



LINKS

Newsletter of the Department of Computer Science

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New CS Graduates

The photo on the left side was taken on April 25, 2004, during the CS Graduation Brunch held in honor of the new graduates of the Computer Science program. In the 2003-2004 academic year 87 students have received the Bachelors degree; some are pursuing graduate studies, whereas others have already entered the job market.

CS joins forces with Engineering to offer Graduate Program in Computer Engineering

Following on the heels of the hugely successful undergraduate program in Computer Engineering introduced six years ago, the Department of Computer Science and the Department of Electrical Engineering (now the Electrical and Computer Engineering Department) will begin offering a Masters and Ph.D. Program in Computer Engineering starting this fall.

This is a unique program that is specifically structured to bring together faculty and research groups from CS and ECE into a common program that will allow students access to far greater breadth and depth across the discipline than is available in conventional programs. The program is to be simultaneously housed in both departments. Each will offer identical Computer Engineering degrees with a common curriculum and with the same graduation requirements. Students will apply through a single admission portal managed by the joint faculty. Once in the program, students are free to select an advisor at any time, from either department. The degree will be awarded either from the School of Arts and Sciences or the School of Engineering; this will be based on the home department of the student's advisor.

(continued in the next page)

From the Editors

As you have probably noticed there are two changes with this issue of LINKS: it has arrived later than usual and it is bigger than usual.

We have decided to change the publication schedule in order to allow for better coverage of events happening each term in the Department. Under the new schedule, LINKS will be published twice a year: during winter (around February) and during summer (around August).

The second change, the increase in size, is a positive side-effect of the growth of our Department and we hope that the trend continues!

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CS joins forces with Engineering to offer Graduate Program in Computer Engineering

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“Computer Engineering as a discipline has grown considerably in recent years and the boundary in systems design between what we traditionally think of as Computer Science based software solutions and Electrical Engineering based hardware design has become increasingly blurred,” said Prof. Chiarulli, co-director of the program with Prof. Levitan of ECE. Prof. Chiarulli went on to say: “This program is designed to provide our students with a wide spectrum of educational resources and research experiences across the disciplines of Computer Science and Electrical Engineering.”

According to the Pennsylvania Career Guide 2001-2002, Pittsburgh ranks sixth among U.S. cities in the number of employees in the computer industry. It is projected that the number of computer engineers in Pennsylvania will double between 2001 and 2008. Engineers Quarterly predicts that by the year 2006, computer engineers will become “the second largest of the engineering disciplines.” This is based on the U.S. Bureau of Labor Statistics projected growth of 235,000 new Computer Engineering positions created in the next decade, a growth of 109 percent.

Presently, there are more than 75,000 undergraduate students enrolled in computer engineering programs in the United States, constituting about 20 percent of the total engineering enrollment, a number that has tripled during the past decade. Pitt’s undergraduate degree program in computer engineering is only six years old, but is the largest undergraduate degree program within Pitt’s School of Engineering. These numbers are on a par with the U.S. Bureau of Labor Statistics which lists doctoral degree computer researchers in its list of fastest growing occupations. The projection indicates a need for 11,000 new Ph.D. computer engineers by the year 2010, a 40 percent growth in the field.

The current Computer Engineering graduate faculty includes seven members from Computer Science and eight from ECE. Computer Science faculty include Professor Chiarulli, who is co-director of the program together with Professor Levitan of ECE, Professors Amer, Brustoloni, Childers, Melhem, Mosse, and Znati. ECE faculty include Professors Hoare, Hoelzman, Jones, Kane, Kourtev, Levine, Levitan, and Mickel.

The program is currently seeking prospective students and support from industrial sponsors. The program website at www.coe.pitt.edu is currently under construction. Interested individuals should contact Prof. Chiarulli at don@cs.pitt.edu or by phone at 412-624-8839. Prof. Levitan can also be reached at steve@ee.pitt.edu or 412-648-9883.

The Fourth Annual Computer Science Day

The fourth annual Computer Science Day was held on November 1st, 2003 in order to bring together educators, students, parents, alumni, and industry representatives in a forum enabling the exchange of ideas and information about Computer Science and available career opportunities.

The day’s activities included talks by representatives from major technical companies, the marketplace, a sample Computer Science lecture, a student panel on research & industry experiences, a keynote talk by Robert Thibadeau from Seagate, and an awards ceremony. Awards were given to the Outstanding Undergraduate Student (Joseph M. Burdis, pictured right), the students on the CS Undergraduate Honor Roll, and the winners of the research poster competition:



Best Poster (Graduate):

Sameh Gabriel (pictured left)

Best Poster (Undergraduate):

Corey Grone

Poster Award (Grad. Runner-up):

Mohamed Sharaf

Poster Award (Undergraduate Runner-up): Heather Gribenas

People’s Choice Award: Leo Selavo.

Announcement

The 5th Annual Computer Science Day will be held in the Spring of 2005. Details in the Winter issue of LINKS.

2004 CS Graduate Research Competition

The graduate research competition this year produced four finalists among the many submissions of high quality from graduate students in the Department. Submissions were judged based on originality, technical merit, and writing. The four finalists presented their work on April 2nd, 2004 in front of the entire Department.

The four finalists (in alphabetical order) were: (1) Jason Bakos, “*Hierarchical Error Correction Codes over Multi-Bit-Differential Signaling*”; (2) Jonathan Beaver: “*The Advantage of Multicast Pull in Data Dissemination*”; (3) Sameh Gabriel: “*An Energy-Aware MAC Layer Enhancement for Wireless Adhoc Networks*”; (4) Haidong Xia: “*Building Secure and Ubiquitous Wi-Fi Networks*”.

