

# Department of Computer Science

## Spring 2006 Newsletter

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Visit the Department's web page at:

[cs.umr.edu](http://cs.umr.edu)

E-mail us at:

[csdept@umr.edu](mailto:csdept@umr.edu)

### PHONATHON

#### DATES:

JANUARY 31

FEBRUARY:

1, 2, 6, 7, 8, 9, 12 & 13

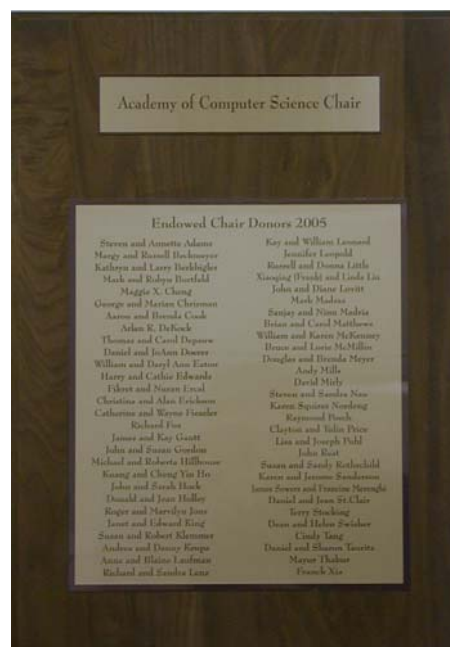
### A Historical Milestone:

## Our First Computer Science Chaired Professorship is Endowed

Five years ago, it would have been a dream to think we could raise \$2.2 million to establish an endowed chair professorship in the Computer Science Department. Today, it is a reality! With the help of dedicated and generous alumni, friends, and faculty, we have accomplished this dream and reached a milestone in the history of our department. We are proud of this great accomplishment and we thank each and every alum who made this possible.

The seeds for this endowment were planted five years ago with the help of a few generous alumni during Dr. Daniel St. Clair's chairmanship. Dan deserves much of the credit for initiating this endowment and making sure that the dream stayed alive. Last April, we received information that a rare opportunity existed to receive significant amounts of matching dollars from the UM system and UMR. The CS Academy and faculty took up the challenge and, in less than two months, with help from University Advancement, raised enough dollars to be eligible for the match. We thank our alumni, friends, and faculty for their support and loyalty to this institution. We also would like to offer special thanks to several alumni who contributed their valuable time and resources to this effort in a significant way: John Lovitt, Cindy Tang, and Carol and Brian Matthews.

Our September 2005 homecoming was devoted to the celebration of this historic event. A plaque was dedicated to recognize our alumni, friends, and faculty who made donations to the Academy of Computer Science Endowed Chair fund. You may read about the details of our homecoming celebration in this newsletter.





## Chair's Message

Greetings and best wishes for the New Year! I hope that you had a wonderful holiday season!

Once again you will read about some great things that are happening in your department. Before I share this exciting news with you, we would like to extend our deepest sympathies to Jean St. Clair and family for the passing of Dr. Dan St. Clair, our former chairman, a great person and beloved husband and father. Dan made significant contributions to the CS department and moved it forward in many ways. We are very grateful to him for his dedication and services to our department. He will be missed by many on this campus. We wish Dan's family strength and patience during this difficult time and ask that you keep Jean and the family in your thoughts and prayers.

This year, we will be searching for a permanent chair for the CS department. While the chair search continues, I have agreed to serve as the interim chair of the department. After fifteen years as a faculty member, I am very pleased to serve this great department in this capacity. And I hope, with the help of its faculty and staff, we will move the CS department to even higher ground.

### **News from the Department**

We are proud to announce the establishment of an endowed chair position in our department which was made possible through the generous contributions from alumni, friends, and faculty. We genuinely thank everyone who has contributed to this historic achievement. To celebrate this exciting event and recognize the generous contributions of our alumni, friends, and faculty, we held a special homecoming reception in the department on September, 30, 2005.

Our newest faculty member Dr. Ying Zhao has joined the department this fall. She received her PhD from the University of Minnesota. Her research areas are in Bioinformatics and Data Mining. We are delighted to have Dr. Zhao join our faculty.

### **Awards**

The computer science faculty continues to receive recognition for their outstanding teaching and research. Please join us in congratulating Jennifer Leopold for receiving the Outstanding Graduate Faculty Award from the Council of Graduate Students, and Clayton Price for getting the prestigious Outstanding Student Advisor Award from the MSM-UMR Alumni Association. We also want to congratulate Ralph Wilkerson for receiving a UMR Outstanding Teacher Award; Jennifer Leopold, Clayton Price, and Ralph Wilkerson for receiving the College of Arts and Sciences Excellence in Teaching Awards; and Rhonda Grayson, our secretary, on receiving the Computer Science Outstanding Service Award. Our congratulations also goes to Randy Canis, one of our adjunct faculty, for authoring a "Copyright Law" chapter for the publications "Handbook of Information Security" which will be published next month.

### **Research**

Research activity, publications, as well as funded research in the department continues to grow. This year, the department's external funding for research has reached record levels. We are delighted to see such a high level of research productivity in the department which, we believe, will have major impact in improving the quality of our graduate program and hence the visibility of our department nationally and internationally. Thanks to those faculty who have contributed to the research productivity of the department.

The department has identified *software lifecycle*, *critical infrastructure*, and *bioinformatics* as the three areas of excellence on which we should focus and invest our resources. A large majority of the CS faculty are doing research in one of these areas and have obtained significant funding in these research areas. We hope that this type of research activity will increase the department's visibility and reputation which, in turn, will help in attracting high quality faculty and students to our department.

## Chair's Message (continued)

### **Student Activities**

There continues to be a large number of student events in the department. The fourth annual Computer Science Awards Banquet was held in late April 2005 and it was a huge success. We awarded a large number of scholarships to undergraduate and graduate students during the awards banquet along with many great door prizes. We continue to seek company table, scholarship, and door prizes sponsorships for this event. Lastly, in mid September, we held our seventh Boeing sponsored pizza party for all CS students.

### **Our Alumni and Friends**

Our third homecoming reception for alumni and students was held at the end of September during UMR's Homecoming celebrations. This homecoming was a special one for the department. We dedicated a plaque to recognize our alumni, friends, and faculty who have made donations to the Academy of Computer Science Endowed Chair Fund.

Two outstanding alumni, Karen Squires Nordeng and Dean Swisher, were inducted into the UMR Academy of Computer Science (ACS) during the annual ACS meeting in Rolla in late April 2005. We would like to extend our congratulations to these distinguished alumni.

We wish to thank all of you, individuals and corporations, for your continued support in a variety of ways including scholarships and endowments, donations to the department, capstone projects for CS seniors, telling others about CS at UMR, and taking time to call or send a note. In these times of extremely tight budgets, your generous gifts to the department make a big difference!

We hope you will continue to keep in touch with us either by phone (573-341-4491), fax (573-341-4501), e-mail (csdept@umr.edu), and/or in person. Hopefully you can join us for next year's homecoming event.

If you are an alum, please take a moment to complete the alumni survey at:

[http://campus.umn.edu/irinfo/computer\\_science\\_survey\\_2004.htm](http://campus.umn.edu/irinfo/computer_science_survey_2004.htm)

If you are an employer of our graduates, please fill out the alumni survey at:

[http://campus.umn.edu/irinfo/Perseus\\_Surveys/2004/CS\\_2004\\_Employer\\_Survey.htm](http://campus.umn.edu/irinfo/Perseus_Surveys/2004/CS_2004_Employer_Survey.htm)

Thanks,



## Daniel C. St. Clair Memorial



Daniel Clay St. Clair was born June 30, 1943, at Keokuk, Iowa, the son of Lee and Bessie (Sharts) St. Clair. He graduated from Canton High School, Canton, MO., in 1961 and attended Culver-Stockton College, where he earned a B.A. in mathematics with a minor in chemistry in 1965. He earned an M.T.S. in mathematics with a minor in physics from the College of William and Mary, Williamsburg, VA., in 1969 and a Ph.D. in mathematics with an emphasis in computer science from UMR in 1975.

