

In this issue: Computers that Can See, Engineering Students Serve as Mentors, New Scholarship Honors Alumnus, Biomedical Program Co-Chair Appointed, Civil & Environmental Engineering Department Priorities.

FALL 2001

ISSUE NO. 6

U C L A E N G I N E E R



## WORKING FOR THE FUTURE:

## DEVELOPING COMPUTER SYSTEMS WITH VISION

*Team members (left to right) Hailin Jin, Gianfranco Doretto, and Payam Saisan with Professor Stefano Soatto (standing), surrounded by some of the tools they use in their research. Paolo Fauaro, Alessandro Bissacco, Prabhakar Pundir, and Jason Meltzer (not pictured) are also part of Soatto's research group.*

## MESSAGE FROM THE EAA PRESIDENT

Dear Friends,

Have you ever thought you'd like to volunteer and become involved at your alma mater but didn't know quite how?

Active alumni play a critical role in the life of a university, and that is very true at the Henry Samueli School of Engineering and Applied Science. There are many ways our alumni can give back to the School. While making an annual gift might be the most obvious, many opportunities involve little or no financial commitment.

For example, our alumni are the best source of information for students about life after college and what a career in engineering really involves. Alumni also serve as guest lecturers for courses each year on ethics and management techniques, sharing their experiences and advice with undergraduates.

Or, you might want to be a mentor on one of the Engineering Alumni Association's advisory committees for engineering student groups. Through these groups, you would offer advice to student leaders on forming relationships with companies and recruiting members, and assist them in finding guest speakers for their events and meetings.

Other opportunities to work directly with students include one-on-one mock interviews, alumni panels, and networking events – all of which will help our students succeed when they graduate and begin their careers. Alumni also act as recruiters for their

employers, speaking to student groups or hosting informational sessions on campus about careers in the engineering industry.

Alumni involvement also includes collaborative research activities with the faculty. Several cooperative research projects have led to the formation of companies in the Los Angeles area.

And a high level of alumni participation at the annual Engineering Open House in March has helped attract hundreds of outstanding students to the School. Alumni answer questions from parents and prospective students, give presentations at department events, and make phone calls to students who were not able to attend.

Volunteers often say that maintaining their connection with UCLA is one of the most rewarding things they do. Why not give it a try? If you would like to participate, please call the School's Development and Alumni Relations Office at 310-206-0678, or e-mail them at [seasalum@ea.ucla.edu](mailto:seasalum@ea.ucla.edu).

We look forward to hearing from you!



William Goodin, MS '71, PhD '75, ME '82  
Engineering Alumni Association President

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## CALENDAR OF EVENTS

### October 15-16, 2001

Electrical Engineering Research Review  
Covel Commons, UCLA  
For more information: 310.267.1954  
<http://www.ee.ucla.edu/arr/>

### October 20, 2001

EAA Homecoming Tailgate - UCLA vs Cal  
Pasadena Rose Bowl, Foodzone  
4:30 pm to 7:00 pm  
(Game begins at 7:15 pm)  
<http://www.seasalum.ucla.edu/tailgate.cfm>

### November 8-9, 2001

Wireless Internet Workshop  
Bradley International Center, UCLA  
For more information: 310.794.4082  
<http://www.wireless.ucla.edu/>

Please visit our web site, [www.seasalum.ucla.edu](http://www.seasalum.ucla.edu), for additional information on these and other events.

# STUDENTS

## NEW MENTORSHIP PROGRAM FOR ENGINEERING STUDENTS A SUCCESS

Who would know better than a student about engineering life at UCLA?

Based on this principle, the Engineering Society (ESUC) has launched a mentorship program that pairs new engineering students with their more experienced classmates. Explains Beckie Chan, “The program gives freshmen and transfer students the opportunity to ask upper-division engineering students about classes, scheduling, professors, internships, etc. via e-mail, quickly and informally.”

The mentorship program was the brainchild of Marnelli Tabbada, president of ESUC, and Ruth Matela and Beckie Chan, former ESUC vice presidents. All three students wished they had mentors when beginning the challenging engineering curriculum at UCLA, and thought such a program would be a helpful addition to ESUC’s other services. When Matela surveyed ESUC’s members to gauge their interest, she received overwhelmingly positive feedback.

Chan worked to publicize the new program and to pair up mentors with mentees based on their majors and number of years in school.

In only two quarters, more than 50 students have participated as mentors or mentees – and everyone has had positive reactions to the program. “I had someone to go to, rather than being confused as to whom to ask,” says survey respondent Cathy Leong. “My mentor was always just an e-mail away.” Leong was a first year Aerospace major when the program began, and participated both quarters.

