFRL) visiting summer fellowship for 2008. The Air Force Summer Faculty Fellowship Program (SFFP) offers hands-on exposure to Air Force research challenges through 8 to 12 weeks research residencies at participating Air Force Research Facilities. The selection is through open competitive process which involves submission of a research proposal. The award can also continue for up to 3 years with a possibility of additional grant support for academic year research.

Evaluation of the applications received by AFRL from eligible research candidates, which also considers Air Force relevance of the proposed area of research, is performed by a panel of experts designated by ASEE and approved by AFOSR. Each Air Force Research Facility directly monitors the awards conferred to fellows in research areas closely related to its mission.

Researchers help build 'Internet for energy' through new NSF center

Missouri University of Science and Technology is one of seven universities in the United States and Europe involved in a new National Science Foundation research initiative that aims to transform the nation's power grid into an Internet for energy that will speed renewable electric-energy technologies into every home and business.

Missouri S&T is one of five U.S. universities in the NSF's Energy Research Center for Future Renewable Electric Energy Delivery and Management (FREEDM) Systems. The new center, announced on Sept. 4, 2008 by the NSF, will be led by North Carolina State University and also includes universities in Germany and Switzerland.

The center will be supported by an initial five-year, \$18.5 million grant from NSF with an additional \$10 million in institutional support and industry membership fees. More than 65 utility companies, electrical equipment manufacturers, alternative energy start-ups and other established and emerging firms have committed to joining this global partnership, according to the NSF.



"We're excited to be playing a lead role in helping to solve the nation's energy infrastructure problems in collaboration with our university and corporate partners through this new initiative," says Dr. Mariesa Crow, the Fred W. Finley Distinguished Professor of Electrical and Computer Engineering at Missouri S&T and director of the university's Energy Research and Development Center. "Our university has a long tradition of excellence in power engineering, and our expertise in that area, combined with our emphasis on addressing the pressing energy issues of our time, allow us to make unique contributions to this research effort."

Transforming the nation's power grid is vitally important as alternative-energy technologies prepare to flood the marketplace. Center researchers foresee widespread adoption of plug-in hybrid cars over the next several years, for example, but today's power grid would not be able to handle energy demand during peak charging times, such as when people return home from work in the evening. The smart grid developed at the center will also allow consumers to sell energy back to the power companies when demand is low, preparing the utilities for times when demand is greatest.

Working with Crow are Drs. Badrul Chowdhury (professor of electrical and computer engineering), Keith Corzine (associate professor of electrical and computer engineering), Mehdi Ferdowsi (assistant professor of electrical and computer engineering), Jonathan Kimball (assistant professor of electrical and computer engineering) and Bruce McMillin (professor of computer science).

Joining North Carolina State and Missouri S&T in the FREEDM project are Arizona State University, Florida A&M University, Florida State University, RWTH Aachen University in Germany and the Swiss Federal Institute of Technology in Switzerland.

More information about the research may be found on the FREEDM center website, www.freedm.ncsu.edu.

Missouri S&T Undergraduate Research Conference 2008 - Computer Science Projects

About the Conference

The Missouri University of Science and Technology emphasizes the participation of undergraduates in research through a number of means, including an annual undergraduate research conference. This event provides an opportunity for Missouri S&T undergraduates to showcase their research efforts to the campus community and to the public.

For more info please visit: <http://ugs.mst.edu/ugrc.html>

Computer Science Projects

Janet Guntly (INDAQS Project) Joint project with Amber Loftis

Department(s) Computer Science and Civil, Architectural, and Environmental Engineering
Research Advisor(s) Dr. Daniel Tauritz and Dr. Glenn Morrison

Indoor Air Quality Simulator with Lab and Interactive Consumer Interface

The Environmental Protection Agency ranks health risks due to indoor air among the top five environmental health risks. A research review estimates \$160 billion could be saved every year in the United States by improving indoor air quality. High indoor pollutant levels are a result of emissions from indoor sources, limited air exchange, high surface area to volume ratios, and indoor chemistry. By observing the interactions between reagents, the project is aimed at helping (1) consumers, by allowing them to realize what pollution is in their home, and (2) researchers who would use the simulations to test new ideas. By creating a cyber infrastructure, comprising consumers and researchers with feedback loops, we plan to improve consumer health and also provide researchers with a valuable research tool. At this time, we have performed lab tests on the reactions of alpha-pinene, discovered sets of equations, and produced programs that solve these equations.