His dissertation, "A Block Orthogonalization Method for Nonlinear Regression" was completed under the direction of Dr. A.K. Rigler. Dan was enrolled in an NSF-sponsored summer class in Regression Analysis with Dr. Rigler as instructor. Dan's ability to acquire knowledge and his independence and initiative in expanding on that knowledge left a strong impression of Dan as an outstanding student. When Dan returned to UMR as a full time graduate student, Dr. Rigler felt truly privileged to serve as his Ph.D. advisor and was gratified by the process Dan was able to

make on his project, with little guidance beyond occasional conversations. With his combination of scholastic capabilities, his strength of character, his natural friendliness, and his even-tempered disposition, Dan won the admiration, respect, and affection of faculty, staff, and students alike throughout his time at UMR.

Dan taught junior high school, and college math from 1965 to 1978. After finishing his Ph.D. in 1975, Dan taught for several years at Western Kentucky University at Bowling Green, KY. In 1978 he joined the faculty of the University of Missouri-Rolla as an Assistant Professor of Computer Science. His first 21 years on the faculty were at the Engineering Education Center (EEC) in St. Louis between 1978 and 1999. At the EEC, he taught classes in Machine Learning, Data Mining, and Databases. From 1984 to 1985 he had a NASA/ASEE faculty fellowship at the Johnson Space Center in Houston, Texas. From 1987 to 1992 he was a visiting principal scientist at McDonnell-Douglas Research Laboratories, St. Louis. His very productive years in St. Louis led to many students completing their MS degrees under his direction. Most of these students worked in industry. They brought an application-oriented perspective to their graduate study that generated these material for themselves as well as consulting projects for Dan, who generously shared them with his colleges. In 1994, he served one year as interim chair of the Computer Science Department at UMR. In 1999, he became the permanent chair of the department and served in that capacity until his death. In the fall of 2000 he was a member of the first UM President's Academic Leadership class department chairs, and remained an active member of that group until last spring. Dan loved his job as department chair. He was a dedicated and concerned administrator. He genuinely cared about every problem brought to his attention, regardless of whether it was from students, faculty, or staff. Dan strengthened computer science alumni relations in a significant way. The Academy of Computer Science was founded during his chairmanship, and he regularly held meetings with CS Advisory Board and the CS Academy. He also initiated the first endowed Professorship in the Computer Science Department.

Dan's research interests were in the areas of machine intelligence, data mining, neural networks, and databases. He also conducted research in automated detection and evaluation of rail defects, nondestructive evaluation of aerospace structures, and intelligent intruder detection in computer networks. His research papers appeared in many conference proceedings, journals, and magazines including *BIT*, *IEEE Potentials*, *Journal of Imaging Science and Technology*, and *IEEE Transactions on Neural Networks*. He was a member of the American Association for Artificial Intelligence, the Association for Computing Machinery, ACM Special Interest Group in Artificial Intelligence, and the IEEE Computer Society.

Dan had several other interests, which kept him busy during his time away from academia. He was a regular member of the United Methodist Church, Wentzville. He liked fishing, hunting, and traveling, the first two being a natural result of his rural Missouri upbringing. Meramec Springs was a special place for Dan. He liked to tell about a physical education class he took in college where they were introduced to different "lifetime sports." He and his friends from the country were not too familiar with golf and tennis, but when it came to trapshooting and baitcasting, then they got to show off to the city kids. Dan enjoyed just visiting, and was comfortable talking with anyone about almost anything, and had the gift of easily making others comfortable talking to him. Dan and Jean loved going out to dinner with their close friends from Rolla on Friday nights. There were two general rules for these outings: have a good time and, to add a touch of adventure, don't eat in Rolla or at a franchised restaurant. The second rule's was Dan's idea and was broken sometimes, but he was strict about the first rule.

Dan and his high school sweetheart, Jean Barkley, were married in 1966 and spent 39 years happily together. They have two sons, Joe and Clay. Joe is an airline pilot and lives in Wentzville, MO., and Clay is an attorney, practicing in Illinois.

Dan was diagnosed with esophageal cancer in February 2004. His family, friends, and the UMR community were saddened at this unexpected news. He put up a spirited fight against this vicious disease, and even towards the end he still showed his sense of humor and his concern for others. On October 23, 2005, Daniel Clay St. Clair passed away at his home in Wentzville, MO. He is survived by his parents, Lee and Bessie St. Clair, Canton, MO.; his wife, Jean St. Clair, Wentzville; two sons, Joseph St. Clair, Wentzville, and Clay St. Clair, Columbia, ILL.; a sister, Laura Withers, Quincy, ILL.; two grandchildren, Garret Joseph St. Clair, Columbia, ILL. and Hollynn Marie St. Clair, Wentzville.

We all have been honored and blessed by knowing Dan and feel a great sense of loss at his passing. His faculty colleagues and university friends extend their sympathy to his family.

## Two Distinguished Alumni Are Inducted Into the UMR Academy of Computer Science

Two outstanding UMR computer science alumni, Karen Squires Nordeng and Dean Swisher, were inducted into the UMR Academy of Computer Science (ACS) during the annual ACS meeting in Rolla in late April 2005.

The Academy of Computer Science was established in 2003 for the purpose of recognizing MSM-UMR alumni for their outstanding professional achievement and success as well as providing advisory guidance and counsel to the UMR Computer Science Department and the college. Each year the academy honors several outstanding alumni for their contributions to the computer science profession and for their active involvement with the UMR CS Department.

The 2005 Inductees are:

**Karen Squires Nordeng**, the Director of Content Support Services for Pearson Educational Measurement (PEM), a subsidiary of Pearson Education, the world's largest education business. PEM has been a trusted partner in district, state and national assessments for more than fifty years. As a pioneer and largest comprehensive provider of educational assessment products, services and solutions, PEM helps states and large school districts meet the requirements of education reform.



Karen Squires Nordeng is responsible for the build-out of a new business segment within PEM, the implementation of an item and test development function to make PEM a full-service provider for assessments. Ms. Squires Nordeng leads the budget, financial and business development support for the Test and Measurement Services unit comprised of Consulting Research Services, Content Support Services and Psychometric Services. Under Karen's leadership, in less than three years PEM has secured eight contracts in item and test development worth over \$20 million. Before joining PEM's TMS Team, she led the IT Services function supporting PEM and two other business units. She restructured the IT Services function, implementing service-based costing, and IT process documentation and development during a three year period of double-digit growth within the supported businesses. Prior to joining Pearson, she held IT positions with Monsanto Company in the corporate, agriculture, chemical and pharmaceutical divisions.

Karen holds a Bachelor of Science degree in computer science from the University of Missouri—Rolla and a Masters of Business Administration from Washington University in St. Louis. At Pearson she is the first non-sales support person to receive the Most Valuable Player award from the PEM Sales and Marketing group for her outstanding support of increased sales. Karen has served on the Computer Science Advisory Board at the University of Missouri—Rolla for almost ten years. She is the founding President of the Greater Iowa City Area Dollars for Scholars chapter which provides scholarships for post-secondary education. She is the past chairperson of the Pearson Education Cares charitable campaign supporting United Way and Community Health Charities and was recently recognized for leading Pearson in a 42% increase in United Way giving.



**Dean Swisher**, vice president of technology and process integration at MedSynergies, a healthcare business service provider offering revenue cycle management for physician groups and institutions. He joined MedSynergies in July 2003 and comes from a management consulting career as partner at Ernst and Young with over twenty years of information technology experience where he headed their internal development and delivery of methodologies for consulting practitioners worldwide and vice president at Cap Gemini Ernst and Young. Dean has extensive international consulting with large client engagements in Indonesia, Greece, Canada, South Africa, Pakistan and the Far East including four years as vice president of Ernst and Young Case Technologies in Tokyo in a joint US-Japan venture in development, translation and sales of double-byte versions (i.e., Japanese, Korean and Chinese) of commercial I-CASE software.

ware.

