November 2000

Build a Killer PC from parts! Configure it! Keep it!

Who:	Prof. Bruce Segee, and a band of highly competent helpers, co-hosted by the IEEE
When:	Jan 27, 2001 (first Saturday of the Spring semester), 9:00 am (Note: if you will be a UM first year student next year, we have a special workshop planned for you.)
Where:	Room 17 Barrows Hall
Cost:	$1500 (or nothing if you're just observing - space permitting)
Deadline:	Dec 28, 2000 with $1500 payable to the University of Maine and sent to the UM ECE Department, 5708 Barrows Hall, Orono, ME 04469-5708 (We need the $ in advance to buy parts.)

Why: This seminar is aimed at Electrical and Computer Engineering students who want to have a detailed knowledge of the guts of their own high-performance computer system. Each person starts with a big box of "stuff" and a screwdriver and ends up with an 800 MHz 128 Meg RAM, 20 Gig disk, CD RW/ DVD, 17 inch monitor, majorly cool system. We're talking high-end graphics, sound, you name it. (See http://hornet.eece.maine.edu/buildpc/ for details)

We're going to step through the nitty gritty of building a computer - what each part is, what it does, how it works, and how to put it together. When you're done, you will have touched everything, smelled everything, and maybe worked up a little sweat.

Who this is for: If you want bragging rights to an awesome machine that is currently near the top of the line and can be upgraded over time to stay that way, and if you want to know what does what and how it works together, this is for you.

Who this is NOT for: If you dream of an "internet appliance" where you only touch the keyboard and mouse and only use it a few times a month to get chicken soup recipes off the web and send e-mail to grandma, this is not for you. This is not the way to get the cheapest possible PC, nor is it the easiest way to get a working PC. But we think you'll be very, very satisfied. Ah ... what could be sweeter?

Francis Crowe Society ...

This semester, we will induct the first College of Engineering graduating class into the Francis Crowe Society. Earlier in the semester, the College faculty were initiated in what we hope will become a time-honored tradition. In the past, we have noted how graduation tends to be impersonal, and the Francis Crowe Society was established to give greater meaning to this very significant event in the lives of our students. We will be honoring distinuguished alumni/ae with membership as well. It is an opportunity for students, loved ones, faculty, and friends to celebrate a new beginning. The first ceremony will be held December 15, 2000 at 1:00 in Little Hall. Graduating seniors should be receiving invitations soon, if not already

Faculty Focus - Professor Habtom Ressom ...

Assistant Professor Habtom Ressom, e-mail: ressom@eece.maine.edu, phone (207) 581 2231.

Dr. Habtom Ressom joined the Electrical and Computer Engineering Department in November 1999. Prior to joining UMaine, he worked as a research and teaching assistant with the Institute of Process Automation at the University of Kaiserslautern, Germany, where he received a Ph.D. in Electrical Engineering in May 1999. At the Institute of Process Automation, he was responsible for a number of industrial projects dealing with neural network-based dynamic system modeling. His industrial collaborators included IBM Storage Division (Mainz, Germany), Freudenberg Nonwoven Group (Kaiserslautern, Germany), and Schott Glas (Mainz, Germany).

Habtom's current research interests focus on the application of integrated computational intelligence techniques for process modeling, control, and optimization. Recently, he developed a software tool that is particularly tailored for modeling nonlinear dynamic systems using recurrent neural networks. His aim is to develop a more comprehensive tool that integrates neural networks, fuzzy logic controllers, and genetic algorithms.

The tool will be used for the design and optimization of knowledge-based control schemes, in particular, for the synthesis of optimum fuzzy logic controllers. Based on a neural process model, the performance of a roughly designed fuzzy logic controller will be evaluated for a given set of parameters that govern the fuzzy system. Depending on this evaluation, genetic algorithms will generate the best set of parameters that gives rise to a better closed-loop behavior.

Habtom has been collaborating with Professor Mohamad Musavi in strengthening the Intelligent Systems Laboratory (INTSYS), which is an inter-disciplinary research group at the University of Maine. Habtom is currently investigating the application of advanced computational intelligence techniques in the areas of Bioinformatics and Oceanography (e.g., DNA base calling, gene expression data analysis, primary production modeling, estimation of chlorophyll concentration, etc.). In addition, he is also working on neural network-based estimation of paper quality and neuro-fuzzy control of critical dimension in photolithography process. These projects have been carried out in collaboration with Sappi Fine Paper and National Semiconductor, respectively.
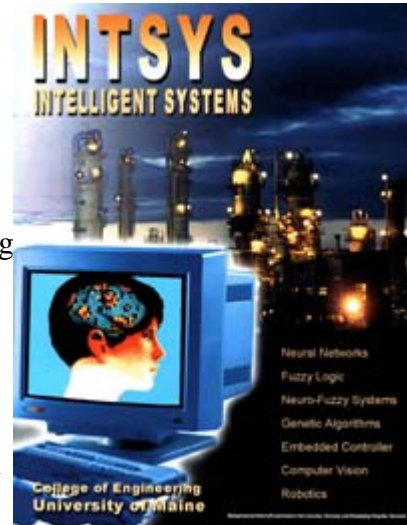

This semester, Habtom is teaching the undergraduate course Linear Circuits and Systems ECE314) and is assisting in the graduate level course Neural Networks (ECE590). In the Spring 2001, Habtom will teach Linear Systems Analysis (ECE512) and will also assist in Feedback Control Systems (ECE414).

