Electrical Engineering

Spring 2006

The ∫ntegrator

UNIVERSITY OF WASHINGTON
COLLEGE of ENGINEERING
A Community of Innovators

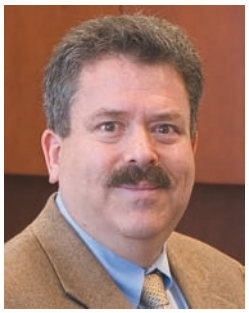
In this issue

1906 – 2006

Celebrating 100 Years!

see pages 3-6

Centennial Keynote Speaker – *Dr. Bernard Meyerson, IBM's CTO*



Dr. Bernard Meyerson

How often do you get the chance to meet one of the greatest engineers of our time? You have that opportunity on April 29th, when we are pleased to welcome Dr. Bernard Meyerson, Chief Technical Officer of IBM's Technology Group, to the University of Washington for our centennial celebration. Dr. Meyerson will share how he is turning IBM's focus toward areas such as on-the-fly reconfiguration that will let computer chips automatically adapt to different jobs. He's also proposing a new, more open way for IBM to interact with its customers.

Dr. Meyerson joined IBM as a Research Staff member in 1980. He was later promoted to Vice President of the Communications Research and Development Center, a multinational organization encompassing IBM's worldwide communications technology and circuit design efforts in both the Research and Microelectronics Divisions. Dr. Meyer-

Continued on page 3

Tektronix Funds New Undergraduate Research Lab

On November 18, 2005, the Department celebrated the opening of our first lab solely dedicated to undergraduate research opportunities. The Tektronix Undergraduate Research Lab in Sieg Hall was made possible through the generous support of Tektronix, Inc. Tektronix gave over $350,000 worth of equipment and furniture needed to fully outfit the lab.

Students who are serious about research opportunities during their undergraduate years can now work in a dedicated facility on state-of-the-art equipment. ∫

From left to right: David Brown, Vice President of Central Engineering at Tektronix (UWEE Alum '76), Stan Kaveckis, Principal Engineer at Tektronix (UWEE Alum '72), and Jim Brophy, Local Sales Account Manager at Tektronix

The faculty members of UW EE. *Front Row: Jeff Bilmes, Brian Otis, Hui Liu, Yasuo Kuga, Radha Poovendran. 2nd Row: Jacob Rosen, Mark Holl, Lih Lin, Howard Chizeck, Linda Shapiro, Martin Afromowitz, R. Bruce Darling, Mark Damborg, John Sahr, Jim Ritcey, Kai Strunz, Richard Shi, Maya Gupta, Vikram Jandhyala. 3rd Row: Tai-Chang Chen, Les Atlas, Eric Klavins, Blake Hannaford, Mohamed El-Sharkawi, Jenq-Neng Hwang, Jim Peckol, Greg Zick. Back Row: Akira Ishimaru, Leung Tsang, Ward Helms, Sinclair Yee, Deirdre R. Meldrum, Babak Parviz, Rich Christie, Ming-Ting Sun.*

Message from the Chair

A variety of fun-filled activities have been planned for our Centennial Celebration, and we are looking forward to seeing you on Saturday, April 29th. Here are just some of the things we have in store for you.

Professor Richard Christie has assembled an in-depth update of the Department's rich history, which will be available on CDROM. Also, a panel of EE alumni will discuss the future of the Department and of Electrical Engineering in general. After a lunch in the HUB, you'll have an opportunity to visit faculty and students in the research and instructional labs, and they will show you their remarkable accomplishments and latest innovations. On page 3 of this newsletter, you will find a list of all the open labs available for tours.

All throughout the day, you will be able to catch up with old friends and favorite faculty. To cap the night off, we're excited to have IBM's Chief Technical Officer, Bernard Myerson give the keynote address at dinner.

The campus will be lively with two other major events: the Engineering Open House (April 28th-29th), and the UW Alumni Association's Washington Weekend (April 27th-29th).

With all these activities, and the rhododendrons in blossom at your alma mater, what better place is there to be? Come join the fun and festivities at the UW EE Centennial Celebration in April. ∫

I hope to see you all there!

David J. Allstot
Professor and Chair

Emeriti gathered at annual reunion.

