

# Voices

CAL POLY'S COMPUTER SCIENCE & SOFTWARE ENGINEERING DEPARTMENT

WINTER 2009

▼ FROM THE CHAIR: IGNATIOS VAKALIS

## Excitement and success

It is certainly true that "time flies" when one enjoys all aspects of life. I am already in my third year as the chair of our

Computer Science Department, and I am enjoying and building upon the open communication and the supportive environment that is exercised by all of our colleagues. It has been another busy year in which we have experienced the completion of some major initiatives and created momentum for new curriculum development.

This edition of *Voices* is full of success stories. Major renovations in our computer lab area were completed in Summer 2008. The Open Lab area had a major facelift, the server room was redesigned,

a faculty conference room has been developed and extra workstations were added to some labs.

Students will soon have 24/7 access to the Open Computing Lab area. Such a major renovation was possible due to endowments established by **Gary Bloom**, **Bert and Candice Forbes** and the continuous and generous support of our other many donors. On behalf of our students, faculty and staff, please accept our deepest gratitude.

Please stop by soon to see the upgraded facilities. One of our future targets is to

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*Our outstanding colleagues are developing and teaching new courses ... that are not only aligning our curriculum with industry trends, but also are designed to attract a diverse population of students in our area.*



## GREETING OUR INCOMING FRESHMEN

Department Chair **Ignatios Vakalis**, CSE faculty and students welcomed incoming freshman to Cal Poly's Computer Science and Software Engineering Department on WOW Academic Day on September 17, 2008.

After hearing short introductions to faculty and staff and tips on how to manage time and ask for help, students were treated to lunch with professors.

They also participated in an afternoon scavenger hunt that helped them find their classrooms and labs. The hunt was coordinated by student clubs to verse the new students on what they need to know as they begin their college careers.

The CS/SE Department welcomed 116 new students in fall 2008.



Students were greeted by Department Chair Ignatios Vakalis (top) and Assistant Professor Chris Clark (above).





Brian Hagen (standing) assists Josh Lange.

## Hagen brings computer repair prowess to CS/SE

**Brian Hagen**, CSC's new equipment specialist, has been doing computer repair and system administration for 10 years. Before coming to Cal Poly, he worked as a system administrator for an HMO and a high school district.

"I have worked with many diverse systems and people," says Hagen, but adds, "I enjoy working with college-age students. They are helpful and always willing to learn. Cal Poly is a great environment to work in. We have excellent co-workers and faculty."

Hagen has an A.A. degree in network engineering and a B.S. degree in business administration. He enjoys kayaking, photography, guitar/piano composition, and film.

## Nott works 20 years ... and doesn't retire!

**Diane Nott**, administrative coordinator and scheduler, celebrated her 20th year with Cal Poly in March 2008.

Seventeen of her 20 years on campus have been with the Computer Science Department.

"We are lucky to have Diane, with her patience, kindness and skill," says Department Chair **Ignatios Vakalis**. Congratulations, Diane!

## Excitement ▼ from page 1

implement a major upgrade of the Software Engineering Development Lab and develop a Robotics Laboratory: dreams that could become reality with your donations.

We are very fortunate to have recruited **Chris Lupo**, an outstanding new faculty member in the areas of computer science and computer engineering. **Brian Hagen**, an equipment specialist, has also joined the department to provide the much needed help in the area of technical support.

We also celebrated 20 years of outstanding service by **Diane Nott**, who is still in our department providing fantastic help with her experience and sparkly personality.

Our long-time colleagues **Mei-Ling Liu** and **Cornel Pokorny** have just entered the early retirement program (FERP), while **Joe Grimes** and **Dan Stearns** have retired from the department. As we all know, these are colleagues who have dedicated their lives to teaching and service to the CSC Department and Cal Poly. As I am writing this note, all of them are still around, providing invaluable help and guidance. (I wish I had a special flash-drive to download their infinite wisdom and experience).

Our outstanding colleagues are developing and teaching new courses in areas such as Parallel Computing, Interactive Entertainment/Gaming, Data Mining, Computational Finance, Computer Security, Scientific

*As you know, Cal Poly and the CSC Department are entering some difficult financial times. In order for us to provide the best educational experience to our students, retain our amazing faculty colleagues and continue to upgrade our infrastructure, your help and direct involvement are needed more than ever.*

Visualization and Robotics. Such courses are not only aligning our curriculum with industry trends, but are also attracting a diverse population of students in our area.

Our students and student clubs continue to amaze us with their accomplishments. Take a look at the achievements of **Sean Lydon** and **Michael McThrow**, and read about the work and initiatives of SWE and the newly formed club, WISH (see pages 5-7).

Students are also directly participating in outreach activities in the K-12 area (see page 5). A number of colleagues and students are very interested in increasing the diversity of young people entering the field of computing, a national problem that requires continuous attention.

