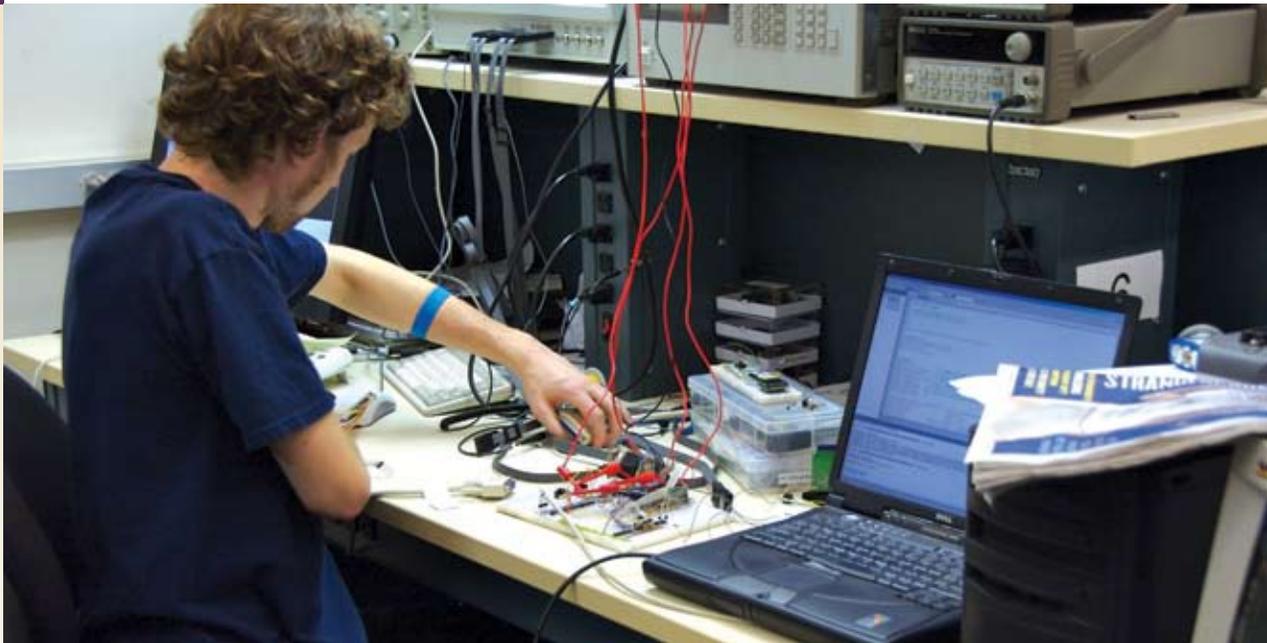


The Integrator

UNIVERSITY OF WASHINGTON
 COLLEGE of ENGINEERING
A Community of Innovators

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An EE undergrad works diligently on one of Professor Jim Peckol's infamous final projects in EE 478.

New Undergrad Curriculum In Effect

Last autumn, the BSEE program unveiled its new and improved revisions to the undergraduate curriculum. This was the first major revision since the early 1990's, and it reflects the changing nature of the field of electrical engineering. "I'm really pleased with the new curriculum structure that our faculty has passed," said Professor and Associate Dean for Undergrad Affairs, John Sahr. "The new curriculum provides wonderful opportunities to introduce modern research thrusts into the program, increase opportunities for our students, and helps faculty be responsive to the students' interests."

Previously, undergrads were required to take all nine EE core (200- and 300- level) courses no matter where their interests fell. Now, there are only three common core classes that all students must take. Beyond the smaller required core, students also choose a focus from thirteen "major concentration areas" such as wireless communications, sustainable electric energy, biomedical instrumentation, analog circuits and embedded computing systems.

This is a major expansion from the previous curriculum, where students could choose from only six different areas.