From left to right: Dr. Daniel Tauritz (Advisor), Amber Loftis, Janet Guntly, and Kate Holdener (Mentor)

Joshua Eads (IDA Project)

Department(s) Computer Science
 Research Advisor(s) Dr. Daniel Tauritz and Dr. Glenn Morrison
 Award Best Bibliography Award

Deriving Gas-Phase Exposure History Through Computationally Evolved Inverse Diffusion Analysis

Health risks due to indoor air are large and are ranked among the top five environmental health risks by the Environmental Protection Agency (EPA). High indoor pollutant levels are a result of emissions from indoor sources, limited air exchange, high surface area to volume ratios, and indoor chemistry. This research presents an ongoing project to find inverse diffusion differential equations employing advanced computational techniques. A technique known as Genetic Programming (GP) will be used to evolve candidate equation solutions. The final result will be validated by applying it to core samples from Dr. Morrison's laboratory exposure chamber for which the exposure histories are known. Beyond indoor human exposure, the validated method will be transferable to many environmental systems where diffusion records historic exposures in solid materials.



Dr. Ali Hurson (Computer Science Dept. Chair)
 and Joshua Eads

Jasmine Glaese, Lisa Guntly, Jessica Williams (CSRecruit21 Project)

Department(s) Computer Science
 Research Advisor(s) Dr. Daniel Tauritz
 Award 2nd Prize in Management & Information Systems Poster Session

Computer Science Recruitment for the 21st Century

The goal of this project is to create recruitment software to aid in reversing the alarming trend of decreasing interest in Computer Science (CS) among American students, particularly women. The current generation of American students, especially women, tends to be attracted to fields with clear social relevancy. Third through sixth grade is a crucial time when students form their opinions about, and interest in, math and science. Misconceptions about what CS is and a lack of understanding regarding its many socially relevant applications creates negative associations during this crucial time. These negative associations can result later in many women students not picking the math and science classes that would prepare them for a CS career, ultimately lowering CS enrollment. Our recruitment software explains in an entertaining way what CS is and showcases its social relevancy through a series of highly visual, interactive games & puzzles, and illustrates CS alumni careers.



From left to right: Dr Daniel Tauritz (Advisor), Jasmine Glaese, and Jessica Williams



From left to right: Jessica Williams, Jasmine Glaese, and Dr. Ali Hurson (Computer Science Dept. Chair)

Tim Coalson (AI Project)

Department(s) Computer Science

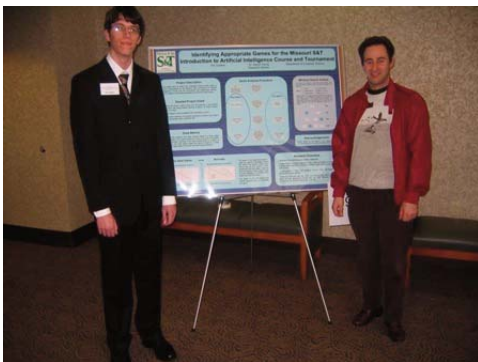
Research Advisor(s) Dr. Daniel Tauritz

Award 1st Prize in Management & Information Systems Poster Session

Identifying Appropriate Games for the Missouri S&T Introduction to Artificial Intelligence Course & Tournament

The CS 347: Introduction to Artificial Intelligence (AI) class and the following AI versus human tournaments have shown that some testing of a game should be done before it is used as an educational vehicle, such as whether it provides a fair and challenging contest in a tournament. Until now, very little work has been done to study how well a game would perform in a tournament with both human and AI players before holding the tournament itself.

This research identifies several possible ways a game can be ill-suited to this class and/or tournament from previous experience, and describes and utilizes a general test schema that can be applied to any turn-based two-player game to quantify a game's suitability in each of these respects.