Dean received a bachelor's degree in mathematics and physics from Missouri Valley College in 1969, earned a master's degree in computer science from University of Missouri-Rolla in 1970, and a master's degree of business administration from Central Missouri State University in 1978. He is a member of the Board of Directors for Camp Magic, a medical camp for children with chronic Crohn's Disease or Ulcerative Colitis, and he is a member of the Board of Advocates for Baylor University's School of Engineering and Computer Science.

## Computer Science Advisory Board Met in April 2005

The annual CS Advisory Board meeting was held on April 29, 2005 with a large attendance of the members following the CS Awards banquet the day before. The board had a full agenda and this year's discussion topics included; (i) how to increase the enrollment in CS, especially women and minorities, (ii) curriculum changes, (iii) how to get the software lifecycle integrated into the curriculum, (iv) distance education classes. There were lively discussions among the members and excellent suggestions were made to improve the CS curriculum and increase enrollment. We appreciate the time and dedication of the board members in our continuous efforts to improve the CS curriculum and the quality of education in our department. Their perspective provides 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@umr.edu](mailto:csdept@umr.edu) along with your short bio.

Members of the 2004-2005 board were:

Ken Brenneke (Boeing)

John M. Brown (Purina)

Robert Byrne (Boeing)

Richard Conn (Microsoft)

Jeff Herzog (Maryville Technologies)

John Hock (IBM)

Herb Krasner (Krasner Consulting & ECE at University of Texas)

Jim Lahm (Accenture)

Jim Leonard (Boeing)

Karen Squires Nordeng (Pearson Educational Measurement)

Bob Perry (Mastercard International)

David Schade (SBC)

Curt Schroeder (Lockheed Martin)

Juan Vargas (Microsoft)

## Distance Education Classes: M.S. Degree in CS in the Near Future

We continue to offer a large number of distance classes through the new School of Extended Learning. In the Spring 2006 semester, the CS department will be offering ten senior/graduate level distance classes over the internet. This number comprises 63% of our graduate offerings. These classes originate from the UMR campus as well as from the EEC in St. Louis.

The department currently offers a graduate certificate in Software Design & Development through distance education with more planned. Information about certificate programs can be found at <http://cs.umr.edu/dce.html>. In the past two years, we have been approached by several schools outside the United States to establish a complete master's program with them through distance education. Currently, we are making plans to offer a Master's degree in Computer Science via only distance class offerings.

Additional information about UMR distance classes can be obtained by visiting the following websites: <http://vcc.umr.edu/> and <http://dce.umr.edu>.

One of the projects in W2C lab directed by Dr. Sanjay Madria is on attacks and key management for secure data streaming. Here is a brief overview of the work currently under progress by the three PhD students (Jian Yin, Julia Albath, and Biswajeet Panja):



**Attacks in Sensor Networks:** Many sensor network applications, such as border security, emergency response operations in disaster environment and battlefield monitoring, run in untrustworthy environments and require secure communication against different types of attacks. The attacks such as black hole attack and wormhole attack cause an existing route to be broken or a new route to be prevented from being established. A black hole attack is a severe attack that can be easily employed against routing in sensor networks. In the black hole attack, a malicious node advertises that it is on zero-cost (low cost) paths to the destination, and then proceeds to drop the packets that it receives. We propose a hierarchical secure routing protocol for detecting and defending against black hole attacks. The protocol uses only symmetric key cryptography to discover a safe route against black hole attacks. A wormhole attack is also a severe attack where an attacker receives packets at one location in the network, tunnels them to another location in the network, and then replays them into the network from that location. We propose a **Secure Route** protocol against **Wormhole Attack** in sensor network (SeRWA) to build the secure route against the wormhole attack. We focus on how to build the secure route against the wormhole attack. We do not need any special hardware such as directional antenna or a precise synchronized clock to detect the wormhole attack.

**Secure Aggregation in Sensor Networks:** Wireless sensor networks (WSN) create a constant stream of data which flows from the sensing location towards an interface with the world, usually a more powerful computer, called base station. Since all communication is done via wireless radio links, security is an especially important topic. Most sensors run from a non-renewable energy source such as batteries and ways to increase the life of the network are constantly sought. Aggregation or the combining of several readings along the routing path has been shown to decrease the number of radio transmissions, generally the most expensive operation in a WSN. How to handle aggregation if security is required poses a new problem. There are two central issues for secure aggregation in WSN. At each aggregation point, it is important to ensure that the actual reading where used to calculate the aggregation. Due to the nature of WSN, infiltration of malicious sensors is possible and they could falsify an aggregate result. If data security is required and standard encryption schemes are used, only constant decryption, aggregation, encryption allows for security and aggregation. This slows down the data collection process and consumes additional energy. Encryption schemes are needed which allow for aggregation without decryption, only the base station needs to be able to decrypt the aggregate result. We are proposing some algorithms to handle secure aggregation in WSN.

**Key Management in WSN:** Sensor nodes have limited computation and battery power, and are not very reliable. A sensor network needs to be secure against eavesdrop when it is deployed in hostile environments. In order to provide security at low cost symmetric key based approaches have been proposed. An elliptic curve cryptography based approach has been implemented to facilitate the public-key cryptography. However, the scheme becomes effective in terms of memory usage, communication time and energy required with the rapidly growing network size. We propose an **Energy and Communication Efficient Group** key management (ECEG) scheme which reduces the memory usage, communication and energy in sensors. This scheme designed based on the idea that each node is pre-loaded with a key chain and an elliptic curve. In our scheme instead of computing the key by collaborating with other nodes a point of the elliptic curve broadcasted from the base station is used to compute the key. Simulations conducted using TinyOS to evaluate the proposed scheme shows that ECEG scheme significantly improves the communication and energy usage in computing the key over existing algorithms. In addition, we have also analytically evaluated algorithmic complexity and compared with other schemes.

Visit the  
W2C Lab at:  
[web.umr.edu/~cswebdb/](http://web.umr.edu/~cswebdb/)

# Natural Computation Laboratory



The Natural Computation Laboratory (NC-LAB) [<http://www.umn.edu/~tauritzd/nc-lab>], founded and directed by Dr. Daniel Tauritz, performs both fundamental and applied research in algorithms inspired by nature, with an emphasis on Evolutionary Algorithms (EAs), as well as more traditional artificial intelligence approaches such as multi-agent systems, reinforcing learning, and fuzzy logic. The current focus of the NC-LAB is a collaborative effort with Drs. Bruce McMillin and Frank Liu from the Experimental Computation Laboratory [<http://web.umn.edu/~ff/ECL>] and the Software Engineering Laboratories [<http://web.umn.edu/~fliu/selab.html>] respectively, and several of UMR's power engineers. This effort is funded by Sandia National Laboratories and is aimed to improve the robustness of the electrical power grid employing advanced power regulation devices.