The winner of the competition was Jason Bakos. This event was sponsored by Compunetix, whose support is gratefully acknowledged.

Logic Games 2004

The 2004 Logic Games

On April 2nd, 2004 the first Logic Games were held in the Department of Computer Science. The 2004 Logic Games were a competition involving first-order logic where the students got a chance to display their logical skills and their proficiency at using the software that they learned in the CS1502 course.

The CS1502 course – Formal Methods in Computer Science – is a required course for all CS majors. In this course, students learn first-order logic using software with three components: Fitch (formal proofs in logic), Boole (truth-tables), and Tarski’s World (translation of sentences and determining the truth or falsity of a sentence with respect to a given world). The competition was organized by Profs. John Aronis, George Novacky, John Ramirez, Patchrawat Uthaisombut, and Jan Wiebe.

Eleven students competed for over two and a half hours before a winner was determined. The contest consisted of two parts – the short answer session and the long answer session requiring the use of the software.

The rankings from the competition are:

1st place: Steven Davis

2nd place: Mazen Kahwa

3rd place: Stephen Fanesali

Honorable Mention: Wesley Goodman, Joe Hummel, and Bill Morris

We extend our congratulations to all participants and hope to see them again next year!

Laboratory Upgrade



The Department recently bought new flat-screen monitors to upgrade all 30 Sun Sparcstations of the JavaLab. The photo on the left shows the lab’s new “sleek” look.

Does Your CS Degree Suffice?

What are we to make of the recent trend of large companies outsourcing IT jobs offshore? From a CEO’s point-of-view, outsourcing reduces costs and makes a company more competitive and profitable. As a direct result, we the consumers benefit from cheaper prices in the marketplace. Just look at the cost of a PC. Only a year ago, ads in magazines and on television touted the below-\$1000 PC. Today, a comparable PC sells for around \$500. This is small consolation to those displaced IT-workers who are victims of this trend.

There are mixed opinions among experts about whether or not outsourcing will have the predicted devastating effect on IT-workers as foreign steel had on displaced steel-workers in the 1970s and 80s. No one seems to know the answer. But because of it, there are lots of reactions from government, business, and academia. Presidential candidates are proposing job-loss insurance and medical benefits for displaced workers. State governments are reacting by passing legislation to protect residents who are affected. There are calls to revamp our educational system from kindergarten through high school. Those of you who are old enough may remember similar calls in the late 1950s for such reforms after the Soviet Union launched Sputnik. At universities, computer science and engineering departments are rethinking their curriculum to stress global-awareness, team-work, and entrepreneurship along with technical skills. To add to the doom-and-gloom, we are told that there was a 23% decrease in newly declared computer science majors last year after about seven years of growth.

Are there any positive signs on the horizon on which to hang our hopes for the future? Yes. Every two years, the Bureau of Labor Statistics (BLS) makes predictions about employment projections for the next ten year period. Last year, the BLS projected that IT employment will grow by 1.14 million new jobs through 2012. This projection is six times as great as the total number of new jobs in engineering, the physical sciences, the life sciences, and the mathematical occupations combined.

So let us get around to the title of this article, does your CS degree suffice, or, said another way, will your CS degree get you through hard times? We are all aware of how rapidly our discipline changes and the enormity of what it encompasses. Common sense dictates that we must be willing to keep as current as possible in our field. However, it is our strong belief that your CS degree provides a firm foundation on which to continue the learning process successfully.

References:

- [1] Computing Research News, Vol. 16/No.3
- [2] Facing the challenges of a global work force, Jim McKay, March 24, 2004

Secure Critical Information Technology Infrastructure (S-CITI)

Ahmed Amer, Jose Carlos Brustoloni, Panos Chrysanthis, Milos Hauskrecht, Alexandros Labrinidis, Rami Melhem, Daniel Mossé, and Kirk Pruhs (Computer Science) and Louise Comfort (GSPIA)

Disaster management encompasses activities that range from the immediate response to events of unpredictable nature to preparedness and mitigation for reducing the impact of future events. These issues present problems of large scale and high complexity. To manage disasters and enable response teams to respond to crises in real time, we are developing a hybrid communication infrastructure. The infrastructure will consist of both wireless and wired devices with different levels of sensing, computing, reliability, storage, energy, and communication capabilities (that is, resource-constrained devices). The nine-faculty team is funded by the National Science Foundation (NSF) to consider an augmented network: simple as well as complex sensors with light/temperature/vibration/biological/chemical sensing capabilities, PDAs (with wireless, cameras, microphones, and other possible devices), and laptops aboard vehicles.

The core research problems that S-CITI is addressing are: (a) the development of an information- and communication-centric infrastructure to support coordination and control functions, such as gathering, evaluation, processing, and dissemination of information; (b) sensing to capture localized spatial and temporal information in a reliable and timely manner; (c) cross-organizational coordination of actions in response to disaster and aid recovery operations.

Self-management (or self-CHOP: configuration, healing, optimization, and protection) of devices and subsystems is an important goal of the project. Automating device and node management reduces system complexity and overall management costs and allows for more data to be collected, correlated, and disseminated. More manageable systems offer fewer distractions from the Emergency Manager's task at hand. Another central piece of the system will be a learning module, which will analyze post-emergency data and use the results for future pre-emergency planning. If the change in sensor activity is not an emergency situation but, for example, the result of weekend traffic congestion, the emergency managers will be able to program the system to ignore similar signals on Friday afternoons. The system will learn to alert the managers only in actual emergency situations, saving time and labor.

