



BITS & PCs

COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

April 2002 Wright State University Dayton, Ohio 45435 Vol. 18 No. 7

Important Dates

- April 26
Last day for all but freshmen to drop a class with a grade of "W"
- May 17
Last day for freshmen to drop a class with a grade of "W"
- May 27
NO CLASSES,
Memorial Day Holiday
- June 1
Last day of S02 classes
- June 3-8
Final Exams Weeks
- June 7
~ 4:30 PM - CECS Awards and Recognition Ceremony
~ 7:00 PM - Order of the Engineer Ring Ceremony
- June 8
Spring Quarter Commencement
- June 10
Summer Quarter "A" and "C" classes begin
- June 19
Last day to drop an "A" Term class without a grade
- June 25
Last day for all but freshman to drop an "A" Term class with a grade of "W"

CECS Suffers Loss of Professor



With great sadness, we report the passing of Rai Pujara, Ph.D., on March 14, 2002. Dr. Pujara was a Professor in the Department of Electrical Engineering in the College of Engineering and Computer Science. Dr. Pujara had been with Wright State University since 1978, first serving as an adjunct professor and then becoming a full-time professor in 1983.

Prior to coming to Wright State, Dr. Pujara was an Associate Professor at Wilberforce University, a Visiting Fellow at Punjab University, and an Assistant Professor at The Ohio State University. He helped many a student through his courses on linear systems, controls, electric circuits and even introduced a graduate course on robust control.

Dr. Pujara had a strong interest in his students. He wanted to ensure that all his students understood the concepts he taught and would go to lengths to help them do this. He helped nine graduate students obtain their Master's degrees by serving as their thesis advisor.

In addition to his work with students, Dr. Pujara was also very active within the College of Engineering and Computer Science and Wright State University. He had served on several university, college and departmental committees, including the college petition committee, the college teaching committee and the col-

Rai called the EE office a week before his death. We discussed his courses, his students, and the welfare of the department. The academic development of his students and the advancement of the department were very important, even in his time of great trial.

Rai was first a teacher, pouring his life into his calling for over 31 years. Who of us can forget the countless times we've walked by his office and observed Rai and a student huddled together over an engineering problem?

Thank you, Rai, for maintaining the passion for teaching.

Thank you for investing yourself in the lives of your students.

Thank you, Rai, for teaching all of us.

~ Fred Garber, Ph.D., Chair
Dept. of Electrical Engineering

Continued on page 2

Visit us on the Web at <http://www.engineering.wright.edu>

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lege scholarship committee. While serving on the college library committee, he helped create the Periodical Reading Room to aid students, faculty, and staff in the search for research material. He was also a member of the advisory committee for the WSU Asian/Hispanic/Native American Center and served as the co-chair of the 1998 Asian Festival.

On a professional level, Dr. Pujara was involved with the Institute of Electrical and Electronics Engineers (IEEE) and the IEEE Control Systems Society. He chaired sessions at multiple conferences, such as the IEEE Conference on Decision Control and the IEEE Control Applications

Conference. He was also a reviewer for the National Science Foundation and the AIAA Journal of Guidance and Control, to name just a few. Dr. Pujara had also authored or co-authored over 50 publications. He had also received over \$325,000 in research grants and awards.

Dr. Pujara's death is an enormous loss for Wright State University. He was profoundly dedicated to assisting students become prepared to accept all of the challenges they would or could expect to see in this ever-changing world.

To honor Dr. Pujara's efforts, a memorial fund has been set up in his name to create an endowed

scholarship. Contributions can be made to the Pujara Memorial Fund by sending a check payable to Wright State University Foundation, Pujara Memorial Fund, 3640 Colonel Glenn Hwy., Dayton, OH 45435. For more information regarding this fund, please contact Jay Davenport, Director of Development, at (937) 775-5159 or via email at jdaven@cs.wright.edu. ■

"The teacher's task is not to implant facts but to place the subject to be learned in front of the learner and, through sympathy, emotion, imagination and patience, to awaken in the learner the restless drive for answers and insights which enlarge the personal life and give it meaning."