The current members of the NC-LAB and their research areas are as follows:

Dr. Daniel Tauritz: director; supervises all research in the lab; main research interests are EAs and their applications; current emphasis is on designing custom EAs for optimizing the placement of flow regulation devices in transport network such as Flexible A/C Transmission System (FACTS) devices in the power grid,

Dr. Bruce McMillin: consults on all power grid related research lab,

Bill Siever: PhD student working on various aspects of power grid research; his dissertation topic is distributed reinforcement learning techniques for the cooperative control of FACTS devices,

Kate Smorodkina: PhD student working on power grid research; including fast power flow computation code, partial power flow computations for contingency analysis, mathematical analysis of performance index search spaces, and distributed Sequential Quadratic Programming,

Kalyani Radha: PhD student working on power grid research, including empirical studies of contingency spaces of performance indices and advanced natural computation techniques for FACTS device development.,

Matt Johnson: PhD student developing novel multi-objective EAs for computer music generation,

Josh Wilkerson: Masters student working on power grid research, including the study of multi-line contingencies and evolving cascading failures,

Christopher Gore: Masters student designing novel Learning Classifier Systems for stock market prediction,

Travis Service: Senior, developing multi-agent system simulation of power grids along with advanced power grid visualization,

Evan Wright: Sophomore, researching meta-algorithms for using distributed maxflow for coordinated FACTS device control, and

Eric Mertens: Senior, deploying Berkeley Open Infrastructure for Network Computing [<http://boinc.berkeley.edu/>] grid computing software on UMR campus support for computationally intensive research.

Visit the  
NC-LAB at:

[www.umn.edu/~tauritzd/  
nc-lab](http://www.umn.edu/~tauritzd/nc-lab)



## Newcomer to the Department



Ying Zhao joined the department of Computer Science in the fall of 2005. She received a PhD in computer science from the University of Minnesota in July of 2005. Her work in bioinformatics and data mining enhances the teaching and research in bioinformatics, especially in the application of data mining and machine learning techniques to biological data analysis. Her research interests include clustering on high-dimensional data, protein structure prediction, semi-supervised learning, and text-mining. She has spent the last summer doing research at Thomson Legal & Regulatory, a leading IT company that provides information solutions in legal domain. Dr. Zhao is currently teaching CS 253: Data Structures 2 and CS 404: Data Mining. She also serves as a member of the program committee of several international conferences including the fifth IEEE International Conference on Data Mining (ICDM '05) and the IEEE Bioinformatics and Bioengineering Conference (BIBE '05).

## Awards Received by Computer Science Faculty



The recipients of the College of Arts and Sciences Excellence in Teaching Award for 2004-2005 in the Computer Science department are Jennifer Leopold, Assistant Professor of Computer Science, Clayton Price, Instructor of Computer Science, and Ralph Wilkerson, Professor of Computer Science. This award honors those who make a special contributions to student retention. A committee of Distinguished Teaching Professors in the College of Arts and Sciences selected the award winners based on student teaching

evaluations of faculty members done by the Committee of Effective Teaching at UMR. Jennifer Leopold also received the Outstanding Graduate Faculty Award from the Council of Graduate Students; and Clayton Price also received the Outstanding Student Advisor

**Phonethon Dates:**

**Jan. 31**

**Feb. 1, 2, 6, 7, 8, 9,**

**12 & 13**

## UMR Outstanding Teaching Award for Computer Science



Dr. Ralph Wilkerson, Professor of Computer Science, has won an Outstanding Teaching Award for 2004-2005. The individuals receiving this award are selected by the Committee on Effective Teaching and are recognized at a luncheon given by the Provost.

## Alumni News

**James Louis Ressler** after over eighteen years with Hughes/Raythem has changed jobs and is currently working for Northrop-Grumman in St. Louis. He is looking forward to new research and development with the National Geospatial Intelligence Agency.

**Larry Galper** is proud to announce that Claire Galper Zahnd, Summa Cum Laude in CS and Math-1998, is a partner in Zahnd Industries, an IT company based in the San Frisco Bay area.

**Kathryn Becker** is still in Balton, Missouri after twenty years. The boys are now thirteen and ten. She is not employed but keep very busy volunteering at the boys' schools.

**Cheryl Ann (Dodson) Steffan** completed a second degree in Civil Engineering in May of 2004 and is now an Environmental Engineering with the Missouri Department of Natural Resources.

**Dr. Rochelle Boehning** retired from California State University in December of 2004 after forty-five years of teaching.

**Janice Breidert's** son, Stephen Werner Breidert, will graduate from UMR with a degree in Computer Engineering and Mathematics in May of 2005. He is an honor roll student who will be a third generation Rolla graduate.

## Computer Science Alumni Survey

Last year's newsletter contained an alumni survey of our program. This information is vital to assess and ensure the quality of the Computer Science degree. If you responded last year, thank you, if you have not responded, please visit our web site at [www.cs.umn.edu](http://www.cs.umn.edu) and navigate to "Alumni" then to surveys.

For those of you that graduated this last year, we would really like your feedback about the program after a year in your professional career. The survey is quite similar to the exit interview survey that most of you filled out and replying to the alumni survey will help us keep track of how well we did in your professional development

## Computer Science Employer Survey

If you are an employer of UMR Computer Science graduates, we would also like to hear your assessment of how well we did in preparing your new employees; the Employer survey is also at [www.cs.umn.edu](http://www.cs.umn.edu).

# Computer Science 2004 Awards Banquet

The Fourth Annual UMR Computer Science Department Awards Banquet was held on April 28, 2005. The banquet was well attended by students, faculty, alumni and friends. A short reception preceded the banquet where students had the opportunity to visit with alumni and sponsors. Mr. John Lovitt, Vice President Rational Software (retired), CS alum and President of the department's Academy of Computer Science, presented a talk entitled "Thoughts on a Career in Computer Science". The Computer Science Department awarded several scholarships, handed out numerous awards and recognized faculty for their dedication to the department. Distinguished speaker awards were given to Herb Krasner, 1st CS Awards Banquet; Karen Squires Nordeng, 2nd CS Awards Banquet; Jean Holley, 3rd CS Awards Banquet and John Lovitt, 4th CS Awards Banquet. The evening concluded with door prizes and games, hosted by Matt Buechler. Banquet sponsors purchased tables for the event. The money from the table purchases made it possible for all CS majors to attend the banquet free of charge. The 2006 Fifth Annual Computer Science Awards Banquet is scheduled for April 27, 2006. If you are in the area, we would be honored to have you join us. Additional information will be available on the CS web page. If you and/or your company would like to participate in the 2006 banquet, please contact Carleen Humphrey at [humphrey@umr.edu](mailto:humphrey@umr.edu). Additional information about the banquet can be found by going to [cs.umr.edu](http://cs.umr.edu) and navigating to "Department Activities".

Sponsors for the event included:

Maryville Technologies

Tellabs

L-3 Communications Integrated Systems

James Sowers

Appistry—Michael Groner

Accenture

Pearson Education

The Boeing Company

Garmin

Microsoft

Rolla Book and Supply

Eclipse

UMR Bookstore

Little Caesar's Pizza



**Do not miss the  
Computer Science  
2006 Awards  
Banquet:  
April 27, 2006**

# 2005 Scholarship Recipients

**Accenture**

Christopher Allen  
Elijah Biesemeyer

**John W. Hamblen**

Phillip Ponzer

**Rex Widmer Software Archaeology**

Phillip Ponzer

**Howard & Lois Cook**

Nathan Alferman

**Garmin International**

Matthew Staats

**Lovitt Internet**

**Computing Fund**

Yadi Ma  
Abhishek Tripathi

**Mark X. Stratman**

John Gibbons  
Adam Nichols

**Toshiba**

Yan Sun  
Sojan Markose

**Ellen M. Hodges**

Jessica Williams  
Laura Woodard

**Boeing**

Valerie Houseman  
Kristin Loesch  
Lisa Guntley  
Laura Woodard  
Sarah Garafalo  
Jessica Williams  
Andre Nwamba

**CS Alumni Scholarship**

James Jolly  
Walter Kopecky  
Anthony Jones  
Charles Tullock  
Ryenne Dolan  
Jason Bright

# 2005 Special Award Recipients

**CS Leadership**

Kristin Loesch

**CS Mentor**

Brian Sea

**CS Ambassador**

Brian Sea

**Outstanding CS**

**Graduate Assistant**

Bill Siever

**CS Academic Achievement**

Gregory Letrello  
Kenneth Rodgers  
Jason Sprague  
Kevin Tarwater  
Evan Wright  
Ryenne Dolan  
Will Hubert  
Colin Stagner  
Thomas Szalapski  
Nathan Alferman  
Christopher Eckhard  
John Gibbons  
Lisa Guntley  
Charles Huber  
Jason Yonker

**CS Academic Achievement (con't)**

Anthony Blum  
Andrew Langefeld  
Brian Church  
Xiongzi Hu  
Prashanth Kannan  
Kumar Rathore  
Adrian Rieder  
Latesh Semrani  
Ekaterina Smorodkina  
Ryan Underwood  
Christopher Walker  
Yin Liang  
Yan Sun

## Computer Science Annual Boeing Pizza Party

The Computer Science Department and The Boeing Company sponsored the annual “get acquainted” Pizza Party for all computer science majors on Wednesday, September 14, 2005. This was the seventh year for the Pizza Party. The UMR Alumni Boeing reps were Charles Hayes, David Fries, John Woytus and Terry Caton. Door prizes were given by Boeing. Approximately 150 computer science students, faculty and staff attended the party.