Tidbits

Three first year students, Clint Folsom, Roxie Paine, and Matt Rodrique, are working hard on developing projects for the high school computer engineering course we're developing. Modeled after the Lego Mindstorm products, we're working with MIT's Handyboard system to introduce C programming and the development of microprocessor-based systems using Legos.

The IEEE Student Chapter is planning events for the Spring semester. We're thinking of a couple of seminar ideas ("After you land your first job - the politics of promotion" or "Successfully building your own company - from those who have"), we're planning a ski trip, and we'll have a few sessions of ECE1000.
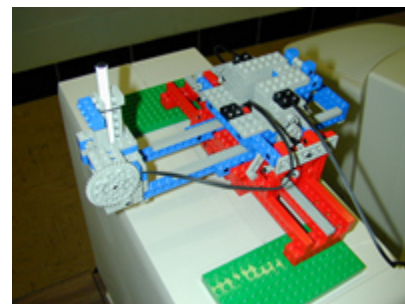
An XY, ball point pen plotter, made with Legos and the Handyboard - by Matt Rodrique, First Year student.

To the uninitiated, ECE 1000 is a Friday afternoon get together at the classic and famed Orono institution and landmark, Pat's Pizza. Also, watch for enhanced working conditions (including a net-connected pc) for those who volunteer to work in the IEEE Coffee Shop. **Don't forget the IEEE Christmas party, scheduled for Dec 14 in Soderberg (Jenness Hall) Everyone (nonmembers included) is invited.**

The Microelectronics Scholarship Consortium will be meeting soon to discuss this year's scholarships. Increased emphasis will be given to the category, "Service to the Profession", as demonstrated by service and involvement in student professional organizations (like IEEE). We will be actively seeking volunteers to give our IEEE Chapter a kick-start this semester. Involvement in Eta Kappa Nu, and Tau Beta PI are also encouraged. A [draft Microelectronics Scholarship Consortium web page](#) is in the works.

Based partly on student interviews during our recent ABET evaluation and the "arrival" of our new Computer Engineering lecturers, Bruce Littlefiled and Andy Sheaff,, we are discussing some serious revision of the Computer Engineering curriculum. You will hear much more about this in the near future.

We are in the final stages of organizing summer sessions of ECE 342, Electronics I, and ECE 314, Linear Systems. I think we'll be announcing the details soon.

The ECE Department is currently soliciting interest from **high school science and mathematics teachers** to spend 10 weeks during the 2001 summer working in a departmental research area. Available research areas include environmental sensors, robotics computer vision and neural processing, communication devices and applications, microprocessor instrumentation, microelectronics and computational modeling. The teacher(s) will receive a stipend (~$10,000) and academic credit to participate in the program. It is anticipated that the teacher(s) will be involved in a project which may continue into the academic year and involve participation from high school students. As a result of the student participation, students will be exposed to and involved in state of the art research problems. Please forward this message to anyone who you think might be interested.

And finally ...

Some question the value of formal class lectures these days. And in light of Internet technology, some even question the need for an instructor. And, of course, labs are a problem with web courses. But some things never change, as Sam Johnson said in 1791 ...

"Lectures were once useful; but now, when all can read, and books are so numerous, lectures are unnecessary. If your attention fails, and you miss a part of a lecture, it is lost; you cannot go back as you do upon a book. . . . People have nowadays got a strange opinion that everything should be taught by lectures. Now, I cannot see that lectures can do as much good as reading the books from which the lectures are taken. I know nothing that can be best taught by lectures, except where experiments are to be shown. You may teach chymistry by lectures. You might teach making shoes by lectures!" -- Samuel Johnson, quoted in Boswell's Life of Johnson (1791).

Publications, proposals, etc.

UNIVERSITY/COLLEGE/DEPT SERVICE
R. Eason gave a tour of the robotics lab to Hampden Academy high school students, Oct. 10
D.E. Kotecki attended the Grad Board Meeting, Nov. 2
M. Musavi attended Nat'l Inst of Health COBRE (Center of biomedical Research) meeting, Nov. 3
J. Field attended Coke Classroom Renovation Committee meeting, Nov. 3
M. Musavi attended Spacial Engineering Search Committee meeting, Oct. 23
R. Eason hosted Prof. Eiji Kawaguchi from Kyushu Inst of Tech in Kitakyushu, Japan, Nov. 27-Dec. 1.
D. Kotecki attended ACAC Technology Fellowing meeting, Nov. 13.
D. Kotecki attended Global Information Science open house on November 14.