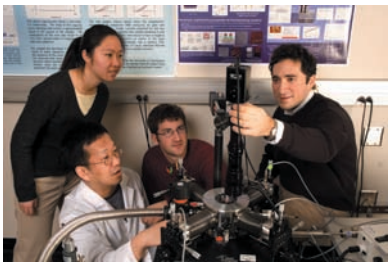
Tour Research Labs During the Centennial

Don't miss this opportunity to visit our labs, talk with professors and researchers, and get a sneak preview into emerging innovation. Below is a list of labs and research teams that will be available to talk with you from 3:30 to 5:30 on April 29th. More information on lab tours can be found at: www.ee.washington.edu/centennial/events/lab_tours.html

Understanding How Cells Work
Deirdre Meldrum & Mark Holl

Nanotechnology
Babak Parviz

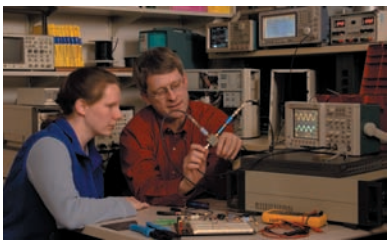
The Human-Robot Interface
Blake Hannaford



Micro Electro Mechanical Systems
Karl Böhringer

Direct-Write Microelectronic Fabrication and Fine Tuning
R. Bruce Darling

EE History - Arcs, Sparks, and Sailing Objects of the 1800s
R. Bruce Darling



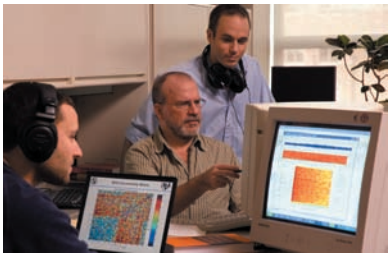
Passive Radar Detection of Aircraft, Meteors, and Ionospheric Turbulence
John Sahr

Intelligent Transportation Systems Program
Daniel J. Dailey

New Generation of Hearing Aids
Les Atlas

The Power of Electrical Engineering
Mohamed A. El-Sharkawi

Signal, Speech, and Language Interpretation
Jeff Bilmes



Open House
April 28th-29th

Attendees of the Centennial Celebration are welcome to enjoy the exhibits at the College of Engineering Open House. This event is also open to children of all ages who are interested in learning more about engineering. For more information about the exhibits, please visit: http://www.engr.washington.edu/openhouse/

Keynote Speaker

(Continued from page 1)

son is an IBM Fellow (IBM's highest technical honor), a Fellow of the American Physical Society and the IEEE. Through the years, Dr. Meyerson has received numerous honors and awards, including "Inventor of the Year 1997" by the New York State Legislature, and "United States Distinguished Inventor of the Year" in 1999 by the US Patent and Trademark office. ∫

The Electrical Laboratory in Old Engineering Hall, 1916. Magnusson Collection.

The Electrophysics Lab, ca 1950s.

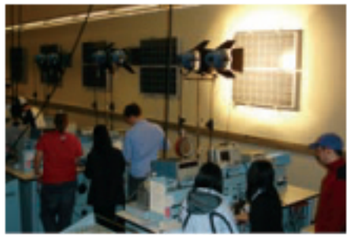
DC Ammeter, ca. 1948. Magnusson Collection.

Weston Wattmeter, ca. 1948. Magnusson Collection.

Shunt Box, ca. 1948. Magnusson Collection.

DC Voltmeter, ca. 1948. Magnusson Collection.

The Electonics Lab, 1948. Magnusson Collection.



Students in EE 351 use a thyristor controlled dimmer to explore the effect of light intensity on solar cell performance in the Energy Systems Laboratory of the current EE building.

The Electrical Laboratory in the 1948 Electrical Engineering Building. Professor Roy Lindblom standing on the left. Magnusson Collection.

The Electronics Lab.

The EE 161 Class of 1944. Victor Grgurinovitch, front row second from left, changed his name to Grinich and went on to be one of the eight founders of Fairchild Semiconductor. Can you name any of the other students? Visit www.ee.washington.edu/centennial/looking_back/ to view the department's class photos over the last 100 years.

EE 372 Microprocessor Systems Laboratory in the mid-1980's. Professor Bill Moritz at left.

Students working on their final project for their Digital Circuits and Systems course (EE 271) in the current EE Building.

EE Homes Over the Last 100 Years:

1. Science Hall (now Parrington Hall)
2. Machinery Hall
3. Electrical Engineering Building
4. New Electrical Engineering Building

1.

1902 - 1910

2.

1910 - 1948

3.

1948 - 1998

4.

1998 - Current

Professor Emeritus Robert N. Clark

In Memory of Bob Clark

The Department was saddened by the death of Professor Robert N. Clark on January 27, 2006. Professor Clark joined the EE Department in 1957 from Honeywell Inc. where he had established his reputation as an expert in the analysis of feedback systems and automatic control. This emergent technology was critical to understanding the dynamics of complex systems, from motors to aircraft, and the design of the necessary control systems.

He documented his expertise in a seminal text, "Introduction to Automatic Control Systems." Published by John Wiley and Sons in 1962, it had at least three printings. This book was particularly impressive for the relevance of its content. Students were challenged with real-world examples from Bob's experience, lending more excitement to their study than often the case in introductory texts. Upon arriving at UW, Bob was an early and major contributor to developing our curriculum in systems and automatic control.