*Do not miss the  
2006 Computer  
Science  
Homecoming  
October 20, 2006*

## Homecoming 2005

Homecoming 2005 was a reception and celebration of the establishment of an endowed chair position in the department. The endowed chair position was made possible through generous contributions from alumni, faculty and friends of the department. Laboratory tours of undergraduate and graduate research were given. Alumni attending the activities were Susan Rothschild '74 and Diane Eppestine.

CS Homecoming 2006 will be held on Friday, October 20, 2006. Please watch our web site for details, we would love to have you attend.

## Association for Computing Machinery Committee on Women in Computing



In August of 2005, the UMR chapter of the Association for Computing Machinery Committee on Women in Computing (ACM-W) was chartered. The purposes of this organization are to celebrate, inform, and support women in computing, and to work with the international ACM-W community of computer scientists, educators, employers, and policy makers to improve working and learning environments for women. Currently, the UMR chapter of ACM-W has approximately twenty members. The faculty advisor is Dr. Jennifer Leopold, Assistant Professor of Computer Science.



## Artificial Intelligence Tournament



Winter Semester 2003 gave birth to a new UMR tradition: the Artificial Intelligence (AI) Tournament Series, created and organized by Dr. Daniel Tauritz and hosted by the Computer Science Department. This series follows a tradition of in-class tournaments in CS 347— Introduction to Artificial Intelligence, but aims to broaden that scope by inviting campus-wide participation in public tournaments and having formal awards ceremonies. Every semester this tournament gives students, faculty, and staff a chance to test their skills in designing and implementing AI by having their creations compete against each other and humans. Each academic year a new challenge, typically a board game, is chosen to be solved during that fall and spring tournament. Three winners are chosen each semester and presented with trophies and prizes at the Graduation Jubilee by Dr. Paula Lutz, the Dean of the College of Arts and Sciences. Each semester that name of the first place winner is engraved on a perpetual plaque and displayed in the trophy case on the second floor of the CS building.

The 2004-2005 academic year featured chess, a classic challenge in Artificial Intelligence. The fall 2004 winners were first place: Travis Service (human player), second place: Travis Service (his computer player), and third place: David Cape (human player). Thanks to Microsoft for sponsoring the prizes that semester. The winners in spring 2005 were, first place: Travis Service (again as a human player), second place: Chad Deshon (computing player), and third place: Jimmy Townsend (human player). New in spring 2005 was the participation by a number of students from Rolla Public High School. Thanks to Network Appliance, Inc. in St. Louis for sponsoring the prizes that semester.

The 2005-2006 academic year challenge is the board game Othello (also known as Reversi). The fall 2005 tournament will be held on Sunday, December 4th and the spring tournament is tentatively scheduled for Saturday, April 29th. Additional information can be found at <http://web.umn.edu/~tauritzd/AI-Tournament/>.

Dr. Tauritz is always looking for (corporate) sponsors for the AI Tournament Series (great publicity). For more information, E-mail him at [tauritzd@umn.edu](mailto:tauritzd@umn.edu).



## Association for Computing Machinery Special Interest Group: Security

UMR Association for Computing Machinery (ACM) student branch Special Interest Group: Security (SIG Sec) is a computer/network security branch of ACM that was founded four years ago and is now chaired by Jason Trent and Joshua Maib and the faculty advisor is Dr. Daniel Tauritz. We are a group of people that are interested in computer and network security, and at meetings we have variety of speakers come to talk about software vulnerabilities and about security projects and research. We also do our own security projects like building cantennas (antennas to add to wireless cards that are made from soup cans, coffee cans or Pringle cans), wireless auditing (mapping open wireless access points so we can inform the owner), and red team vs. blue team ( a competition in a controlled environment where each team defends their server from the attacks/attempted entry of the other team). We meet every other Wednesday night at 7:00 p.m. in CS 209 and everyone should come if they have an interest n computer or network security.

### Highlights from last year include:

Cantenna Building Party led by Jason Trent.

Wireless Security Audit event: Total unique access points: 589; Total unprotected: 330 (56%)

Rolla TV Interview about the Security Audit conducted in November.

Brian Buege gave a presentation on BotNets, Discovery and Defense.

Cracking Basic Encryption

Dr. Ann Miller presented a Discussion of Attack Scenarios and Cryptovirology

Karen Shanklin from Sandia National Labs gave a presentation on the recent security research being done by Sandia Center for Cyber Defenders.

In a joint meeting between ACM SIG Security and the Society of Women in Engineering, Elonka Dunin gave a presentation on cryptography.

### Topics this academic year (2005-2006) include:

Students from the Sandia Center for Cyber Defenders UMR Node will be discussing their research projects conducted during Summer 2005.

Presentation by student that went to the DefCon conference this summer about some of the highlights and key topics discussed there.

Cantenna building party for the wireless security audit to be conducted.

Wireless security audit of Rolla 2005, followed by another analytical article about our findings with comparison to last year's published findings.

Wireless Scavenger Hunt

Series on Reverse Engineering

**Phonathon**

**Dates:**

**Jan. 31**

**Feb. 1, 2, 6, 7,**

**8, 9, 12 & 13**

## Upsilon Pi Epsilon (UPE)

This year, the UPE continues to aid the department in its admittance of new students. For the past two years, new UPE pledges have been tasked with calling incoming freshman, as well as high-school students who have expressed interest in the UMR Computer Science program, to answer any questions about the department of the school that these students may have. It is very likely that this process will continue on indefinitely as the years progress, as the higher-ups in the department have expressed great enthusiasm over the results each semester.

## Keeping in Touch

**Randy Canis** continues to teach CS 317 (Computers and the Law) and EE 385 (Patent Law) while working full time as a patent attorney at Greesfelder, Hemker & Gale, P.C. (St. Louis, MO). He currently serves as the president of the Missouri Bar Technology and Computer law committee and authored a chapter on copyright law for the Handbook of Information Security. Randy and his wife Terri are especially pleased to announce the birth of their son, Evan, during the summer.

**Dr. Maggie Cheng** resumed CS 385 in Fall 2005, it has not been offered for many years. She enjoys teaching this class very much, With a new NSF-funded project, her schedule is busier than ever. She has been invited to speak at the Old Dominion University and serve NSF as a panelist.

**Dr. Jennifer Leopold** is co-investigator on a recently awarded \$664,000 NSF grant for the Morphology Net digital library project ([www.morphologynet.org/](http://www.morphologynet.org/)). She is the faculty advisor for the newly chartered UMR Chapter of the ACM-W student group. In the past year, Dr. Leopold has also received a UMR College of Arts and Sciences Excellence in Teaching Award, a UMR Council of Graduate Students Outstanding Graduate Faculty Award, and a UMR Outstanding Teaching Award given by the School of Extended (Distance) Learning.