Funded by a \$2.8 million grant from the National Science Foundation, S-CITI will simultaneously integrate data from multiple sources, and be applicable to numerous situations. Cities such as Los Angeles have earthquake detectors con-

nected to emergency managers, but no city has a comprehensive system where data from utilities, the National Weather Service, traffic sensors, and other sources are integrated in real time. Already deployed electricity, gas, water, and temperature sensors as well as traffic cameras can be utilized, and new sensors added. For example, stationary cameras that monitor traffic could be replaced with rotating cameras that could also take pictures from different angles, as would be needed, for example, in the case of a landslide.

The S-CITI team will spend the first few years of the project building a prototype of the system within the Department of Computer Science and then within part of the University. Potentially, the system will also have direct links with the Pitt Police.

For more information on the S-CITI project, please visit www.cs.pitt.edu/S-CITI

Improving Program Performance with Speculative Memory Disambiguation

Markus Mock

A major problem facing optimizing compilers today is the increasing ineffectiveness of traditional program optimization techniques. Programs are increasingly constructed from components, which are dynamically selected to adapt systems to changes in their environments, for instance, by using software that is distributed on demand in portable formats such as Java byte-code. To support this dynamism, programming languages used to build such systems use mechanisms like dynamic dispatch and dynamic linking of libraries. This dynamism poses numerous challenges to traditional optimizing compilers. In particular, it forces the compiler to make progressively more conservative assumptions about possible program behavior.

Unfortunately, such assumptions will frequently prevent program optimizations even though they would be safe vis-a-vis actual program behavior. One particular area where compilers have to make conservative assumptions is aliasing, i.e., the fact that a memory location may be accessed by different names, for instance, directly and via a pointer. Since memory accesses are the major bottleneck to improving program performance today, being able to eliminate memory accesses is of paramount importance. However, in practice, poor results of static pointer analysis algorithms frequently prevent compiler optimizations that attempt to eliminate unnecessary memory operations (e.g., by redundant load removal).

To estimate the typical performance loss due to poor memory disambiguation, this project develops a framework to optimize programs based on dynamic pointer information. It also develops compile-time methods to ensure the correctness of speculative optimizations based on dynamic pointer information by adding the generation of appropriate run-time checks to a traditional optimizing compiler.

Teaching Computers to Teach Like Humans

Pitt researchers developing natural language tutors

New federal education rules emphasizing testing and standards have created a demand for tutoring, but relatively few pupils enjoy access to costly one-on-one teaching. Scientists at the University of Pittsburgh's Learning Research and Development Center (LRDC) are developing technologies that aim to make individual instruction widely available.

With \$2.5 million from the National Science Foundation (NSF), principal investigator Kurt VanLehn, a Pitt computer science professor and LRDC senior scientist, is working to build computer tutors that work as well as humans, but are far less expensive. Concentrating their research on one academic subject, VanLehn and his colleagues are probing tutor and student behavior in teaching and learning physics.

"The computer tutors available in stores today just tell you if your answer is right or wrong," VanLehn said. "With a human tutor, though, students can do much more," including discussing assigned readings and getting help solving longer, more complex problems.

A major difference between human and computer tutors has been that only human tutors understand unconstrained natural language – the conversational, open-ended give-and-take that can often flummox the smartest software.

Coprincipal investigator Diane J. Litman, an associate professor of computer science and LRDC research scientist, gives an example: Responding to a computer tutor's question about velocity, a student might incorrectly answer that distance equals velocity x mass, instead of velocity x time. The computer might say, "Why do you think that?" And the student replies, "I read it," rather than explaining the formula or rationale in scientific terms that the computer might comprehend.

Commercially available educational technology uses two response formats: multiple choice and mathematical formulas. The LRDC researchers believe that a tutoring program that can handle open-ended questions and analyze the students' text or speech responses will be on the market in five to 10 years.

Programming a computer to handle every variant of human language responses is probably not feasible in the near term, according to Litman. A more reasonable approach might be to train students to focus more sharply on thinking and responding in scientific terms while increasing computers' capacities to understand and respond to natural language.

Another obstacle to making computer tutors more human-like is voice recognition. Computer understanding of human language has a long way to go. Accent, word choice, speed,

and clarity can all be problem issues. Frustrated students may speak very differently when giving an answer.

Coprincipal investigator Michelene Chi, a professor of psychology and LRDC senior scientist, has shown that learning is accelerated when students make thoughtful contributions to the dialogue and when they are actively engaged in the learning activity. Chi and her colleagues work from those premises to determine the student behaviors that enhance learning. The next step for the researchers is determining what kinds of tutor behavior elicit the desired student actions. The team is testing the hypothesis that learning increases if tutors decrease explanations to students and increase questions. As more effective dialogue strategies between humans and computer tutors are identified, they will be incorporated into the natural language-based system.

In order to incorporate the dialogue strategies into existing text and spoken natural language-based tutoring systems, two approaches are being developed. One approach will interpret student responses using an explanation network, which functions as a "road map" of all reasonable answers and their explanations. The second new approach uses machine learning to improve the selection of dialogue management strategies that navigate this road map.

LRDC's new tutoring venture builds on the work of the recently completed five-year, \$5 million, NSF-funded Center for Interdisciplinary Research on Constructive Learning Environments, led by VanLehn. The center developed several prototypes of natural language tutoring systems both at LRDC and at Carnegie Mellon University, as well as tools for building more such tutors.

Capitalizing on LRDC's ability to attract and link researchers from a wide variety of disciplines, the computer tutor study includes researchers specializing in cognitive psychology, natural language processing, and system design.