From right to left: Tim Coalson and Dr. Daniel Tauritz



From left to right: Tim Coalson and Dr. Ali Hurson (Computer Science Dept. Chair)

Derek Ditch (Power Grid Security Project)

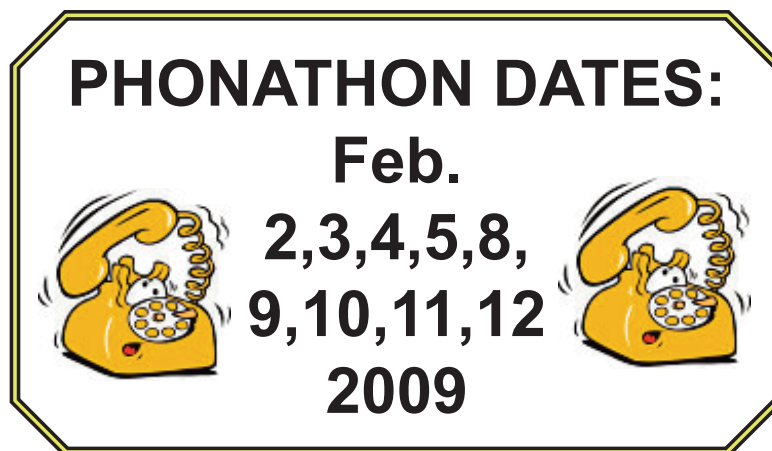
Department(s) Computer Science & Electrical and Computer Engineering
 Research Advisor(s) Dr. Bruce McMillin and Dr. Mariesa Crow

Security in Cyber Physical Systems

The need for protecting our nation's critical infrastructures is a pressing one that is undergoing much research. In the current approach for protecting our national power grid, assumptions are made that suggest that traditional approaches to cyber security may be applied without further analysis. However, systems involving information resources as well as physical resources present additional complexity in their protection needs. This research takes formal analysis of the proposed security architecture of a Cooperating Flexible Alternating Current Transmission System Device (CFD) and applies results of lab experiments to indicate weakness in the suggested architecture.



From left to right: Dr. Ali Hurson (Computer Science Dept. Chair)
 Derek Ditch, and Dr. Bruce McMillin (Advisor)



Recruiting Future Computer Scientists – Year 3



CSRecruit21 2008-2009 Team (from left to right: Charissa Mathis, Jasmine Glaese née Bowles, Janet Guntly, Dr. Daniel Tauritz)

The team of Computer Science (CS) seniors Janet Guntly, Jasmine Glaese née Bowles, CS junior Charissa Mathis, and faculty advisor Dr. Daniel Tauritz are continuing the Computer Science Recruitment for the 21st Century (CSRecruit21) project started in academic year 2006-2007 by CS seniors Kristen Loesch, Laura Woodard and continued in academic year 2007-2008 by CS undergraduates Lisa Guntly (Janet's sister), Jasmine Glaese née Bowles and Jessica Williams. Their goal has been to create software to recruit more students, especially women, to the field of CS. They have received continued funding from Missouri S&T's Opportunities for Undergraduate Research Experience (OURE) program as well as a third Collaborative Research Experience for Undergraduates (CREU) grant provided by the Computer Research Association's Committee on the Status of Women in Computing Research (CRA-W), an organization focused on increasing the number of women participating in computer science and engineering research. They are creating 'Edutainment' software to showcase the relevancy of CS to real-world problems. The software consists of a series of highly visual games, interactive questions, and puzzles that illustrate CS careers and socially relevant research. The games & puzzles are associated with the careers of S&T CS alumni whose profiles and inspirational quotes are integrated into the software. An alpha version of the software was field-tested in spring 2007 at Rolla's Mark Twain Elementary School to a class of 3rd & 4th grade students. Extensive field-testing of a beta version of the software was conducted in spring 2008 again to 3rd grade students at Mark Twain. A new version of the software featuring a reading level sensitive dictionary, new alumni profiles, games and puzzles, and many "under-the-hood" improvements is presently under development.

The second year of the CSRecruit21 project was again very promising and received a lot of attention, including being presented at the Undergraduate Research Day at the Capitol, the Missouri S&T Undergraduate Research Conference (where it won second prize in a poster competition), being featured on Missouri S&T's home page,

The Facts

- The enrollment in CS degree programs has dropped 49% between the '01/'02 and '06/'07 academic years and the proportion of CS bachelor degrees awarded to females has fallen from 36% to 21% between 1983 and 2006.
- At Missouri S&T, from fall 2002 to fall 2008, the overall enrollment in computer science has fallen by 25% and the already very low female enrollment by 28%.
- Study after study shows that many women are not attracted to Computer Science because they are more interested in the application of technology rather than the technology itself.

and most recently in poster form at the 2008 Grace Hopper Celebration of Women in Computing conference (for the second consecutive year).