INDUSTRY/SCHOOL VISITS: DATE INDUSTRY SCHOOL
R. Eason Nov. 1 Dexter Shoe, Dexter
J. Vetelino Oct. 30 Eaton Corporation Milwaukee, WI

GRANTS RECEIVED
D. Hummels, "Digital Acoustic Telemetry Upgrade," Naval Undersea Warfare, $24,950, Oct. 1.

PROPOSALS SUBMITTED
Musavi, M. (70%), Van Beneden, R. (15%) and Ressom, H. (15%), "A Neuro-Fuzzy DNA Sequencing Software," NIH, $601,111, Nov. 1.

Kotecki, D. submitted an equipment grant proposal to Agilent Technologies for $53,400, Oct. 30.

PUBLICATIONS

"Critical Dimension Control in Semiconductor Manufacturing," S. Khan, M. Musavi, and H. Ressom, in Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 10, ASME Press (Proc. ANNIE 2000), pp. 995-1000, November 2000.

"Neural Network-Based On-Line Quality Prediction in Nonwoven Production," H. Ressom, in Intelligent Engineering Systems Through Artificial Neural Networks, Vol. 10, ASME Press, (Proc. ANNIE 2000), pp. 1031-1036, November 2000.

"Sidewall Capacitor With L-Shaped Dielectric," U.S. Patent 6,131,258, K.L. Saenger, J.H. Comfort, A. Grill, and D.E. Kotecki, Oct. 17.

"Filling of High Aspect Ratio Trench Isolation," U.S. Patent 6,136,664, L. Economikos, D.E. Kotecki, and J.A. Mandelman, Oct. 24.

"Trench Separator for Self-Defining Discontinuous Film," U.S. Patent 6,150,230, D.E. Kotecki and W.H. Ma, Nov. 21.

"Overhanging Separator for Self-Defining Discontinuous Film," U.S. Patent 6,153,491, D.E. Kotecki and W.H. Ma, Nov. 28.

PROFESSIONAL ACTIVITY

J. Vetelino met with representatives at the Office of Naval Research to negotiate new contract on proposal, "Metal Oxide Based Sensor," Washington, DC, Nov. 8-13.

M. Musavi and C. Domnisoru attended 4th Annual conference on Computational Genomics, Baltimore, Maryland, Nov. 18.

J. Patton, R. Eason, A. Sheaff, and B. Littlefield met with reps from Applied Thermal Sciences to discuss high speed networking for superconducting computer, Nov. 21.

J. Vetelino, L. French, and C. Zhang visited RITEC (Rhode Island Technical Electronics Corp.) to perform ultrasonic testing on metallic glass substrates, Warwick, RI, Nov. 27-30.

B. Segee met with reps from VoiceTally Systems on developing voice activated products for automated lumber mills, Nov. 28.

R. Eason and E. Kawaguchi met with patent lawyer, Mike Persson, on steganography patents, Nov. 29.

PRESENTATIONS

J.F. Vetelino, "Novel Electrode Configurations of Bulk Acoustic Wave Resonators for Liquid Sensing Applications," 2000 IEEE Ultrasonics Symposium, Puero Rico, Oct. 20.

J.F. Vetelino, "The Bleustein-Gulyaev Wave Mode in Potassium Niobate for Liquid Sensing Applications," 2000 IEEE Ultrasonics Symposium, Puero Rico, Oct. 20.

C. Zhang, "Theoretical Investigation of Bleustein-Gulyaev Waves in Potassium Niobate for Liquid Sensing Applications," 198th Electrochemical Society Meeting, Phoenix, AZ, Oct. 21.

C. Zhang, "Novel Bulk Acoustic Wave Sensors for Probing Liquid Electrical Property Changes," 198th Electrochemical Society Meeting, Phoenix, AZ, Oct. 21.

C. Zhang, "Bulk Acoustic Wave Modes in Quartz for Sensing Measurand-induced Mechanical and Electrical Property Changes," 198th Electrochemical Society Meeting, Phoenix, AZ, Oct. 21.

H. Ressom, "Critical Dimension Control in Semiconductor Manufacturing," ANNIE 2000 Conference, St. Louis, Missouri, Nov. 8.

H. Ressom, "Neural Network-Based on-line Quality Prediction in Nonwoven Production," ANNIE 2000 Conference, St. Louis, Missouri, Nov. 8.

M. Musavi and H. Ressom made presentation to state review panel on "NASA/EPSCoR Project", Portland, Nov. 16.

UPDATES

B. Littlefield is attending the 14th Systems Administration Conference and Tutorials and participate in a workshop on "Teaching System Administration," New Orleans, LA, Dec. 2-9.