Other co-principal investigators are Pamela W. Jordan, an LRDC research associate, and Carolyn P. Rose, a research scientist at Carnegie Mellon.

The group's grant is administered under NSF's Information Technology Research program, which supports innovative multidisciplinary research in information technology.

(Article reprinted from the Pitt Chronicle)

ALUMNI, we would like to hear from you! Your news, suggestions, comments, and contributions are always welcome. Please send them by postal mail or email them to links@cs.pitt.edu.

New "PERCS" at Pitt

University of Pittsburgh scientists help define the next generation of high performance computers.

As part of a national effort aiming to dramatically boost the power of supercomputers by 2010, researchers at the University of Pittsburgh, led by Prof. Rami Melhem, have been provided with \$900,000 in research funding as part of a three year project called PERCS (Productive, Easy-to-use, Reliable Computing System). The award was made by IBM, one of only three qualifying industry contractors, and the highest funded, in this DARPA-backed effort.

PERCS aims to rethink the design and use of supercomputers beyond attempting to simply produce faster computers. Rather, PERCS takes on the task of rethinking the means by which these computers are used, and basic design decisions in their hardware, interconnects, and even development environments are made. At the University of Pittsburgh, Prof. Melhem, chair of the Computer Science Department, leads several collaborations that constitute the University's contribution to this project. Collaborators include faculty from Computer Science (Ahmed Amer), Electrical and Computer Engineering (Raymond Hoare and Alex Jones), and from the Pittsburgh Supercomputing Center (led by Nick Nystrom and John Urbanic).

While a big part of the PERCS project looks to the hardware, compilers, and architecture of the system, another component looks at evaluating new measures of performance that have long been overlooked, but are as critical as the performance of the computing hardware itself. The users of supercomputers and their productivity and effectiveness, are a major component of a supercomputer's overall usefulness, and it is this particular aspect that is being investigated in collaboration with the Pittsburgh Supercomputing Center, (PSC). To this end, the group is developing a wide array of tools to account for programmer and user time spent writing, debugging, optimizing, and using software. These measurements will allow computer scientists to make more informed decisions on programming models, hardware architectures, and ultimately allow for decisions with the greatest impact on the performance that counts – how effectively the computing hardware can be used to solve real-world problems.

The problem, of which a growing number of computer scientists are becoming aware, is that productivity is more than simply how fast code will run on a computer. For scientific problems, the development time of a solution is often overlooked. *"If a programmer spends a year tuning the software to double its performance,"* says Melhem, *"that human time has to be part of the equation when we talk about productivity of the system. It's not just the productivity of the*

machine, but also productivity of the people — the scientific research group — who use the machine to solve problems."

As an important step toward more realistic productivity assessment, the PERCS project has announced plans to develop a software tool called SUMS (Standardized User Monitoring Suite). SUMS will run in the background as a programmer creates a program and non-intrusively record data on the full cycle of the "code development" process, explain PSC scientists Nick Nystrom and John Urbanic.

The outcome, says Melhem, is to be able to evaluate different approaches and weigh the cost of production, including human time, against the ultimate performance of a system, and to rationally weigh these factors prior to committing to a particular system architecture.

For more information on the PERCS project, please visit www.cs.pitt.edu/PERCS

Outstanding Computer Science Undergraduate Student for the 2003 - 2004 Academic Year

Joseph M. Burdis

The Outstanding Undergraduate Student Award is presented annually to the graduating senior who best represents the Computer Science Department and its standards of excellence in the classroom, in research and in extracurricular activities.

Computer Science Undergraduate Honor Roll for the 2002 - 2003 Academic Year

Christopher M. Aumiller	Eric B. Humenay
Alen Bahovic	Thaddeus M. Lange
Russell D. Bortz	Patrick Lanigan
Joseph M. Burdis	Minna S. Lunney
Shyamal S. Chandra	Carol L. Nichols
Cory R. Crooks	Anna Nys
Michael F. DaParma	Stephen J. Pack
Jonathan E. Dean	Thomas A. Puskarich
Molly C. DesJardin	Steve A. Robbbaro
David. S. Essary	Michael P. Rushe
Benjamin A. Ganis	Christopher J. Santamaria
Stephen M. Groucutt	Joel J. Smetanka
Dayne M. Grove	Matthew J. Swadley

Requirements for the yearly honor roll: (1) Full time status for the past academic year (Fall, Spring), and (2) Qualifying CS GPA of 3.75 and overall GPA of 3.5 during that period.

Panos K. Chrysanthis, Professor



Dr. Panos K. Chrysanthis became officially the ninth full Professor in our Department on 1.1.2004. He is the co-director of the the *Advanced Data Management Technologies (ADMT)* lab which focuses on innovative theories, paradigms, and applications in network-centric data management. Panos started the ADMT lab twelve years ago under the name *database group* when he was hired as an assistant professor with the expectation of bringing a new strength in database research to the Computer Science Department (CSD). He joined the CSD immediately after completing his PhD degree at the University of Massachusetts, Amherst. Besides the theoretical investigation of his PhD dissertation on modeling and reasoning about extended transactions, he brought along his experience of developing Gutenberg, a prototype distributed operating system, from his MS project (UMass, Amherst) and data stream filters from his BS thesis (U. of Athens, Greece). As he says, he was one of the last two faculty hires at the end of the “second renaissance of the CSD, during which AI research was established and Data Management research was re-founded in broader basis in the CSD.”