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Department News

Message from the Chair

In December 2006, Professor David J. Allstot stepped down as Chair. During his time, Dave advanced the department tremendously. He hired two outstanding new faculty, organized a very successful Centennial Anniversary Celebration, revitalized industry relations, implemented the new undergraduate curriculum and brought the graduate enrollment to new heights. We thank Dave for his dedication and service as Chair, and we wish him continued success in his teaching and research as he returns to his role as professor. Dean Matt O'Donnell has launched a search for a new EE Chair, and we will keep you posted on the progress of this important endeavor.

Currently, the department is undergoing an international faculty



search, from which we have received more than 300 applicants. We are seeking outstanding interdisciplinary expertise in dynamic systems and systems biology, nanoscience/technology and multi-physics-based simulation. We are also investigating the possibility of

an Professional Master's Program (PMP). Already, we have received numerous inquiries about the PMP as we witnessed a recent sharp increase in the number of engineers in the state of Washington.

As noted in the cover story of this issue of *The Integrator*, the department recently kicked off its new undergraduate curriculum. As technology advances, and research becomes increasingly interdisciplinary, it becomes more and more important that our education program allows our undergraduates the freedom to explore a wider range of disciplines. This will help our students obtain the essential tools needed to become successful electrical engineers.

In my brief time as Acting Chair, I have thoroughly enjoyed meeting some of the outstanding EE alumni at the Leadership Seminar Series held this last winter quarter (see page 6). We are very proud of the accomplishments of our alumni. It's been great to hear your insights on the skills and approaches that have led to your outstanding careers with the students. It is evident by the high student turnout at each lecture that your input is invaluable to the young minds of the department and to the broader EE community.

Faculty Awards and Honors

Congratulations to the following faculty for receiving these recent awards and honors!

Sumit Roy

Professor

2007 IEEE Fellow

Babak Parviz

Assistant Professor

2007 NSF CAREER Award,
Rising Young Investigator by
Genome Technology Magazine

Eve Riskin

Professor & Associate Dean

David B. Thorud Leadership
Award

Maya Gupta

Assistant Professor

Office of Naval Research Young
Investigator Program Award

Leung Tsang

Professor and Acting Chair
Electrical Engineering

Professor Zick Retires

After 32 years of service and five years as EE Chair, members of the department gathered to honor Professor Greg Zick and celebrate his retirement at the Bill and Melinda Gates Commons on October 20th, 2006.



Zick obtained his Ph.D. degree from the University of Michigan in Biomedical Engineering in 1974.

He joined UW EE that same year, and his research interests moved into computer engineering. In 1983, he was promoted to full professor, and ten years later became Chair of EE. “Greg was always a cheerful person,” said Acting Chair Leung Tsang. “His words are words of encouragement, and during his term as Chair, he emphasized mentorship of junior faculty.”

Zick continued on as Chair until 1998, during which time the department moved into the new building. This was a major accomplishment for this era, as the new building provided much needed space and improved offices and lab facilities for teaching and research.

We would like to thank Professor Greg Zick for his service over the years and wish him health, happiness and continued success at OCLC Digital Services. J

Cover of IEEE Spectrum Features Research From Biorobotics Lab

The military has long been interested in remote surgery capabilities. Such technology could let medical personnel work away from the frontline. And if surgery robots could one day be transported via a mobile platform such as a Humvee or a Medevac helicopter, taking the surgical care to the patients would become faster than transporting the patients to the care. In addition, these systems could also help under served populations in remote locations that lack access to specialists and state-of-the-art healthcare, or even with disaster relief such as Hurricane Katrina, last year’s earthquake in northern Pakistan, or the Indian Ocean tsunami of December 2004. As recently featured on the cover of IEEE Spectrum, these are the type of scenarios that researchers in the Biorobotics Lab are trying to address.

Last June, a team led by UW EE professors Blake Hannaford and Jacob Rosen set out to field-test RAVEN—a prototype surgical robot in the desert conditions of Simi Valley, California. Two separate sites were set up 100 meters apart; one with the surgical robot, portable surgery table and a video camera, and the other with a control console and video monitor. From the control console, a surgeon transmitted operating instructions via wireless communications channels through an Unmanned Aerial Vehicle (UAV) flying above the site. This linked the two stations together to the surgical robot, which performed the surgical task.