“I’m glad that students have been taking advantage of this opportunity and can learn from other students’ experiences,” Chan says.

ESUC will have sign-ups available at Welcome Night on September 25, and also via e-mail. Interested students should contact the Engineering Society ([esuc@seas.ucla.edu](mailto:esuc@seas.ucla.edu)) or Beckie Chan ([pchan543@ucla.edu](mailto:pchan543@ucla.edu)). **UE**

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## Record Number of Student Applications

The Henry Samueli School of Engineering & Applied Science received 8,713 undergraduate applications for Fall Quarter 2001. This is an increase of 16 percent over the number of applications received the previous year.

### ALUMNI UPDATE - DO WE HAVE YOUR E-MAIL ADDRESS?

If you would like to receive engineering news and invitations from the School, why not join our engineering list serve? If you’re already a member, help us keep our information up-to-date.

When your e-mail address changes, please send a message to [seasalum@ea.ucla.edu](mailto:seasalum@ea.ucla.edu) with **Change of Address - Electronic** in the subject header and your old and new e-mail addresses in the body of the message.

For more information on the engineering list serve, please visit our web site:

[www.seasalum.ucla.edu/list\\_serve.cfm](http://www.seasalum.ucla.edu/list_serve.cfm) or send an e-mail to [seasalum@ea.ucla.edu](mailto:seasalum@ea.ucla.edu)

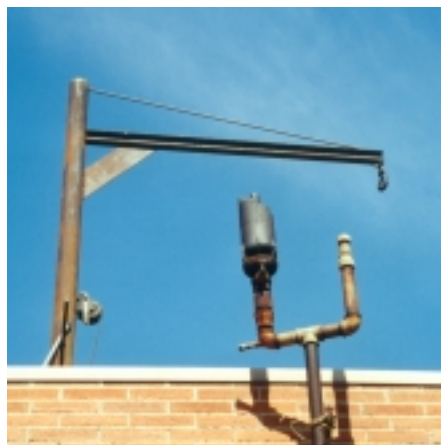
## The History of UCLA Engineering’s Steam Whistles

In 1962, the Southern Pacific Railroad donated a steam whistle to UCLA to be blown after touchdowns and at football victories. Soon after, the Atchison, Topeka, and Sante Fe Railway donated a second whistle.

Both whistles were moved to the top of Engineering I in the early 1970s. According to student legend, the whistles were given to Engineering because “all engineers do not drive trains.”

With their move to Engineering I came a new campus tradition, and the

still-operational Sante Fe whistle is blown during Engineer’s Week, at the end of the quarter, and for other significant School occasions.



# RESEARCH

## COMPUTERS THAT CAN SEE: TEAM ENABLING ADVANCED VISUAL SYSTEMS

Imagine computers that can safely drive your car on unfamiliar roads, detect the movements of a specific person and respond, or instantly add a computer-generated figure to a movie. All of these scenarios require computers with the ability to see the world in real-time and to make decisions and adjustments based on visual input.

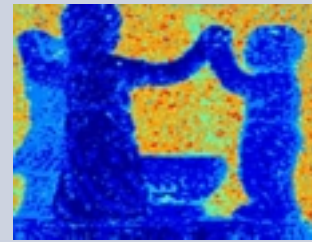
Computer Science Professor Stefano Soatto and the students in his laboratory are developing ways to endow engineering systems and computers with a sense of vision. The team is examining how people use vision to interact with others and with their environment, and is designing systems that will allow computers to interact in similar ways.

Although computers have made extraordinary leaps in processing power in the last 50 years, they still operate with limited interface systems. Explains Soatto, “Most people use a mouse, which has the expressive power of a one-year-old, and a keyboard to interact with their computer. Current computer systems cannot

*“How can a machine measure a pattern of zeros and ones... and decide whether it is a tree, or a person, and whether she is wearing a hat?”*

gauge your interest or attention, and they are unable to recognize objects or people.”

By researching vision as a sensor for machines to interact with the environment, Soatto and his team hope to expand the role computers play in our lives. Although his research focus is on fundamentals rather than specific applications, he foresees applications in such diverse areas as human-machine interfaces, computer-environment interactions (such as robotics and automa-



*The picture on the left is a defocused image of a scene, and the one on the right is a visualization of the depth estimated by the team's “shape from focus” algorithm.*

tion), mass customization of products, improved CAD modeling, special effects, and medicine.