On reflection, Panos said that he has met the expectation of his hiring to a great extent and, smiling, he adds, “I must have met it and the proof is that I was promoted to Associate Professor and given tenure in 1997 and now I was again promoted to full and given a raise.” He recalls the Fall of 1991, his very first term at Pitt, during which he created his first grad course on the Principles of Database Systems, revised the undergrad course on database systems with projects on the commercial Rdb database server (nowadays Oracle Rdb), wrote his first successful NSF proposal on the interoperation of heterogeneous and autonomous database systems, and spent long hours installing Latex on his new workstation. Since then, Panos developed and taught new grad and undergrad database courses and a series of PhD seminars on distributed database systems, mobile computing, Internet middleware, and the more recent one on sensor networks and data streams. These seminars provided the material for his book (1997) and several contributed book chapters, in addition to inspiring his students’ lines of research that go beyond traditional database issues. Panos enjoys teaching as much as research. He also points out that his ADMT lab has acted as a local umbrella for research seminars over the years. Panos co-started the joint Pitt/CMU database seminar in 1999, with Christos Faloutsos of CMU. The seminar, which is still going on today, brings together researchers from the greater Pittsburgh area.

After his first NSF award, the award that shaped Panos’ research at Pitt was the prestigious NSF CAREER award (1995) for his investigation on the management of data for mobile and wireless computing. “The CAREER led to the assignment of physical lab space for the ADMT lab that enabled my students and me to experiment with new hardware and software technologies; we established the first wireless LAN at Pitt and experimented with data sharing paradigms from handheld devices and with mobile agents.” It has also sparked a lot of successful collaborations with other groups within the CSD and within Pitt, for example, Sujata Banerjee’s network group in SIS and Martha Pollack’s AI group in CS. More recent collaborations include the RODS project (that monitors in real-time for outbreak of diseases) with the Center for Biomedical Informatics and the S-CITI project (secure IT infrastructure for disaster management) between the CSD and GSPIA. The research accomplishments of his lab have been published in over 100 well-cited papers in top journals and in prestigious conferences and workshops in the field. He plans to continue this collaborative style of research with the motivation of producing new technology from first principles to address the data management challenges of pervasive computing environments.

Panos liked the community spirit among the faculty and the open-door policy, which continues until today, making the CSD a great environment to work in. Panos is very proud of what the CSD has accomplished over the last 10 years, with the new building and its current research and teaching infrastructure that is comparable to that of top universities in the country. He is even more optimistic now than ever before for the CSD’s future, a future that he has discussed for many hours with his colleagues, especially Rajiv Gupta and Daniel Mosse during some tough times and budget crises. Panos said that he enjoys being promoted as part of this new renaissance of the CSD with nine new, very energetic assistant professors.

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Dr. Daniel Mosse says about Panos: “I met Panos, a then fellow-Assistant Professor with one year under his belt, when I started at CSD twelve years ago. Those first few years, Panos and I shared many nights at the CSD working on papers, working on classes, working on software installations, and just working... Panos has always been very participative in all areas of the CSD and tireless in helping out. As the years went by, he has been able to use his incredible foresight and his unparalleled analytical skills, particularly as GAFA chair: he has worked closely with both faculty and GPEC to change the face of admissions, and he contributed enormously to the academic as well as administrative advancement of the CSD. He has done all this while teaching in his characteristic way, paying attention not only to the technical details but also to the global picture... In summary, and I’ll admit that I am biased, I have nothing but praises for Panos. Congrats!”

December 2003

Rebecca Hwa presented the lecture “*A Comparison of Bootstrapping Methods for Parsing Natural Languages*” for the Big Picture Talk Series at the Univ. of Rochester, Rochester, NY.

January 2004

Panos K. Chrysanthis was on the program committee for the 5th International Conference on Mobile Data Management (MDM 04).

Alexandros Labrinidis gave an invited talk on “*Balancing Energy Efficiency and Quality of Aggregate Data in Sensor Networks*” at Boston University, Boston, Massachusetts.

Diane J. Litman started a two year term as Past Chair, North American Chapter of the Association for Computational Linguistics Executive Board.

Daniel Mosse has been appointed associate editor of the Journal of Real-Time Systems.

Daniel Mosse was on the US Advisory Committee for the ART-IST Project, a European project committed to providing a roadmap and long term vision for real time software & systems in Europe.

March 2004

Jose Carlos Brustoloni was on the program committee of IEEE INFOCOM 2004.

Panos K. Chrysanthis was on the program committee of the International ACM Symposium on Applied Computing: Ubiquitous Computing Track (SAC 2004).

Panos K. Chrysanthis was the program committee vice-chair for the 20th International Conference on Data Engineering (ICDE’04).

Panos K. Chrysanthis and **Alexandros Labrinidis** were on the program committee of the 9th International Conference on Extending Database Technology (EDBT 2004).

Alexandros Labrinidis co-organized the Internet Data Management Track of the International ACM Symposium on Applied Computing (SAC 2004).

Alexandros Labrinidis was on the program committee of the 20th International Conference on Data Engineering (ICDE 2004).

Kirk Pruhs was an invited speaker at the Twenty-Ninth Conference on the Mathematics of Operations Research.

Janyce Wiebe was on the program committee of the the First International Joint Conference on Natural Language Processing (IJCNLP-04).

April 2004

Alexandros Labrinidis participated in the NSF-sponsored Hungarian-US R&D Workshop on Information Society Technologies and Research, which was held in Budapest, Hungary.

Daniel Mosse was on the program committee of the IEEE Workshop on Parallel and Distributed Real-Time Systems (WPDRTS).

Janyce Wiebe was on the committee of the Fifth SIGdial Workshop on Discourse and Dialog (SIGdial-2004).

May 2004

Rebecca Hwa was on the Student Research Panel at the meeting

of the North American chapter of the Association for Computational Linguistics held in Boston.