**Dr. Frank Liu** works in software engineering application in FACTS Power networks. This work is supported by NSF and Sandia National Laboratories. Dr. Liu continues his research collaboration with the software engineering center at the Toshiba Corporation. He visited the British Telecom as a research fellow in July 2005 to work on non-functional requirements specification for Next Generation Operation Support Systems (NGOSS) a standard in the telecommunication industry. Dr. Liu teaches software testing, quality assurance, data structures, and software engineering II.

**Dr. Sanjay Madria** is directing the W2C (Web and Wireless Computing) Lab, and is currently busy with his funded research projects. He graduated three students last year, and now is supervising seven PhD and Master students for their thesis. Dr. Madria also has two undergraduate students working for NSF REU for one year in the W2C lab. He continues to teach courses in the area of web and wireless computing.

**Dr. Bruce McMillin** and his colleagues continue their work in Critical Infrastructure Protection for the Electric Power Grid. He continues as Graduate and Research Coordinator. On the departmental research front, funding broke a new departmental record of \$1.6 million and keeps Computer Science on track to meet campus goals. We're holding fairly steady on graduate enrollment despite losses in graduate enrollment nationally. The certificate programs are growing in enrollment ([dce.UMR.edu](http://dce.UMR.edu)) and are a popular way for working professionals to bridge into a graduate program.

**Dave Mentis** continues to teach CS 74 (Introduction to Programming in C++) and CS 158 (Discrete Math). He is still involved in the department's computer systems administration. Mr. Mentis and his family live on their farm and are always involved in a variety of projects.

**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. Dr. Miller is also the Assistant Chair for Computer Engineering within the Electrical and Computer Engineering Department.

**Clayton Price** never ceases to enjoy his teaching and advising duties for the department. Every semester seems to bring new and surprising twists. CS 328 keeps him jumping and CS 53 is always fun. But helping with the organization and execution of the annual Awards Banquet in April and being master of ceremonies was a totally new experience and one he hopes to repeat. Mr. Price is the proud recipient of two advising awards for the last year: The University of Missouri-Rolla Freshman Advising Award and the MSM-UMR Alumni Association Advisor of the Year Award.



## Keeping in Touch (con't)

**Dr. Chaman Sabharwal** continues to teach Data Structures II (CS 253) and Java GUI and Visualization (CS 342). In the spring of 2006 he will teach a new course, Modular Software Systems Design and Development (CS 301). He is the Multimedia track Chair of ACM Symposium on Applied Computing 2006. Dr. Sabharwal still commutes back and forth from St. Louis.

**Dr. Daniel Tauritz** continues to fine-tune his advanced graduate course on Evolutionary Computation (CS 448) as well as his Artificial Intelligence course (CS 347). Two projects from his CS 448 course were presented at the 6th International Workshop on Frontiers in Evolutionary Algorithms (FEA 2005) held in conjunction with the 8th Joint Conference on Information Sciences (ICIS 2005) from July 21-26, 2005 in St. Lake City, Utah. He also sponsors the Artificial Intelligence Tournament held each semester (see article) and is enjoying his fourth year as the UMR ACM Student Chapter SIG Security advisor (see article). Since December 2004 he has been the UMR coordinator for Sandia National Laboratories' Center for Cyber Defenders (CCD) and during summer 2005, he brought a team of outstanding UMR students (three from CS, one from CpE) to the CCD as summer interns. On the research front, Dr. Tauritz continues to lead and expand the National Computation Laboratory (NC-LAB) whose main focus is applying natural computation techniques, such as evolutionary algorithms, to Critical Infrastructure Protection; currently there are three PhD, four MS and two undergraduates students working in the NC-LAB on a project to increase electrical power grid reliability.

**Dr. Mayur Thakur** taught two courses last year: Analysis of Algorithms in fall 2004 and Advanced Algorithms in spring 2005. He is continuing his research in real-world sub-network discovery and vulnerability analysis, reducibilities in complexity theory, and sets of low information content. With UMR researchers, he is studying relationships between nondeterminism and witness functions, design formal models for individual investors, and developing formal models for distributed control. He spent the summer of 2005 as a visiting assistant professor at Northeastern University in Boston. He plays in the faculty golf league, in which his team placed first (due in large part to his frequent absences) and last (due in large part to his presence), respectively, in two past semesters.

**Dr. Ralph Wilkerson** continues to work as the Associate Dean of the College of Arts and Sciences for Graduate Studies and Research. He was awarded the College of Arts and Science Excellence in Teaching Award as well as a UMR Outstanding Teaching Award.

**Dr. Donald Wunsch**, Mary K. Finley Missouri Distinguished Professor, director of the Applied Computational Intelligence Laboratory, was elected to the 2005 class of IEEE Fellows. He continues research collaboration with Boeing Phantom Works in Seattle, where his former CS student Paul Pigg works, and with Sandia National Laboratories, where his former CS student Dr. Sam Mulder works. Other research activities include adaptive reconfigurable telecommunications networking, bioinformatics, smart sensors, fuzzy logic, the game of Go, and evolutionary computation. He chairs the Computer Security Task Force, is the UMR representative to the University of Missouri Bioinformatics Consortium, and President of the International Neural Networks Society. He is also an Action Editor of the Elsevier journal Neural Network. He has produced nine PhD's (five from UMR), and two more are scheduled to finish in November 2005. Dr. Wunsch travels frequently, and is sometimes able to bring along his wife Hong, and six year old son, Donnie, who is learning chess and loves travel as much as his dad.

**Phonathon Dates:**

*Jan. 31*

*Feb. 1, 2, 6, 7, 8, 9,*

*12 & 13*

## Keeping in Touch (con't)

**Dr. Franck Xia's** research activities span several fields, ranging from discrete differential geometry and computer vision to software engineering. He is an associate editor of the Pattern Recognition journal, Elsevier, and serves on the program committee for several international conferences. In the field of computer vision, his long-term interests remain seeking a better representation of objects for machine vision and pattern recognition systems. Dr. Xia is developing a new differential geometry theory that can be directly applied to three-dimensional digital objects in computer images. These objects are intrinsically irregular for engineering. Dr. Xia is focusing on developing fundamental theories metrics and methods, in particular a general semantics theory for software artifacts, for software construction. His students are implementing the new semantics theory with an open-source CASE tool which would enable an early detection of semantics errors in software specifications, leading to a cost reduction for software projects. Currently, Dr. Xia is responsible for teaching Programming Languages and Translator (CS 236), Software Engineering I (CS 306) and Object-Oriented Analysis and Design (CS 308). He enjoys teaching these courses and integrating the most recent research outcomes, including his own results, into these courses.

**Dr. Vincent Yu** currently teaches numerical methods in CS and web programming and systems analysis in IST. Dr. Yu plans to offer a new CS graduate course in Software agent Simulation and Modeling in spring 2006 and a new IST course in Business Intelligence in fall 2006. Recently, Dr. Yu and Dr. Bih-Ru Lea from the business administration department were awarded a summer research fellowship from British Telecom to conduct a project, "A Text Mining Enhanced Stakeholder Monitor in an Intelligent Enterprise Decision Simulator". By utilizing text/data mining, and software agents, Dr. Yu created a prototype that analyzes unstructured news articles and creates predictive models to monitor activities on new technologies among BT's stakeholder. As a result, the prototype provides critical information that can be used to predict possible changes in service features and technology trends from the stakeholder and, hence, facilitates the strategic planning in new technology adoption for the company.

**Carleen "Corky" Humphrey** is keeping busy with departmental duties, this is her 7th year in the Computer Science Department, the faculty in the department are a great group to work with, never a dull moment around here. She spends all her free time with her husband, children and all the grandkids: Briar (8), Abigail (19 months), Lily (7 months) and Madeline (7 months). She enjoys every minute she gets to spend with her family and friends.