I am confident that you will enjoy again this edition of *Voices*. As you know, Cal Poly and the CSC Department are entering some difficult financial times. In order for us to provide the best educational experience to our students, retain our amazing faculty colleagues and continue to upgrade our infrastructure, your help and direct involvement are needed more than ever.

I will be honored to hear your ideas and work with you in building an even stronger department that will serve our students, industry and society. Please contact me at [ivakalis@calpoly.edu](mailto:ivakalis@calpoly.edu) or (805) 756-6285.

*Ign. Vakalis*

IGNATIOS VAKALIS  
DEPARTMENT CHAIR

*Ignatios Vakalis  
honors Diane Nott.*





*Cindy Mortensen and Judith Frederickson compute the weight of the armadillo.*

## HONOR ROLL OF CSC DONORS

The Computer Science Department extends a heartfelt thanks to its many contributors for their generous support.

Your contributions make a significant difference to us! *One hundred percent* of this money goes to the department and is used to benefit students and our faculty's professional development. With these contributions, we continue to keep our focus on the future.

Please call the Computer Science Department at (805) 756-2824 if you would like a copy of our printed newsletter, which includes a list of contributors who made donations between July 1, 2007 and July 1, 2008. For privacy reasons, we have removed it from this online version.

## TeachScheme 2008 workshop a success at Cal Poly

In the second of three planned TeachScheme/ReachJava summer workshops, 17 attendees came from eight states to learn about our innovative first-year computer science curriculum in an intensive five-day workshop.

This curriculum starts with a simple language that limits the possible errors that students can make (Scheme), and then bridges the gap to an object-oriented language widely used in industry (Java). It also introduces the polished DrScheme environment and the

Design Recipe that helps students break down large problems into manageable steps.

Cal Poly's **John Clements** and **Ian Barland** of Radford College were the instructors for the Cal Poly workshop, which was one of four held last summer around the country. The others were held at the University of Utah, Northeastern University, and Adelphi. The final workshop will be held June 2009.

Visit <http://www.teach-scheme.org/> for more information about the workshops.

## Lockheed Martin-sponsored TDD research renders results

Computer Science Assistant Professor **David Janzen** describes test-driven development (TDD) as "a software development practice that allows detailed designs to emerge by writing automated unit tests and production software in short, rapid iterations."

With the support of a \$25,000 grant from Lockheed Martin, Janzen and Computer Science colleague **John Clements** led a study to examine the cost of using TDD in a first-year programming course.

Assisted by **Chetan Desai** (MS'08) and **Ben Woskow** (BS'08), the team rewrote CSC102 programming labs and projects to use a TDD approach. They then conducted an empirical

study with five sections of CSC102 in Winter 2008 taught by lecturer **Kurt Mammen** and Clements.

"The study demonstrated that TDD can be incorporated into a first-year course with no reduction in content coverage," says Janzen. "Although there was a slight increase in student effort on the projects, there was also a significant increase in code coverage."

Janzen says the project resulted in two peer-reviewed publications, the second of which will be presented in March 2009 at the annual Technical Symposium on Computer Science Education (SIGCSE'09) in Chattanooga, Tenn.





## Our Future Engineers

Program taps enthusiasm of middle school students

The Society of Women Engineers sponsored the annual "Build an Engineer Day" on Saturday, November 22, 2008. The event was designed to introduce 6th to 8th-graders to engineering careers through fun hands-on computer science labs.

The middle-school kids were divided into teams and given color-coded t-shirts. Faculty members **John Clements** and **David Janzen** led four hour-long labs for approximately 80 students. The computer

science labs introduced students to computer programming in two interactive environments. With DrScheme, students were able to compose images and virtual fabrics with a functional programming language. The second environment, Alice, is a drag-and-drop object-oriented programming environment that allowed students to create 3D animations.

All students received a department logo mousepad.



*Students create new worlds (top) and dive into animation (above), as instructor John Clements looks on (right).*

## IBM fellow talks software

Computer Science Department Industrial Advisory Board members joined students, faculty and staff for a talk about “The Promise, The Limits and the Beauty of Software” by guest speaker **Grady Booch**, co-creator of UML.

Booch spoke to the standing-room-only crowd about the “complex matrix of decisions and processes, both intentional and unintentional, that lead to the software design and architectures upon which we rely.”

After the talk, a luncheon was held for Booch with CSC IAB members, students and faculty. The event was arranged by **Rick Spohn**, an IBM representative on the advisory board.



*Grady Booch and student Abhi Vaishnav*

## Student Fee Committee is strong despite budget woes

The CSC/SE Student Fee Committee hit the ground running in September 2008, according to President **Jason Anderson**.