Rebecca Hwa was selected as a mentor for undergraduate women in the CRA-Women Distributed Mentoring Program.

Alexandros Labrinidis gave an invited colloquium talk on “*Data Management for Sensor Networks: Challenges and Success Stories*” at the University of Maine, Orono, Maine.

Diane J. Litman was on the program committee of the Human Language Technology Conference: Fourth Meeting of the North American Chapter of the Association for Computational Linguistics (HLT/NAACL).

Diane J. Litman was on the program committee of the Eighth Conference on Natural Language Learning (CoNLL).

Diane J. Litman presented an invited talk titled “*Spoken Dialogue in Human and Computer Tutoring*” at the Office of Naval Research Tutorial Discourse Meeting held in Memphis.

Markus Mock was on the program committee of the ACM SIGSOFT Second International Workshop on Dynamic Analysis.

Daniel Mosse was on the program committee of the Brazilian Workshop on Real-Time Systems.

Daniel Mosse was on the program committee of the IEEE Real-Time Technology and Applications Symposium (RTAS’04).

Janyce Wiebe presented an invited talk titled “*Opinions in Question Answering*” at the Advanced Question Answering for Intelligence meeting (ARDA AQUAINT) held in McLean, Virginia.

Janyce Wiebe was on the program committee of the 2004 Conference on Natural Language Learning (CoNLL-2004).

June 2004

Jose Carlos Brustoloni was on the program committee of the IEEE International Conference on Communications (ICC 2004).

Bruce Childers was on the program committee of the ACM SIGPLAN Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES’04).

Panos K. Chrysanthis was on the program committee of the Third Hellenic Data Management Symposium (HDMS 2004).

Alexandros Labrinidis was on the demo program committee of the ACM SIGMOD International Conference on Management of Data (SIGMOD 2004).

Rami Melhem was on the program committee of the International Workshop on Methodologies in Low Power Design (MLPD).

Rami Melhem was on the program committee of the International Conference on Dependable Systems and Networks (DSN).

Daniel Mosse was invited to talk at the seminar on Power and Resource Management in Mobile Devices at the Nokia Seminar on Embedded Software and Multimedia held in Helsinki.

Daniel Mosse was on the program committee of the European Conference of Real-Time Systems (ECRTS).

Janyce Wiebe was a program co-chair for the 2004 AAAI Spring Symposium on Exploring Attitude and Affect in Text: Theory and Applications.

Twenty years of service

Nancy Kreuzer, Kathy O'Connor, and Loretta Shabatura have recently completed over 20 years of service to the University of Pittsburgh. They were all recognized during a special campus-wide ceremony in December 2002. John Aronis interviewed all three in September of 2003. We published the interview of Nancy in the last issue; in this issue we feature the interviews of Kathy and Loretta.

Loretta Shabatura



**Loretta in her office
(in the 90s)**

Loretta Shabatura was hired as a temporary worker at the University in August 1982 and became a full-time employee in the Computer Science Department (CSD) in November. At that time, she provided administrative support to part-time instructors.

She recalls that when she started working, she used a Zenith Z-18 terminal, connected to the CSD's timesharing systems. The secretaries wanted to use the screen-based "vi" editor, but Loretta was told to use the line-based editor "ed" since it used much less memory. It certainly makes you appreciate the user-friendly PCs of today.

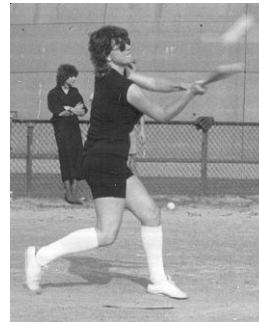
Loretta says that Dr. Orrin Taulbee — who founded the CSD in 1966 — was chairman when she started. He was well-liked and respected. Dr. Taulbee became ill and unfortunately passed away in the mid-eighties. In honor of Dr. Taulbee and his wife, the CSD is giving out the "Taulbee Award" to the most outstanding graduate student every year.

Loretta has a lot of fond memories from knowing some very unique graduate students over the years. She remembers the fun she had attending some of the parties given by grad students and remembers how much fun it was taking the students to Kennywood Park. This was the first experience at an amusement park for a lot of the international students which brought an astonished expression to their faces.

There are not too many of the students that she got to know over the years, while residing in Pittsburgh, so it is always nice to see them when they come back to visit.

Currently, Loretta handles all the administrative work for the graduate program including: applications, admissions, financial aid, and graduation. Last year, the CSD received over 600 applications for graduate study (which corresponds to a 10-fold increase from about 20 years ago). Loretta says that she looks forward to finally putting a face with a name when the new students arrive at the beginning of the term.

Kathy O'Connor



**Kathy playing
softball (in the 80s)**

Kathy O'Connor has lived in Pittsburgh her entire life and has worked at the University of Pittsburgh for over twenty years. She began as a temporary worker in the Registrar's Office and in the first year became a fulltime employee (in 1982).

At that time, student transcripts were not maintained electronically. Kathy recalls how everyone who worked in the transcript office was required to

work one day during Christmas break to manually post grades. This was done by attaching a small sticky label that was printed with course and grade information directly to the master transcript — by hand! Since transcripts were maintained manually, even routine updates could not be made automatically. When Joseph M. Katz donated \$10 million to the School of Business, the clerks in the transcript office had to scrape off the title "Graduate School of Business" from every transcript, and then type in "Joseph M. Katz Graduate School of Business." Kathy was promoted in 1985 and began processing registration forms. This process was also largely manual, and clerks used stacks of IBM punch cards to keep track of seats in classes. When a student dropped a course it often took more than a day for that seat to become available!