**Rhonda Grayson** is beginning her 3rd year with the Computer Science Department and it continues to be an enjoyable experience, the faculty and students in the department are a wonderful group to work with and there is never a dull moment. In her free time Rhonda and her husband continue to follow their son, Coy (17), on the rodeo circuit. They enjoy their time together and watching Coy continue to grow in the sport of bull riding. Rhonda is also helping her son prepare for college in the fall of 2007.

# UMR COMPUTER SCIENCE DEPARTMENT

# Donations From Alumni And Friends

Less than \$100		Codespoti, Daniel J.	1974	Gaitros, Donald L.	1966
Alexander, Mary C.	1971	Cooper, Charles J.	1971	Galli, Donald H.	1974
Altheide, Phyllis	1985	Court, Michael R.	1973	Gao, Xiangling	1996
Anderson, Glenn R.	1973	Cox, David	1983	Gebhardt, Thomas V.	1978
Ashwell, Tracey	1995	Crane, Lynn	1984	Geiger, Christopher	1986
Aubuchon, Joseph F.	1983	Craven, Paul	1996	Gieseking, Paul E.	1973
Augsburger, Laura	1985	Crosbie, Mark	1986	Goetting, Karla K.	1984
Austin, Christopher L.	1986	Dagestad, Pamela S.	1978	Goetz, Carl	1984
Becker, Kathryn A.	1976	Daniel, Kathleen M.	1979	Grose, Daniel	1977
Beckerle, Kelly	1988	Danz, Steven	1987	Grotefendt, Judith R.	1974
Beckmeyer, Margy	1973	Daum, Marilyn S.	1980	Guevel, Lawrence A.	1976
Biggs, Roger	1987	Davis, Sherry L.	1985	Guntley, Stephen P.	1978
Birdsell, Clifford J.	1982	Dearth, David W.	1968	Hagedorn, Gerald	1996
Bischel, Pat	1987	Debner, David E.	1968	Hall, Allison	1997
Boehning, Rochelle L.	1983	Derryberry, Darrell W.	1985	Hall, Donald E.	1974
Bogener, Shawn	1996	DeSalvo, Jason	1999	Harrington, George	1986
Bohn, Ellen B.	1974	Doerer, Daniel	1988	Harrington, Laura	1983
Bollinger, Terry B.	1977	Drewes, Laurie	1985	Hayden, Bruce	1983
Bond, Laura	1986	Dunford, Randall B.	1974	Hayes, Kevin	1988
Booth, Brian	1997	Edwards, Harry K.	1964	Herman, Bradley	1981
Bowman, Charles S.	1986	Ellis, Michael E.	1976	Herold, Lawrence	1974
Brady, Amber	1983	Erickson, Christina K.	1975	Hickman, Lewis	1996
Brand, Ann	1984	Erickson, Rodney J.	1983	Hiebert, Gregory	1982
Breidert, Janice E.	1973	Estep, Ronald L.	1971	Hilleary, Alexander	1976
Bremehr, Dan	1983	Fannin, David	1992	Hilleary, Cynthia	1976
Brenneke, Kenneth J.	1978	Farley, Mary Ann	1984	Hillhouse, Michael	1975
Breuer, Gregory	1990	Farley, Stanton K.	1978	Hilliard, Anthony	2000
Brown, Daniel J.	1974	Feeler, Preston	2002	Howard, Steven	1981
Bruhn, Kurtis	1987	Fellows, William	1998	Hudnut, Mary	1978
Bryson, Dale M.	1970	Field, Jeffery	2003	Huff, Donald	1993
Buckley, Jarod	1996	Fisher, Michael	1971	Hughes, Jason	1995
Bumpus, Gary	1971	Foehrweiser, Roger	1987	Jedlicka, Marla	1987
Byrd, Samuel	1998	Ford, Elizabeth	2001	Johnson, Andrew	1974
Cameron, Jill	1984	Fox, Richard	1986	Junk, Pamela	1995
Childs, Michael	1998	Frager, Alan R.	1974	Kennedy, Kelly	1986
Clarkson, Ernest	1974	Francis, David H.	1975	Kern, Steven	1992
Clifton, Arlene K.	1972	Freiberger, Keith	1984	King, Janet	1980
Cochren, Stephen	1992	Fugina, Julie	1994	Koenig, Gary	1969

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Kornfeld, Paula J.	1979	Mitchell, John	1983	Schafale, Richard G.	1973
Krasner, Herbert C.	1973	Monsees, Robert	1970	Schaper, Gary E.	1993
Krishnamurthy, Bharadwaj	2003	Moore, Joseph R.	1972	Schath, Michael	1986
Kuebler, Kenneth L.	1970	Moore, Robet	1981	Scheer, John	1988
Kunz, Frederick	1978	Moutrie, Chester L.	1968	Schepflin, Michael	1976
Lamb, Wayne	1984	Murrish, Jeremy	1997	Schneider, Susan	1982
Langan, Robert	1986	Nagawiecki, Gregory	1984	Schoenefeld, Karl	1972
Langer, Richard	1983	Newcomer, John	1989	Schroeder, Curtis	1988
Laufman, Anne E.	1983	Niedergerke, Robert L.	1991	Segural, Lynn	1987
Lawson, Lessa	1977	Oldroyd, Juanice E.	1983	Serban, Cristina	1993
Leitz, Carol Ann	1982	Olmstead, Shelia M.	1985	Settle, Benjamin A.	1983
Lenz, Richard G.	1974	Omohundro, Warren C.	1975	Shi, Yuning	2000
Leonard, Kay	1977	Ortbals, Robert J.	1978	Shipman, Lee	1993
Liao, Ruijia	1996	Osborne, Carol	1985	Simon, Kimberly	1976
Lindstrom, John A.	1973	Ott, James	1974	Sinn, Elizabeth A.	1976
Loesch, Janet L.	1980	Owensby, Roger	1986	Sipp, David	1996
Loesch, Terry L.	1980	Pace, Gary Glen	1984	Sisko, Bruce	1987
Lorenzen, Stanley D.	1975	Parrett, Minh T.	1979	Smith, Brian	1987
Madras, Mark	1978	Parsons, Clyde T.	1972	Smith, Neil	1968
Marlow, Erika	2002	Perry, Corinne	1985	Sorrell, Karen	1980
Marsh, Charles	1976	Pfeiffer, Ronald	1977	Stager, Scott P.	1970
Martin, Bennie F.	1986	Phillips, William	1993	Stalnaker , Kevin W.	1979
Maurseth, Vicky J.	1974	Pile, Thomas	1979	Stanley, Denise	1984
Mausshardt, Charles	1983	Plag, Darlene	1981	Steelman, Rhonda L.	1984
Mayberry, Christopher	1998	Posch, Raymond	1969	Steffan, Cheryl A.	1969
Mayberry, Mark	1987	Post, Mark	1978	Stone, Barry N.	1978
McAdams, Patricia A.	1977	Puhl, Lisa Joan	1982	Swofford, Forrest	1972
McBride, Gregory C.	1975	Pundmann, Joel	1979	Swoboda, Scott	1994
McClanahan, Ronald D.	1977	Queen, John	1981	Tadda, George P.	1989
McCleary, Ronnie	1973	Rafferty, Patrick V.	1975	Tatum, Carolyn	1982
McCormick, Craig	1968	Reading, Patrick	2002	Taylor, Charles	1973
McLaughlin, Ellen	1989	Rehkop, Thomas	1974	Taylor, Timothy	1987
McLeod, Jeffery	1992	Ressler, James	1986	Thies, Peggy	1985
McMahon, Thomas	1995	Richards, James L.	1972	Thilker, Steven	1991
McNally, John	1983	Richesson, Jennifer Jo	1994	Thomas, Gary	1978
Mersinger, Rozann	1981	Robertson, James	1967	Thornberry, Pamela	1987
Messmer, Kevin	1988	Robertson, Kevin	1997	Thorsell, Carl	1969
Miller, Larry	1984	Sage, Barry E.	1980	Treptow, Eric	1981
Mills, Andy Ray	1989	Sanderson, Karen	1985	Uebele, Cynthia	1982
Mitchell, Deborah	1984	Santos, Carmela	1996	Utrecht, Daniel	1982