Professor Clark received his BSEE and MSEE degrees from the University of Michigan (1950 and 1951), and his Ph.D. from Stanford University in 1969 while on leave from our department. His expertise was recognized nationally and internationally by his election as a Fellow of the IEEE in 1983 with the citation: "For contributions to engineering education and the practical application of control theory." He was also appointed Professor of Aeronautics and Astronautics in 1988, and continued to serve both departments until his retirement in 1994.

Those of us who served in the Department with Bob enjoyed his wry humor and, especially, his generous friendship. Bob and his wife Mary were gracious and dedicated members of the Electrical Engineering community who provided ready hospitality to faculty and students. ∫

New Student Resources Center - Sieg Hall

After two years of renovation, the newly updated Sieg Hall was officially opened to the public. In addition to structural repairs to the building itself, the following space has been provided to UW EE students:

- ***Integrated Student Center –*** a designated area where students can study, discuss EE related issues, or socialize
- ***Offices for student-run organizations –*** separate dedicated office space for IEEE, HKN, and GSA
- ***TA Center –*** individual workspace for each TA as well as a computer lab
- ***Tutorial Center –*** A room which holds up to 24 students along with three additional smaller and adjoining "break-out" rooms

Congratulations to our new IEEE Fellows!

Professor Blake Hannaford
For his contributions to haptic interfaces and telerobotic systems.

Professor Richard Shi
For his contributions to computer-aided design of mixed-signal integrated circuits.

Alumni Spotlight: Alhussein Abouzeid and Lisa Zurk

Recipients of NSF CAREER Awards

Congratulations to our alumni, Assistant Professors Alhussein Abouzeid from Rensselaer Polytechnic Institute, and Lisa Zurk from Portland State University for receiving NSF CAREER Awards! As one of NSF's most competitive awards, the CAREER Award is given to faculty members who demonstrate high-quality research and novel education initiatives early on in their academic careers.

Alhussein Abouzeid graduated with his M.S. in 1999 and Ph.D. in 2001, and his advisor was Professor Sumit Roy. He will use his NSF CAREER Award to investigate dynamic wireless networks with applications in environmental sensing, disaster response, and connecting homes within a community.

Lisa Zurk graduated with her Ph.D. in 1995 and her advisor was Professor Leung Tsang. Zurk says that although her dissertation research was in electromagnetic scattering in snow covered regions, the theory of scattering in random media has wide applicability and will be a central part of her NSF research in terahertz imaging. "I benefited greatly from learning this theory from Professor Tsang, who is not only a recognized expert in the field but pioneered much of the early research," says Zurk.

"I benefited greatly from learning this theory from Professor Tsang, who is not only a recognized expert in the field but pioneered much of the early research."

The research supported by Zurk's NSF CAREER grant will characterize broadband Terahertz (THz) pulse propagation and scattering in random media by developing advanced electromagnetic (EM) models that are integrated into a rigorous systems simulation framework. ∫

Welcome Assistant Professor Josie Ammer

Josie Ammer joins the department as an Assistant Professor this spring quarter. Ammer's research interests are at the intersection of wireless communication and low power electronics. Her current research focuses on wireless sensor networks and adaptive wireless communication, which requires an understanding of the tradeoff between the communication-theoretic performance and the power consumption of a system.

Outside of academia, Ammer enjoys playing ice hockey, training for triathlons, snowboarding, and practicing yoga. She loves to travel the globe and experience different cultures. She is also interested in entrepreneurship, especially as it applies to high-tech start-ups, and spent three months at a Silicon Valley venture capital firm. ∫

Assistant Professor Josie Ammer

Calling all EE Alumni. This party's for you!

Saturday, April 29, 2006

Your alma mater is celebrating 100 years and you're invited! We have a fantastic line-up of events including a keynote address by IBM's Bernie Meyerson, lab tours with a preview of emerging technology, live music at the celebration dinner, and best of all, the chance to reconnect with former classmates, professors, and friends.

Also on Saturday, the whole family will enjoy our free Engineering Open House featuring hundreds of interactive exhibits for all ages. Live entertainment, lectures, art displays and various demonstrations will also be going on all over campus for the annual Washington Weekend event. There will be something for everyone! We hope to see you in April.

Don't miss it! Register online by April 3rd: www.ee.washington.edu/centennial

The Integrator

Website: www.ee.washington.edu / Tel: 206.221.5270 / Fax: 206.543.3842

University Of Washington
Department of Electrical Engineering
Paul Allen Center - Room AE 100R
Box 352500
Seattle, Washington 98195-2500