“Adjusting for budget cut backs, we still have been able to increase class sections, improve labs and support students to present at conferences around the world,” he says.

The committee also recently hired **Brian Hagen**, who helps to keep the labs running smoothly.

“With only a quarter into the school year, the committee is excited to continue to support its students and their educational experience,” says Anderson.

## ‘Kung Fu Panda’ rocks the house

**Jim Mainard visits from DreamWorks with moviemaking insight**

*Jim Mainard (center) is welcomed back to campus by (from left) Russell Palmiter, Lauren Tsung and Department Chair Ignatios Vakalis.*

**Jim Mainard**, head of production development at DreamWorks Animation, gave a talk on the graphics challenges his crew faced during the production of the movie, “Kung Fu Panda.”

Mainard spoke to a full house of students, faculty and members of the community in April at Cal Poly’s Spanos Theatre. He described the development of DreamWorks productions and the need for computer scientists and software engineers with diverse sets of skills.







*WISH's Megan Jeffrey (center) and Tracy Davies with Student Fee Committee President Jason Anderson*

## WISH provides support to CS/SE women

Founded in fall 2006, Women Involved with Hardware and Software (WISH) is a student organization dedicated to providing a community of support for women in computer science majors and minors. To rectify the gender gap in computing and technology fields, WISH reaches out to industry leaders and hosts on-campus info-sessions and recruitment meetings with companies such as Google, Amgen and Northrop Grumman.

WISH strives to better its members professionally and nurture a strong spirit of friendship. The club organizes events that enable interaction with others in the department as well as the local community, such as rock-climbing at SLO-Op climbing gym and the PASS-Party, where current members assist other students in registering for the classes they need to succeed.

WISH also helps with WOW freshmen orientation and Cal Poly's Open House.

## Paper prompts Greece trip

Computer Science student **Sean Lydon** co-wrote a paper with his thesis advisor, **Hugh Smith**, that was accepted at the second annual International Association for Science and Technology for Development Sensor Networks conference (IASTED).

"The conference was in Crete, Greece, and the Student Fee Committee was gracious enough to sponsor most of my trip so I could present my paper there last month," says Lydon. "It was an amazing experience traveling to Europe to discuss sensor network topics with others excited about the subject."

See Lydon and Smith's paper and photos at <http://www.slydon.com/publications.html>.

## Cal Poly students attend SWE National Conference

Cal Poly sent 18 students to the Society of Women Engineers' (SWE) National Conference, including computing students **Michelle Lee** (CSC), **Alyssa Daw** (SE) and **Selina Chang** (SE). The conference took place in November 2008 in Baltimore, Maryland.

Women in technology worldwide gather at the conference to learn and grow in their endeavors and leadership. Collegiate members were invited to attend professional workshops, networking events, a career fair, hospitality suites and luncheons, and tour Baltimore.

As part of the SWE Collegiate community, Cal Poly took home Gold Level in the Outstanding Collegiate Section Award, first place in the Boeing Multicultural Award, and third place in the Team Tech competition.

Cal Poly SWE is excited to continue innovation and commitment as members look to achieve more milestones for next year. For more information, visit Cal Poly's SWE Web site at <http://swe.calpoly.edu>.



*Cal Poly students Courtney Ward (left) and Michelle Lee accept the first place Boeing Multicultural Award at the SWE National Convention.*

## Students connect via ACM

ACM is a corporate and social club that provides CSC, CPE, and SE majors with opportunities to connect with classmates and companies. The club meets once or twice a quarter to focus on social and corporate events that occur weekly.

"Past events have included LAN parties, hikes, kayaking, movie nights, and recently, a glow stick BBQ and build-your-own-computer workshop!" says ACM Vice President **Nicolas Artman**. "We also host tech talks and info sessions with companies such as Adobe, Yahoo, Salesforce, Microsoft, CBS Interactive, Raytheon, Intuit, IBM, Sun Microsystems and Lockheed Martin."

Students can join ACM by signing up for the mailing list at [acm.calpoly@gmail.com](mailto:acm.calpoly@gmail.com) or at any club events.

## NSBE is valuable link for black engineers



Mike McThrow

The National Society of Black Engineers (NSBE), founded in 1975, is a nonprofit organization that promotes the recruitment, retention and professional development of black engineers.

NSBE is one of the largest student-run organizations in the country with over 30,000 members in collegiate chapters, including Cal Poly's Society of Black Engineers and Scientists, as well as pre-college and alumni chapters.

Cal Poly is in Region Six, a 13-state area, with fourth-year Cal Poly Computer Science student **Michael McThrow** serving as its 2008-

09 membership chair. McThrow is in frequent contact with students from other universities, developing and implementing initiatives to recruit and retain members in the region and helping to build and strengthen chapters regionwide.

As a regional executive board member, he also helps to run and organize the Fall Regional Conference.