“We know how to build cameras to capture images; we know how to build computers to crunch numbers, and we know how to build robots that move and perform pre-assigned tasks,” Soatto says. “However, we still do not know how to put everything together and endow a machine with a sense of vision: how can a machine measure a pattern of zeros and ones (which is what an image looks like to a computer) and decide whether it is a tree, or a person, and whether she is wearing a hat? And

how can a car decide that the driver is being distracted, and take appropriate action?”

Soatto's field of research is relatively new – it has been just over a decade since computers have been able to capture full-resolution moving images in real-time. But some significant advances have been made in recent years.

In 1994, Ernst Dickmanns successfully demonstrated a car driven on a freeway by computers

that used visual sensors to track the lane lines and the location of other vehicles on the road.

In July 2000, Soatto's team demonstrated a computer system that can track an object's movement and shape in real time.

“Once a system is able to track both shape and motion, it becomes relatively easy to place a computer-generated object into the scene,” Soatto explains. By concentrating on feature points, the computer is able to estimate and mimic the movement via algorithms, allowing the image to move with the real objects. Adding computer-generated images to a filmed sequence currently is done by hand and is time intensive; with Soatto's system, it can be done automatically and in real-time.

The team is also working on enabling computers to analyze and recognize complex visual phenomena such as the foliage of trees, ocean waves and smoke, and on automatically detecting events of interest in visual scenes. More information on the on-going research projects in the UCLA Vision Lab can be found on-line at <http://vision.ucla.edu>.

In light of Soatto's promising research, perhaps it won't be long before computer-driven cars and other such visionary scenarios are a reality. **UE**

## NEW SCHOLARSHIP HONORS ALUMNUS

People have many reasons for establishing scholarships, but for Carol Binns it was simple: she wanted to honor her late husband. The first James W. Binns Scholarship in Engineering will be awarded this fall.



*James Binns '67, '69, former President and CEO of Timex.*

“Jim was very proud of being a graduate of UCLA. I know that he always wanted to do something for the School, and I believe I am only fulfilling his wishes [by establishing the scholarship],” Ms. Binns explains.

James Binns, who died in 1999, received both his bachelor’s and master’s degrees from the Henry Samueli School of Engineering and Applied Science but, “surprisingly, Jim never actually held a position as an engineer,” says his wife.

“He did, however, use his knowledge of engineering in his positions as he moved up the corporate ladder,” she continues. “When he was President of Timex, Jim was able to work with the engineering staff on the details of new watch

movement designs. He always believed that this extra knowledge helped him guide the company through the change from mechanical to electronic watch movements.”

The James W. Binns scholarship will provide scholarships for future generations of innovative thinkers. The students who are

chosen Binns Scholars must demonstrate financial need and a sound academic record. The scholarship is designed to support the students for up to 12 quarters once awarded, as long as a 3.0 grade point average is maintained.

“It is my hope that the scholarship will allow students to enroll in the School of Engineering who have a strong desire and the ability to attend but may be held back by financial concerns,” says Ms. Binns. “I would also hope that those who are awarded this scholarship will one day turn around and give a hand up to those who are following behind.” **UE**

## FALL CONFERENCES SHOWCASE GROUND-BREAKING RESEARCH

This fall, the UCLA Henry Samueli School of Engineering and Applied Science is hosting conferences on research in Electrical Engineering and wireless, mobile Internet applications.

The Electrical Engineering Research Review will be held October 15 and 16 in Covel Commons at UCLA. The annual event provides an opportunity for graduate students in Electrical Engineering to present current research results.

The Research Review will begin with area overviews in physical electronics, signals and systems, and circuits and embedded systems. The afternoon and the following day will offer sessions focusing on a number of areas, including lasers and detectors, MEMS, neuro-electronics, antennas, embedded computing technologies, and high-speed, high-performance devices.

The Wireless Internet 2001 conference on November 8 and 9 in the Bradley International Center will explore the emerging area of the wireless, mobile Internet from an applications perspective.

The Wireless conference will focus on issues such as wireless data communication, wireless security, enterprise applications, developing systems for mobile platforms, and mobile program “killer apps.”

For additional information on the Research Review, please visit [www.ee.ucla.edu/arr/or](http://www.ee.ucla.edu/arr/or) or call 310/267-1954.

Information on the Wireless conference is available on-line at [www.wireless.ucla.edu](http://www.wireless.ucla.edu) or by calling 310/825-2559. **UE**

## BIOMEDICAL PROGRAM CO-CHAIR APPOINTED

New Mechanical and Aerospace Engineering Professor Carlo D. Montemagno has joined Professor Warren Grundfest as co-chair of the School’s Interdepartmental Biomedical Engineering Program.

Montemagno will be responsible for developing the academic program and spearheading the effort to broaden the Program’s involvement with other campus units.