Removing the surgical robot from a sterile environment such as an operating room and deploying it in a harsh environment such as the desert posed significant technological challenges. Moreover, it was the first time ever that such an experiment utilized

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The field setup in Simi Valley, California.

Student News

Engineers Without Borders:

Saving the World One Village at a Time

As a founding member of the UW student chapter of Engineers Without Borders (EWB), EE graduate student Stephen Hawley recently led a site assessment trip to Bolivia. EWB is a non-profit organization dedicated to improving the quality of life of individuals in the developing world through sustainable engineering design and training.

The project site, Yanayo, lies in the high Andean region of central Bolivia about 75km SSE of Cochabamba. For the past five hundred years, this small community has relied on traditional farming for its existence, but recent drought conditions threaten their way of life. Below describes Stephen Hawley's experience in his own words:

The trip was the culmination of a year long effort of fundraising and planning. As is often the case, travelers must quickly develop the ability to go with the flow or suffer extreme stress. Just before we left for Bolivia, we learned that our in-country contact would not be able to accompany us to Yanayo. Then our flight to La Paz experienced electrical problems and was re-routed to Santa Cruz where we slept on airport benches until a morning flight to Cochabamba. In Cochabamba, we got in touch with our in-country contact Edward Gonzales and with the Peace Corps office. Edward arranged for two village leaders to make the 13-hour trip by foot and bus to guide us to the village. Tuesday, we drove 158km for six hours in a rented 4x4 on narrow, mostly dirt roads with the ever present fear of encountering a bus on a blind switchback.

Upon arrival in the village, the children immediately greeted us and took great satisfaction in beating the dust from the car using tree branches (oh well, was a rental). The site assessment went extremely well. We had two well-attended and lively community meetings, and we visited their sites of concern, including roads and water sources. We came away with at least five years worth of work that will help the community improve their health, standard of living and income. Initial projects will work on improving stove efficiency and reducing household smoke, improving roofs to decrease habitat for disease vectors and rainwater catchments for household vegetable gardens to improve health and nutrition.

The opportunity for students to meet, interact with and help villages in foreign countries is a priceless learning experience. If you wish to encourage and facilitate these opportunities, we can use your skills and/or your donations. ∫

For more information, please email or visit:



Overlooking the village of Yanayo. The large field in the center is unplanted due to water shortage, yet the trees are green and healthy indicating potential groundwater sources.



School in the community goes through the third grade. The school children embrace CEE graduate student Donee Alexander during their lunch break.

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www.nimret.org/ewbuw.*

Student News

Hurricane Katrina:

Service Learning to Repair the World

Hurricane Katrina was a natural disaster, made worse by human actions. Higher Gulf of Mexico temperatures possibly induced by global warming, widespread destruction of protective barrier wetlands, continued expansion of a city below sea level despite its continued sinking, and the brazen manipulation of water flow (the Mississippi gulf outlet) for economic rather than weather protection, all made a Category 3 storm (as Katrina was when she reached New Orleans) far more destructive.



The students in the program. From L to R (standing): Charlene Reyes, Jimmy Zhu, Jessica Nguyen, Katrina Duell, Rob O'Brien, Dorothy Yeung, Jenna Rovegno. From L to R (kneeling): Mayra Garcia, Haley Brandt, John Franklin, Ashley Jenkinson. Not present: Gen Belcher.



A large home destroyed beyond repair in Bay St. Louis. Category 4 storms predict such damage for small houses, yet Katrina's forces and impacts far exceeded her Category 3/4 rating.

During winter quarter 2007, the University of Washington conducted a full credit program on the Gulf Coast of Mississippi (Bay St. Louis/Waveland). It integrated a formal academic curriculum with service learning. This innovative program was designed and led by EE Professor Denise Wilson to meet the critical needs of those who are still suffering the aftermath of Hurricane Katrina.