Jasmine Glaese née Bowles presenting a CSRecruit21 poster at the Grace Hopper Celebration of Women in Computing 2008 Conference

How Can You Help?

Our main goal is to dispel the stereotype that CS is boring, only for geeks, and not socially relevant.

- You can help us achieve this goal by filling out a simple questionnaire about your job, its social relevancy, and providing an optional photo or video clip. The information you provide along with the photo or video clip may be embedded in the recruitment software we are developing. It should only take a few minutes of your busy schedule and we would really appreciate the assistance. To fill out the questionnaire please visit our research website, <http://web.mst.edu/~csrec21/>, and click on the 'Take the Computer Science Job Survey' link near the bottom of the main page.

Association for Computing Machinery-SIG Sec (ACM-SIG Sec)

The Missouri S&T Association for Computing Machinery (ACM) student branch Special Interest Group: Security (SIG Sec) is a student group focused on computer & network security. Founded six years ago, the organization is currently chaired by Patrick Edgett and Miles Strombach, with Dr. Daniel Tauritz as faculty advisor. SIG Sec meetings are bi-weekly, featuring a wide variety of speakers on topics ranging from software vulnerabilities and real-world tools to security projects and research. The group also works on its own security projects, such as building cantennas (antennas made from soup, coffee or Pringles cans that increase the gain of wireless cards), wireless auditing (mapping open wireless access points so we can inform the owners), security auditing of student computers, and the SIG Sec computer security challenge (controlled environment competition where participants compete to be the first to penetrate a protected computer system).

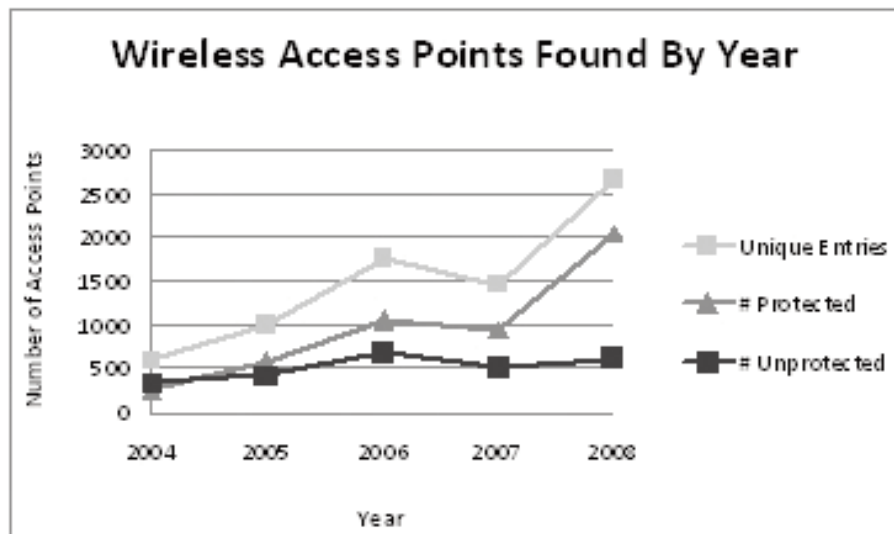
Highlights of the 2008-2009 academic year so far:

- 5th Annual Rolla Wireless Security Audit

Part 1: Cantenna Building Party led by the SIG Sec Officers (see photo)



Part 2: Wireless Security Audit Competition



- Presentation by Dr. Chellappan on trends in network authentication and his own research on a new secure authentication scheme called Predicate-based Authentication Service (see photo)



- Operation Fortify (see photo)
During Operation Fortify, a joint event between ACM SIG Security and Missouri S&T's IT department, students, faculty and staff were invited to bring in their computers for a free security audit and assistance in resolving any identified security vulnerabilities by SIG Sec officers. IT provided hardware support and free pizza & soda.



- Presentation by Mike Collins from the Risk Management team at Brown Smith Wallace LLC on penetration testing including a live demo.

For more information see S&T's ACM SIG Security website at: <http://acm.device.mst.edu/security/>.