His research interests include nanoscale biomedical systems, micro robotics, directed self-assembly, hybrid living/nonliving device engineering, pathogen detection, and tissue engineering.



Montemagno is the recipient of the Carol and Roy Doumani Chair in Biomedical Engineering.

He was formerly an Associate

Professor and Director of Graduate Studies in the Biomedical Engineering Program at Cornell University. He received his Ph.D. from the University of Notre Dame in 1995, and M.S. and B.S. degrees from Penn State and Cornell. **UE**

# FACULTY

## IN MEMORIAM

**Traugott Heinrich Karl Frederking**, a world renowned expert in the field of cryogenics and professor emeritus of Chemical Engineering at UCLA's Henry Samueli School of Engineering and Applied Science, died June 2 in Los Angeles. He was 74.

Born in Rhoden, Germany, Frederking received a Master of Science degree from the University of Hannover in 1954. In 1960, he received his Ph.D. in mechanical engineering from the Swiss Institute of Technology in Zurich. During that time he first began low temperature work at the ETH Zurich Helium Lab.

In 1962, he was appointed acting assistant professor in the School. He retired in July of 1999.



**John H. Lyman**, a pioneer in the area of artificial limbs and professor emeritus of engineering at UCLA, succumbed to cancer at his home in Sherman Oaks. He was 79.

Lyman was originally attached to the Engineering Systems group in the early 1950s by then-dean L.M.K. Boelter to explore human-machine interaction. When the Henry Samueli School of Engineering and Applied Science was created, Lyman became a member of the Materials Science Department.

In the early 1950s, Lyman worked with the Veterans Administration and Northrop Aircraft Corp. to devise high-tech prosthetic devices. Lyman combined lightweight metals, strong,

Frederking and his wife Dorothea were extremely active in the School, even after his retirement. In December 1998, they founded the Endowed Fund for Cryogenics Research at UCLA with the goal of establishing an endowed chair in cryogenics to fund continued research in that area.

Frederking organized both the first and second joint seminars between the U.S. and Japan on Magnet Stability-Related Heat Transfer in 1988 and 1991. He was a Fellow of the American Institute of Chemical Engineers, a member of the American Physical Society and the International Institute of Refrigeration.

- David Brown

multi-strand control cables with new concepts for artificial hand mechanisms to replace the commonly-used wood and leather devices. This also required development of methodologies for analysis of human upper limb motion and research into the bio-electric properties of muscles.

A graduate of UCLA himself, Lyman's Ph.D. thesis was titled "Performance of Man in Extreme Heat Environments." He received his Ph.D. in 1951.

Lyman is survived by a son, John; daughter, Wendy and companion, Dolores Yonker.

- David Brown

## NEW FACULTY

### Civil & Environmental Engineering

**Associate Professor Jiun-Shyan Chen** is interested in finite element methods, meshfree methods, large deformation mechanics, inelasticity, contact problems, and structural dynamics. He was an Associate Professor in the Mechanical Engineering Department at the University of Iowa before joining the UCLA faculty.

**Assistant Professor Ertugrul Taciroglu's** areas of research include computational structural and solid mechanics and constitutive modeling of materials. He held a post-doc position in the Center for Simulation of Advanced Rockets at the University of Illinois, Urbana-Champaign before coming to UCLA.

### Computer Science

**Assistant Professor Junghoo Cho** is interested in the discovery, collection, and management of large-scale data on the Internet. He is a graduate of Stanford University.

**Assistant Professor Petros Faloutsos's** research areas include computer graphics, physics-based animation, and robotics, control, and animation of articulated characters. He is a graduate of the University of Toronto.

**Assistant Professor Glenn Reinman's** areas of research include computer architecture, compiler optimizations, and systems. He is a graduate of UC San Diego. **UE**

## ! New Technique Speeds Conversion Rates

A team led by Professor Bahram Jalali in the Electrical Engineering Department has demonstrated 130 giga sample per second analog to digital conversion. This is several times higher than the previous world record and was obtained using novel "time stretch" techniques invented by the UCLA team.

# ALUMNI

## 2001 COMMENCEMENT ADDRESS



*Dr. Peter Staudhammer '55, '56, '57*

“Dedicate yourself to accomplish things larger than yourself. Whether you make innovations, lead large projects or take on societal leadership, make it a point to take on things that are larger than you think you can accomplish. You will be surprised how often you succeed!

And take on things that benefit more than just yourself.

I know of no one who has found anything but momentary fulfillment in having done something for solely himself. A lifetime of fulfillment comes only from what we accomplish for others - things that others value, things that are larger than ourselves.”