Program participants rebuilt homes and worked in local elementary schools 3.5 days a week, and were engaged in an academic curriculum two days a week entitled, "The Impact of Katrina on Technology and Infrastructure." Students had a unique opportunity to engage in meaningful service learning, provide desperately needed semi-skilled labor (wiring, plumbing, drywall, flooring, etc.) in the Katrina rebuilding. They also studied the impacts of technology development as it relates to what went wrong and right with the preparation and response to the storm. *J*

Curriculum

(Continued from Page 1)

Each new major concentration area includes a set of required coursework and a capstone design course.

The new curriculum also offers more elective flexibility both inside and outside of EE. Students can focus their EE coursework as narrowly as they wish or keep their experience broad-based.

So, why these changes at this point in time? As the electrical engineering field itself diversifies along with its applications to a wide range of other fields, it became apparent that students needed more flexibility in their course choices. Students enter the program with a variety of interests—some want to pursue a particular branch of EE in depth, while others wish to gain a broad background in all aspects of EE. Some students obtain EE-related jobs upon graduation, while others use their degree in professions such as medicine, law, business consulting, and teaching. An ever-increasing number of students intend to pursue double degrees in other fields, including other engineering fields.

The new curriculum also allows the faculty to create new major concentration areas more easily than before, as well as to introduce new senior-level courses that represent emerging directions in the field. Students can also explore and develop their interests as they progress through the major. *J*

2007 UW EE Leadership Seminar Series

This winter, the Department of Electrical Engineering welcomed alumni to campus to speak with undergraduate and graduate students during the EE Leadership Seminar Series. Each week, a UW EE alumnus shared their insights on the skills, attributes and approaches that can lead to outstanding careers.

Professor John Sahr was the instructor for the course, which was attended by approximately 50 students. Students appreciated the breadth of career options available to them, and welcomed the knowledge that an EE degree is a wonderful basis for any career.



Alumnus John Branch speaking to students after the seminar.



Alumnus F. Paul Carlson. His Ph.D. advisor, professor emeritus Akira Ishimaru also attended his seminar.

The list of speakers included:

Jerry Knoll – BS 1965 EE, BS 1966 IE, MBA 1967
VP, Genie Industries

F. Paul Carlson – BS 1960, Ph.D. 1967
President & CEO, Carlson Group

John Branch – BS 1991
Patent Attorney and Partner, Darby & Darby, P.C.

E. Thomas Hart – BS 1967
Chairman, President and CEO, Quick-Logic

Rob Shanafelt – BS 1967
President and CEO, Radix Technologies

Mary Simpson – BS 1990
Chief Systems Engineer, Battelle Pacific NW National Laboratory

Chris Kenworthy – BS 1976
Sr. VP, Worldwide Marketing, McAfee, Inc.

UW EE Represented at ISSCC 2007

In February 2007, UW faculty, students and alumni joined more than three thousand engineers from across the globe in San Francisco for the annual *IEEE International Solid State Circuits Conference (ISSCC)*. ISSCC is the foremost forum for presentation of advances in solid-state circuits and systems-on-chip. ISSCC offers a unique opportunity for engineers working at the cutting edge of IC design and use to maintain technical currency, and to network with leading experts.

UW was again well represented in the ISSCC technical program with presentations from Ying Su, “A 1.6pJ/bit 96% Stable Chip-ID Generating Circuit using Process Variations,” and Shailesh Rai, “A 1V 600uW 2.1GHz Quadrature VCO using BAW Resonators.” Jeremy Holleman co-authored the first paper. All three EE graduate students are advised by Assistant Professor Brian Otis.

During the conference week, EE held its Annual Alumni and



UW EE alumni reception during the ISSCC. From L to R: Sankaran Aniruddhan (MSEE '03, Ph.D. '06), Adam Chu (MSEE '02, Ph.D. '06) and Professor Mani Soma.

Friends Reception in the host hotel, which is now a great tradition and networking opportunity for about 200 attendees. We hope to see you at the reception next year! 