Underwood, Diane E.	1981	Abshier, John	1983	Dearth, David W.	1968
Vandergriff, Matthew	1998	Adams, Steven	1982	Denney, Stephen	1994
Vandeven, John	1979	Androlewicz, Thomas R.	1977	DePauw, Thomas J.	1973
Veatch, Bobby Ray	1982	Au, Jason	1988	Dillon, Janet	1982
Veden, Leonard S.	1973	Bailey, Dr. Wayne P.	1976	Dimmick, Marijo	1992
Walker, Joseph D.	1974	Bardsley, Jeannine M.	1983	Doering, Dennis	1973
Walker, Rhonda A.	1977	Batcheler, Joseph	1995	Doerr, Jerry W.	1967
Weber, Linda	1966	Beckmeyer, Margy A.	1973	Donze, Robert J.	1972
Wegman, John L.	1975	Berkbigler, Kathryn M.P.	1973	Drake, Sandra	1993
Westermayer, Jill A.	1976	Bevans, Judy	1985	Dupont, Steven J.	1974
Wexell, Wesley Laverne	1997	Biermann, Scott	1993	Eaton, William A.	1970
White, James J.	1974	Bodeman, Alan	1972	Ehlmann, Bryon K.	1970
Wieberg, Peggy A.	1986	Boecker, Mark S.	1974	Erickson, Christina K.	1975
Wilfling, Todd	2003	Bonney, David	1975	Estep, Ronald	1971
Wilkerson, Ralph W.		Bortfield, Mark	1979	Feldmann, Robert C.	1980
Wilkins, Arthur T.	1978	Brandon, Dwight W.	1983	Fieseler, Catherine N.	1980
Winfield, Scott B.	1973	Braun, Paul A.	1981	Fischer, Thomas W.	1976
Wiseman, Susan Marie	1987	Brewer, David W.	1969	Flenniken, Gary	1986
Wolenski, David	1985	Brown, Christopher	2002	Fugina, Julie	1994
Wood, Richard	1987	Brune, Charles	1978	Ganofsky, John R.	1978
Work, Paul R.	1990	Brune, William	1973	Gantt, James	1972
Workman, J Douglas	1971	Buch, Brent	2000	Gentry, Timothy W.	1977
Woytus, John Martin	1987	Burke, Terence	1995	George, John	1972
Wren, Frances K.	1978	Butrus, Diane	1985	Gerlt, Robert	1989
Wurtzler, Daniel	1982	Canis, Randy L.	1997	Gieseking, Paul E.	1973
Wurtzler, Pamela	1981	Canis, Walter	1972	Goertzen, Patrick H.	1982
Wynn, Scott Douglas	1989	Carson, David J.	1975	Gordon, John	1988
Yarnall, Charles F.	1976	Chrisman, George F.	1969	Gower, Marcia	1989
Yek, Hong-Seng	1985	Coffman, Mary B.	1978	Graham, David	1983
Yu, An-Chi	1988	Compton, Laura	1990	Graves, Kyle	1991
Ziaja, Kathryn	1993	Cook, Aaron L.	1977	Guevel, Lawrence	1976
		Cook, Thomas	1985	Haines, Benjamin	1985
		Cornell, David	1986	Haldiman, Tina	1985
More than \$100		Court, Michael	1973	Hall, Carla	1994
Abernathie, Dale	1991	Cox, Steven	1998	Hall, Charles	1983
Abraham, Steven	1995	Crume, James L.	1981	Harrigan, George	1986
Abshier, John C.	1983			Hawthorne, John	1966
				Hayes, Kevin Brian	1988
				Hearst, Dale	1972

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Hedgpath, Jeffery	1996	McKenney, William	1972	Rothschild, Susan H.	1974
Hilleary, Alexander	1976	McMahon, Thomas	1995	Rushton, Melvin A.	1975
Hirschbuehler, Daniel C.	1980	McMillin, Bruce		Savells, Kenneth C.	1974
Ho, Kuang C.	1971	McNicholl, Daniel G.	1980	Scarponcini, Paul	1988
Hock, John R.	1982	Meier, Curtis P.	1983	Scherer, Keith W.	1982
Hojnowski, James G.	1984	Mehta, Mahesh	1983	Scherer, Kenneth	1982
Huff, Donald	1993	Meier, Curtis	1983	Schmutzler, Allen J.	1977
James, David	1985	Menke, Elaine A.	1973	Schrader, Aaron	1999
Jecker, Gregory H.	1973	Menkel, Phillip	1998	Schumacher, John	1988
Jones, Roger M.	1971	Meuth, William	1974	Scott, Mark	1995
Judd, Dennis	1974	Meyer, Douglas	1981	Sigman, Scott	1999
Kammer, Darren R.	1991	Mirly, David	1989	Short, Mark J.	1981
Keep, Andrew	1999	Miskell, Lynn	1983	Smith, Houstin	1981
Keith, Chad	1997	Montague, Michael W.	1973	Smith, Johanna	1985
Kelley, David	1977	Morrison, David W.	1967	Smith, Neil S.	1968
Kercher, Bruce	1999	Muenter, Michael	1981	Smith, Todd	1985
Kerns, Randy G.	1974	Muldoon, Mary	1991	Sowers, James R.	1969
Khan, Aatif	2001	Musial, Christopher	1982	Stark, John	1989
Kleekamp, Kurt	1987	Nau, Steven N.	1970	Steffan, Cheryl A.	1969
Kleikamp, David	1986	Nayar, Sanjay	1993	Stocking, Terry	1989
Klemmer, Susan H.	1966	Nemer-Preece, Nichole	1994	Stone, John	1994
Krall, William	1969	Nichols, Byron K.	1973	Stratman, Mark X.	1973
Lahm, James L.	1988	Nordeng, Karen Squires	1989	Swisher, Dean	1970
Laufman, Anne	1983	Oellig, Galen R.	1988	Szygenda, Ralph	1970
Lenz, Richard G.	1974	Oligschlaeger, Brian	1995	Tatum, Carolyn	1982
Lin, Wen-Chung	1992	Osman, John	1983	Taylor, Timothy	1987
Lindsey, Regulah M.	1982	Parker, Jerre L.	1984	Tebo, Stephen D.	1968
Lindstrom, John A.	1973	Peterson, Richard R.	1985	Timson, George	1986
Link, Madonna R.	1989	Phipps, Neil	2001	Toombs, Howard L.	1976
Little, Russell D.	1982	Piper, Timothy	1996	Tutko, Richard	1988
Loesch, Janet L.	1980	Pratt, Michael L.	1978	Urban, Mark A.	1980
Loesch, Terry L.	1980	Pritchett, Peggy Ann	1990	Viswanathan, Ravi	1998
Lovitt, John	1970	Pryor, Gary	1995	Washburn, Ricky L.	1979
Luckcuck, Paul H.	1985	Puhl, Lisa	1982	Wasleski, Steven	1987
Lyon, James S.	1972	Randazzo, Vincent A.	1989	Watson, Lowell R.	1979
Macmann, Paula	1974	Reinhardt, Mary	1986	Watson, Susan E.	1983
Madras, Mark	1978	Richards, James L.	1972	Williams, Nelson	1972
Mayberry, Christopher	1998	Rider, Adam Clinton	1993	White, James	1974
McBride, Sandra R.	1970	Rose, Jeffery	1975	Wittmaier, Charles	1996
McClenning, John C.	1991	Roth, Michael	1972	Wurtzler, Pamela	1982

Wylie, James G.	1969
Yelton, Ken Stuart	1986
Zahnd, Claire	1998
Zike, David Scott	1982

Corporate:

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