Association for Computing Machinery-Women (ACM-W)

Jennifer Leopold is again the faculty advisor for ACM-W. The new president is Charissa Mathis, a sophomore majoring in Computer Science. This year ACM-W is sponsoring a CRA-W Distinguished Lecture Series that is intended to help recruit computer science graduate students from under represented groups (e.g., women, Blacks, Hispanics, and Native Americans). ACM-W also is planning some service-oriented events, specifically to benefit the local Russell House Shelter for Abused and Battered Women. For example, the ACM-W members are helping another student group with a spare change collection drive with all of the proceeds going to Russell House. Another group of ACM-W members is using the Alice programming language to develop an interactive computer game that will describe abuse situations, as well as the pros and cons of the various ways to deal with those situations. Russell House intends to make this computer game available to the K-12 residents at the shelter, and may make the game available to other shelters around the country.

Association for Computing Machinery (ACM)

Anyone who knows Matt Buechler, knows he is not above taking credit for someone else's work. When it comes to our S&T's local ACM Chapter, things are certainly no different. In the past year and a half since Matt was assigned as the organizations faculty advisor, ACM has succeeded like never before. It's membership has grown, participation is way up, fundraising is phenomenal, and many new external university relations are being formed. So while it is true that all of these great things have happened since Matt's arrival, the deeper truth is that his timing just happens to be coincidental. The real force behind ACM's recent accomplishments are because of its last two tenures of student leadership which just happened to take power around Matt's arrival. For the 2007-2008 academic school year we had President Josh Eads, Vice President Ben Murrell, Secretary Zach Zeman, Treasurer Derin Phelps, and Librarian Richard Allen. For the current 2008-2009 year we have President Ben Murrell, Vice President Zach Zeman (currently away on co-op), Interim Vice President Josh Eads, Secretary Andrew Schrader, Treasurer Jeff King, and Librarian Doug Kelly. There simply can not be enough said about these students and their leadership over ACM. They have taken a somewhat inactive organization and in under 3 semesters have completely revamped it to one of the most active and successful student organizations on campus.



S&T students compete and win 2nd at the University of Illinois-Urbana-Champaign's Artificial Intelligence Competition.



Attendance at the Student Design Showcase meeting



Setting up at MinerLAN our biggest social event of the year

During Photo's



Renovations in the Computer Science Building in rooms 212 & 213 were completed SP2008. They made a state of the art student lounge and computer Lab in these new rooms for our CS students.



Completion Photo's



Renovations of Computer Science Administrative offices started in July 2008 completed in October 2008.

Before Photo's



Clayton's Office



Supply Room



Dawn's/Main Office



Rhonda's Office



Ali's Office



Ali's Conference Room

During Photo's



Completion Photo's

Supply Room



Clayton's Office



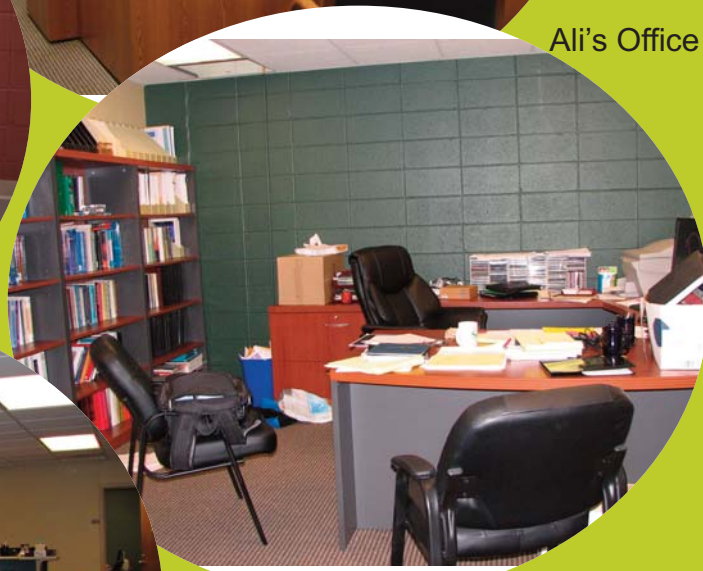
Rhonda's Office



Ali's Conference Room



Ali's Office



Dawn's/Main Office

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