## CLASS NOTES

### 1950s

**Gary MacDougal '58** has written a book, *Make a Difference*, about leading the Illinois Governor's Task Force on Human Services Reform. The Task Force achieved great results with 68 percent of those on the rolls in August 1996 having moved off - most to self sufficiency. The book has sold almost 15,000 copies to date.

### 1990s

**Rex Black '90** and **Laurel Becker '90** founded a consultancy, RBCS, Inc., in 1994 to provide software and hardware testing and quality assurance services to customers worldwide. The company is halfway to making 2001 the third million-dollar-plus sales year in a row.

**Tarun Dewan '95**, after obtaining a Chemical Engineering Degree from UCLA, eventually ended up in the computer networking field working at Juniper Networks, and notes “A UCLA engineering education is a superb foundation to do almost anything with your career.” He also has married and bought a house.

*Submit your news on-line!*

[www.seasalum.ucla.edu/class\\_notes.cfm](http://www.seasalum.ucla.edu/class_notes.cfm)

## OPPORTUNITIES FOR SUPPORT: *Civil & Environmental Engineering*

Our alumni, friends, and industry partners continue to have a significant impact on engineering research and education at UCLA, providing critical funds for facilities, student support, and other areas. The top priorities for Civil & Environmental Engineering are:

### **A Computing Lab for Students** - \$86,000

The lab would provide much-needed computer access to undergraduate students.

### **MTS/Instrument Structural/Material Testing Frames** - \$45,000

The funding will be used to upgrade three machines to current standards for teaching.

### **Structural Teaching Laboratories** - \$58,000

Upgrading current equipment would allow students to learn on up-to-date systems.

### **Conference Room** - \$50,000

This room would be used for seminars, recruit-

ing, faculty meetings, and student organization meetings.

### **Nondestructive Testing Laboratory** - \$60,000

This lab allows for testing innovative ways of using ultrasonic equipment to assess internal damage of bridges and other structures following an earthquake. The equipment can also be used to examine aging aircraft for structural weaknesses.

### **Soil Mechanics Laboratory** - \$24,000

Used primarily by faculty and students in the geotechnical program, the funding would be used to upgrade the lab's instruments and equipment.

### **Environmental Microbiology Laboratory** - \$50,000

Primarily used for research, the funding would be used to purchase new equipment and upgrade current systems for the lab.

### **Water Quality Laboratory** - \$20,000

The funding would be used to upgrade current equipment in the laboratory.

### **Large-scale Reinforced Structural Testing Laboratory** - \$200,000

Funds would equip a new laboratory for structural testing to allow researchers to build full and half-scale models to simulate the effects of major earthquakes.

### **Seminar Budget** - \$20,000

The endowed fund would provide support to pay travel expenses for department seminar speakers.

If you would like to learn more about research in the Civil and Environmental Engineering Department, or would like information about funding priorities in another department, please contact the Development and Alumni Relations Office at 310.206.0678. **UE**

## INTERIM ENGINEERING DEAN APPOINTED AS SEARCH CONTINUES



Dr. Walter J. Karplus, a professor in the Computer Science Department, has been appointed Interim Dean of the UCLA Henry Samueli School of Engineering and Applied Science.

Dr. Karplus will serve as Dean of the School of Engineering until a permanent dean has been

selected by the search committee. Frank Wazzan stepped down earlier this year after serving as dean for 15 years.

Dr. Karplus has been on the faculty of the School for over forty years, and was Chair of the Computer Science Department from 1972 to 1979.

He is head of the Computer Simulation Laboratory and served for many years as director of the Center for Experimental Computer Science at UCLA.

His research deals with scientific computing and the design and application of hardware and software computer systems for the modeling and simulation of physical and biological systems. Most recently his research has focused on computational intelligence, virtual environments and the human/computer interface.

Dr. Karplus received his degrees from Cornell University and the University of California.

**UE**

### Half of Engineering I Scheduled for Demolition

The southeast section of Engineering I will be demolished in July 2002, with construction on a new engineering facility beginning soon after. Many of the Civil & Environmental Engineering laboratories in Engineering I have already been relocated to Boelter Hall.



**Our Students Can Use  
Your Help!**

The Engineering Alumni Association is compiling a list of alumni who are willing to serve as a resource for UCLA's engineering student projects and groups. We hope you will consider sharing your time, experience, and knowledge with our students.

If you would be interested in becoming a resource, please e-mail [seasalum@ea.ucla.edu](mailto:seasalum@ea.ucla.edu) or call 310/206-0678.



#### DEVELOPMENT AND ALUMNI RELATIONS

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