Kathy worked in the Registrar's Office until the birth of her daughter, Kerry, on November 14, 1986. She went out with several ladies from work on the 13th for Chinese food, and still wonders if the spicy food prompted her labor. Kathy remembers the kindness and generosity of the women she worked with in the Registrar's Office, and how they were like grandmothers to her daughter. Since most of the people who worked in the Registrar's Office were long-term employees, Kathy did not see any possibility of advancement there. While riding a bus to work one morning, Nancy Swiantek mentioned that someone who worked in the Department of Computer Science (CSD) at the time had died, and the Department needed to replace her. Kathy applied for the position and was hired in February of 1990. Although Virginia was sorely missed by everyone in the CSD, Kathy was quickly accepted by everyone.

Kathy says that the biggest difference she noticed in the CSD was the opportunity to work more closely with people. She also enjoyed the exposure to graduate students from around the world. This provides many opportunities to learn about and appreciate different cultures.

Kathy was hired in the CSD when Dr. Chang was chair. She

(continued in page 12)

Alumni Spotlight: Gerard A. Pompa

*Compunetix Vice-President and Division Manager,
Communication Systems Division*



Born in Pittsburgh, Pennsylvania, Mr. Pompa received his BS in computer science and mathematics and his MS in computer science from the University of Pittsburgh in 1981 and 1987. He was employed by Westinghouse Electric Corporation in the Nuclear Service Integration and Service Technology Divisions from 1981

to 1987 in software engineering. He designed and implemented software systems for real-time control robotic equipment and other devices for inspecting and repairing nuclear power plant components. Mr. Pompa also developed robotic devices for turbine generator inspection, resulting in several U. S. Patents. In 1987 he joined the WESPACE Division, leading the on-board control software development group for the Industrial Space Facility.

Mr. Pompa joined Compunetics in October 1988 as a senior software engineer in the Communications Systems Division (CSD). He was involved in the software design and development of the Triple Redundant Controller for the NASA Voice Switching System. Later, he became the principal software engineer for Compunetix and managed CSD's software engineering. Mr. Pompa became responsible for the CONTEX teleconferencing system program as development manager in 1990 and in 1992 took on his current position as CSD division manager. As general manager, Mr. Pompa has profit and loss responsibility for the 75 person division and oversees all project management, sales, marketing, engineering, and R&D groups within CSD. CSD has grown to over \$25 million, and is the recognized leader in the multimedia teleconferencing industry. Mr. Pompa is a member of the Compunetix, Inc. board of directors and a director of Compunetix Research, Inc. Mr. Pompa was promoted to vice president in 1998.

About Compunetix (www.compunetix.com)

Founded in 1968, Compunetix is dedicated to developing advanced multipoint communications technology for the telecommunications industry, private enterprises, and government customers worldwide.

Compunetix is a financially secure, privately held manufacturer located in Monroeville, Pennsylvania with offices in Australia, Germany, Italy, the UK, India, and Hong Kong. With more than 250 employees, Compunetix has installed almost 250,000 conferencing ports worldwide. The CONTEX conferencing system is a proven, highly-reliable

telecommunications bridge that enables customers to communicate efficiently, increasing productivity and speeding decision-making. This flexibility and reliability, and a willingness to modify the bridge for specific customer needs, have long been key ingredients to Compunetix's success.

Compunetix has three product divisions and one manufacturing division. The *Communications Systems Division* operates primarily in the commercial sector providing audio and data conferencing systems to the telecommunications industry; the *Federal Systems Division* focuses on the custom requirements of the federal government; the *Video Systems Division* is dedicated to selling and supporting Compunetix video and multimedia conferencing systems; and the *Instrumentation Systems Division* offers a vertically integrated design and manufacturing facility with electronic design, assembly, and test capabilities.

Compunetix's central goal is to drive technological innovation and enhance the electronic communication of multiple users, achieving greater collaboration and productivity.

Compunetix Market Focus

Compunetix is uniquely focused on the conferencing market, concentrating on both large-scale service bureaus and small-scale enterprises, and has a long history of outstanding customer service and technology leadership. CONTEX products are designed to provide service providers and enterprises with flexible, robust, and feature-rich platforms for managing conference calls. Developed with the input of our partners and customers, this platform is ideal for both operator attended and automated, on-demand operations. All CONTEX systems support full-featured touchtone controls, Web interfaces, and wireless IM/SMS messaging.

Compunetix is dedicated to providing our customers with complete and highly functional integration interfaces used to tie third-party applications to the conferencing environment for additional functionality. Compunetix recently launched mobile conferencing services that leverage the advantages of wireless networks, providing easier call initiation and additional notification capabilities. "Communication without Limitation" means that Compunetix offers greater freedom and flexibility when using the CONTEX platform for multipoint collaboration.

The increasing demand for meetings that combine audioconferencing and data presentations is satisfied by a suite of Compunetix-developed applications: CONTEXWeb, CONTEX Messenger, and CONTEX Presenter. These applications and interfaces create a rich collaboration environment for executive meetings, project groups, e-learning, distance medicine, telejustice, business continuity, and crisis communication.

The 2003 ACM East Central North America Regional Programming Contest

November 8, 2003, Pittsburgh, USA

After more than one month of preparation with their coach, Ruibin Xu (a graduate student in the CS Department), two teams from our Department competed in the first Regional Contest held at Carnegie Mellon University on November 8, 2003. The teams were given almost five hours to do eight problems ranging from subjects such as cryptography, graph theory, dynamic programming, and computational geometry.