"The conference is the largest regional event of the year, hosting a variety of events to help members excel academically and succeed professionally," says McThrow. "There are professional development workshops, a career and graduate school fair, and academic competitions such as the Academic Tech Bowl."

The 2008 conference was held in November at Microsoft headquarters in Redmond, Wash.

### ▼ FACULTY NEWS

## Meet Chris Lupo

Hi everyone! I'd first like to say thank you to fellow faculty and to staff and students for the warm welcome I've received. I may be the new guy, but you've made me feel right at home.

I'm a California native, and have long wanted the opportunity to live on the Central Coast. Cal Poly, with its excellent academic reputation and location in San Luis Obispo, has been my top-choice university for several years now. My entire education, from kindergarten to doctorate, has been in the California public school system, and I'm excited to give back. What a privilege it is to be part of such a fantastic department!

My undergraduate education is in electrical engineering from Fresno State. I realized as I was leaving there that I wanted a deeper understanding of computer systems, so I applied to graduate school at UC Davis. There, I earned my master's and doctorate in computer engineering. My research interests are code generation and compiler optimization. I'm specifically interested in algorithms and techniques that can improve performance and reduce power consumption on parallel and mobile architectures.

While working at UC Davis, I had the opportunity to teach a number of classes in computer engineering, and I discovered my passion for teaching. These fields – computer science and computer engineering – are so



Chris and Jennifer Lupo enjoy their tandem bicycle.

dynamic and such a part of the fabric of our society that I can't help but be excited to be in the classroom. I'm pleased to see that my students are just as enthused.

If you see me outside of the campus setting, I will likely be on a bicycle. Riding is my outdoor activity of choice, and this location has been awesome to explore. I enjoy all sorts of other outdoor activities too. I believe I'll have to take up something ocean-related now (kayaking, surfing, etc.).

I'm really looking forward to getting to know my colleagues and students better, and working with you on some interesting computing projects. I know we can do great things together, and I hope you'll share your ideas with me!

By Franz Kurfess  
CS/SE Professor

While my original travel plans for my sabbatical were quite a bit more substantial, the reality of being on a significantly reduced salary during that time quickly eliminated a few of the more exotic locations. So my wife and I settled for one long trip to Europe in October and November of 2007 – mostly in France, bracketed by two brief stays in Germany to visit family and friends.

In February and March of 2008, I went back to Germany to teach a short course on “Computer Support for Knowledge Management” at the University of Ulm, and to collaborate with former colleagues there. During that time, I also went on a short side-trip to Lithuania, where I taught a similar course at the University of Vilnius.

In the fall, my wife and I rented a house near Nîmes, in the south of France. This was a relatively quiet time; no phone in the house, and the closest Internet access point was at a MacDonald’s, about 20 minutes away, with plenty of opportunities to catch up on reading that I never got around to during the normal academic year. We also made use of the culture there, with visits to the Camargue, Provence, with its perched villages and old towns, and even one bull fight.

My second trip to Europe was mostly work, first the course in Ulm, then in Vilnius. I also did some work with people from the Neural Information Processing Institute in Ulm, where I used to work in the early 1990s. One of the interesting outcomes was the description of possible topics for master’s thesis or senior projects jointly supervised by faculty from

*Franz Kurfess’ trip included a visit to Trakai Castle near Vilnius, Lithuania with Vilnius University Professor Vytautas Cyras (right).*



*An asylum in Saint Rémy de Provence, France, where Vincent van Gogh spent a year (right) is now a hospital.*

## European Sabbatical

CS/SE professor enjoys teaching and cultural experiences abroad

there and Cal Poly. Their research is centered around neural networks, and ranges from theoretical investigations in associative memories, spiking neuron models, and classification methods, to applications in such areas as natural language processing, image processing, robotics and medical informatics.

Shortly before that trip, by coincidence, I got in touch with Dr. Vytautas Cyras from the University of Vilnius in Lithuania, whom I met when he was a visitor to the research group in Munich where I did my thesis. When he heard that I would be in Germany, he invited me to teach a similar course in Vilnius. So I spent

about a week there in March, mostly in a high-tech classroom similar to what we have here.

The university there has problems finding and keeping computer science students, since it’s relatively easy for them to find jobs abroad, with or without a degree. And the ones who stay often work on the side, often to the detriment of their studies.

Overall, I enjoyed both the opportunity to have some quiet time in France and to renew my contacts with former colleagues in Germany and Lithuania. One thing I won’t miss is the winter there: It’s grey, drab and cold quite often, and switches between rain and snow, resulting in a rather unpleasant semi-frozen muddy ground layer. Not even a visit to the ski-jumping world championships in Garmisch-Partenkirchen in the Alps could make up for this, especially since most of the snow there was artificial anyway.

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