Alumni on the Radar - EE Class Notes

We would like to hear from you! Let us know what you've been up to since graduating from UW EE by sending us your updates at:

<http://www.ee.washington.edu/people/alumni/index.html>

E. Thomas Hart, BSEE '67

Los Altos Hills, CA – QuickLogic President and Chief Executive Officer Tom Hart was recognized as a Finalist for the 2006 World Technology Award for his efforts as an industry leader in creating technology that impacts our collective future and changes our world. Prior to joining QuickLogic, Hart served as Vice President and General Manager of the Advanced Networks Division at National Semiconductor Corporation and as a private consultant with Hart Weston International, a technology-based management consulting firm.

Richard Citta, MSEE '71

Palatine, IL – Alumnus Richard Citta was recently recognized with the prestigious IEEE Masaru Ibuka Consumer Electronics Award. Citta is Chief Scientist at Micronas Semiconducting Inc., an international supplier of consumer and automotive electronics. Citta invented a delivery system and patent for digital, high-definition television. He is a member of the Academy of Digital Television Pioneers and a two time recipient of the Robert Adler Technical Excellence Award from Zenith.

Keith Rattie, BSEE '76

Salt Lake City, UT – The UW recently recognized six alumni who are CEO's of Fortune 1000 companies; one is EE alumnus Keith Rattie, CEO and chairman of Questar Corp., one of the fastest growing natural gas processor in the U.S. Before Questar, he spent 19 years at Standard Oil before joining the Coastal Corp., a natural gas exploration and production company, as senior vice president.

Pamela Bhatti, MSEE '93

Atlanta, GA – In January 2007, Bhatti joined the faculty of Georgia Institute of Technology. Prior to this, she served as a Clinical Trials Research Associate at the University of Michigan's Radiology Department investigating the discrimination and characterization of breast cancer using 3-D Doppler ultrasound imaging.

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Graduate student Sudip Shekhar and Acting Chair Leung Tsang lead guest alumnus Arthur Chiao on a tour of the System-on-Chip Lab.

EE Alumni Across the Globe

UW EE alumnus Arthur Y. C. Chiao (MS – 1980) was recently appointed the President of the UW Alumni Association in Taiwan where he is fulfilling a volunteer role focused on improving the connection between UW's alumni and the University. During a recent visit to Seattle, Mr. Chiao toured the labs for the first time in many years. Mr. Chiao met with Acting Chair Leung Tsang, one of many EE faculty members who travel to Taiwan to advance collaborative research.

In September of 2006, Professor Tsang met with engineering alumni in Taiwan at a reception hosted by EE alumnus Kuang-Lu Lee (MS – 1978). Another reception hosted by Mr. Chiao was held in Taiwan in March 2007, coinciding with Professor Tsang's travel to National Central University in Zhongli, where he gave seminars on Microwave Remote Sensing. Expect to see more of the UW in Taiwan in the coming months, as numerous electrical engineering faculty have collaborative relationships that require them to travel there often. *J*

Surgical Robots

(Continued from page 3)

wireless communication, and in particular, a UAV as the communication link. The UAV offers substantial advantages compared to a satellite communication. The ability to launch it upon request literally anywhere and its small communications time delay makes it the optimal communication link for these scenarios. *J*



Surgery performed via remote controlled robot arms developed by the Biorobotics Lab. To learn more about this project, visit: <http://brl.ee.washington.edu/>

Class Notes

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Howard Wu, BSEE '00

Seattle, WA – Wu was recognized in the Seattle Times for his service to the community. He created BEAN, a non-profit organization providing service and networking opportunities for young professionals in the Seattle area. 1,000 members currently contribute to their communities in ways such as cleaning up a local park, visiting a retirement home, or helping an elementary school upgrade their computer network.

John Koschwanez, MSEE '04, Ph.D. '06

Cambridge, MA – Koschwanez recently accepted a Post Doc position at Harvard. There, he will be studying the social interactions in yeast and in the bacteria *Pseudomonas Aeruginosa* for developing models at a genetic level.

Mingyan Li, Ph.D. '06

Seattle, WA – Currently with Boeing Phantom Works as an advanced computing technologist, Li's research focuses on information assurance and applied cryptography for wireless networks. She is an Affiliate Assistant Professor in UW EE. On February 16th 2007, she and her husband welcomed a new addition, baby boy Joshua Zhao, to their family.

The Integrator

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