A picture of the two teams (from left to right: Jason Mars, Jason Kessler, José Baiocchi, Nick Morsillo, Shyamal Chandra, Pavel Puchkarev)

The Pitt Blue team consisted of Shyamal Chandra (Junior, CS), Jason Kessler (Junior, CS), Jason Mars (Junior, CS). The Blue team, being composed solely of undergraduates competing for the very first time, ended up in 60th place out of 128 teams (solving one problem).



The teams' coach, Ruibin Xu

The Pitt Gold team had more experience, as Jose Baiocchi (1st year Ph.D. student, CS) had competed in the contest two years ago in his home country, Peru, and Nick Morsillo (Senior, CS & Math) competed in last year's regional competition in Ashland, Ohio. With the help of freshman Pavel Puchkarev (CoE), the high school veteran of programming contests, they solved three problems and ended up quite well in 27th place. Both teams hope to come back next year with more preparation and, obviously, more experience!

It should be noted that the **ACM Student Chapter** at the University of Pittsburgh sponsored the CS Department teams in all three contests. The ACM Chapter is also organizing talks and other interesting and fun events on campus.

The Second Annual CS Games

March 5-7, 2004, Montreal, Canada

For the second year in a row, the University of Pittsburgh competed in the CS Games held at McGill University in Montreal, Canada on March 5-7, 2004. Our team (the Pittsburgh Panthers) consisted of six undergraduates, including two veterans (Jason Kessler and Jason Mars) competing for the second year, and four novices (Shyamal Chandra, Bill Morris, George Nychis, Chris Tokarczyk,). After starting at 4:30 AM on Friday morning, the CS students drove ten and a half hours to McGill University for the first round of competitions. Over the next three days, smaller teams composed of two or three students participated in fun and challenging competitions including AI, algorithms, debugging, LAN gaming, scavenger hunts, scripting, improvisation, software engineering, trivia, and web design. One might call this the North American Olympics of Computer Science looking at the fifteen diverse competitions that tested the skills of students from twenty-six universities in the United States and Canada. In addition to competing in the competitions, the students also participated in the various social events. In the end, the Pittsburgh Panther team finished in the 23rd place overall, including 3rd place in the Debugging Competition, 9th place in the Algorithmic Competition, and 9th place in Trivia. After the competition, everyone agreed that they would be back next year with better preparation.

The 2004 Carnegie Mellon Invitational Programming Contest

March 27, 2004, Pittsburgh, USA

For the first time ever, Carnegie Mellon University hosted a regional programming contest with participants from local universities. Once again, our Blue and Gold teams participated in a contest similar to the ACM Programming Contest with identical rules and guidelines.

The Pitt Blue team consisted of Shyamal Chandra (Junior, CS), Jason Kessler (Junior, CS), Jason Mars (Junior, CS). The Pitt Gold team consisted of José Baiocchi (1st year Ph.D. student, CS), Nicholas Morsillo (Senior, CS & Math), and Pavel Puchkarev (Freshman, CoE).

Each team of three was given five hours to solve eight problems. Of the two teams, our Pitt Gold team, coached once again by Ruibin Xu, catapulted its way to **First Place**. Out of the thirteen teams competing, Pitt Gold solved three problems in the allotted time faster than the second place team, Allegheny College. After the outstanding performance at CMU by Pitt Gold, our teams are preparing more than ever for the ACM Regional Programming Contest this fall and a chance to enter the International Finals next spring.

Panos K. Chrysanthis (continued from page 7)

Everyone who knows Panos, also knows of his community involvement, his willingness to serve as an editor, conference or program chair, or as a member of an academic committee. Dr. Rami Melhem, the Department Chair, described Panos' contribution to the CSD community as follows: "Panos has been a very valuable member in the CSD. For the last few years, he chaired the graduate admission and financial aid committee very effectively and he always has excellent suggestions for improving the research and teaching environments in the CSD. He is a first rate researcher and a dedicated teacher."

In retrospect, Panos feels lucky, having good professors, good mentors, good collaborators, and also good students, who often worked "Greek hours" (until early in the morning). He strongly believes that we owe a lot to our teachers as well as to our students who often act as our teachers. Panos' life has been greatly influenced by his parents, especially his father, Kypros Chrysanthis, who also pursued scientific exploration and knowledge, himself being a medical doctor (with a PhD in pediatrics), a gifted teacher, and a prolific writer nominated for the Nobel Prize in Literature. Panos' father taught him values, high standards, the pursuit of excellence, and the pursuit of the common good.

Panos has celebrated his promotion with a trip to Athens for the Olympic Games. It must have been a deserving reward for him and the most important persons in his life, his spouse and his daughter, based on his description: "The Games were fantastic, a once-in-a-lifetime experience for all of us to be part of this celebration of the world's human spirit!"

Kathy O'Connor (continued from page 9)

remembers that Dr. Daley was a unique chair who could peer at you over his glasses and find an error faster than lightning. She recalls that when Dr. Treu was chair he would say "Is that right?" to mean "You are wrong."

In addition to the friends she has made in the CSD, Kathy has enjoyed many of the departmental activities such as the annual picnic, basketball/volleyball games, and going out with her co-workers. Kathy also appreciates the University's generous tuition benefits for herself and her family. Kathy says that over the years, many faculty and students have been very generous to her and she thanks them all.

Kathy's current duties include scheduling classes, managing grades (but not by hand!), purchasing, and maintaining enrollment figures. Kathy received her Certificate in Statistical Quality Control in April, 2003.

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You can find back issues of the LINKS Newsletter at the web page of the Department of Computer Science <http://www.cs.pitt.edu>

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