~ Nathan M. Pusey, President
Harvard University



3rd Annual AFRL/ DAGSI Research Symposium



Wednesday, April 10, 2002

8:15 AM – 2:15 PM

(continental breakfast begins at 7:45 AM)

Wright State University

Student Union Multipurpose Room

The 38 projects underway from the last two award cycles will be reviewed, each with a poster and an oral presentation.

The symposium is **FREE**, although attendees must pre-register by April 8, 2002. Registration information, including the program and a map, can be found on the DAGSI website at <http://www.dagsi.org>.

For more information regarding the symposium, please contact the Dayton Area Graduate Studies Institute at (937) 781-4001.

Continental breakfast and lunch are included

Faculty Facts

Grandhi, Ramana (ME)
Computational Mechanics Approach for Multidisciplinary Nonlinear Sensitivity Analysis
Department of Defense, Air Force, Air Force Office of Scientific Research (AFOSR)
2/1/01 - 1/31/03.....\$54,000

Grandhi, Ramana (ME)
Computational Mathematics for Determining Uncertainty Bounds in Multi-Valued Engineering Design
Dayton Area Graduate Studies Institute (DAGSI)
2/1/02 - 1/31/03.....\$17,000

Grandhi, Ramana (ME)
Computational Mathematics for Determining Uncertainty Bounds in Multi-Valued Engineering Design
Department of Defense, Air Force, Air Force Office of Scientific Research (AFOSR)
2/1/02 - 1/31/03.....\$140,413

Hangartner, Thomas (BIE)
Evaluation of a Novel Treatment for Osteoarthritis of the Knee
Procter & Gamble Company
8/6/99 - 8/5/02.....\$1,225

Hangartner, Thomas (BIE)
Evaluation of a Novel Treatment for Osteoarthritis of the Knee
Procter & Gamble Company
8/6/99 - 8/5/02.....\$25,858

Hangartner, Thomas (BIE)
Postmenopausal Evaluation and Risk Reduction
Pfizer, Inc.
1/1/02 - 12/31/04.....\$65,000

Hong, Lang (EE)
Automotive Collision Avoidance Systems
Automotive Systems Laboratory
2/1/01 - 8/31/02.....\$18,750

Misra, Pradeep (EE)
Development of IEEE Control Systems Society Web Site
Institute of Electrical and Electronics Engineers, Inc.
1/1/02 - 12/31/02.....\$18,876

Shang, Joseph (ME)
Investigation of Microwave Attenuation in Plasma
Department of Defense, Air Force, Air Force Office of Scientific Research (AFOSR)
1/1/02 - 12/31/02.....\$142,618

Siferd, Raymond (EE)
High Speed/Resolution Delta Sigma Analog-to-Digital Converters
Systran Federal Corporation
5/9/01-5/8/03.....\$167,256

CECS Students Win African American Quiz Bowl, NSBE Recognized

In October of 2001, twenty-one Wright State University students attended the National Society of Black Engineers (NSBE) Region IV Fall Conference held at the Westin Hotel in Cincinnati. Region IV is made up of NSBE Student Chapters from Wisconsin, Illinois, Indiana, Michigan, Ohio, and Minnesota. During the conference, the students participated in several activities including workshops, a career fair, and the African American Quiz Bowl, an academic competition between NSBE Student Chapters. Students are quizzed on technology issues, African American history, civil rights, and NSBE history. Wright State's NSBE team, represented by Candace Beach,

Adrienne Bolds, Andrea Bolds, and Jennifer Brown, took home top honors in the competition.

In addition to winning the Quiz Bowl, the Wright State NSBE Chapter and its Program Chair, Tanisha Williams, were recognized with certificates of merit for their excellence in outreach programs. The mentoring program was one of the outreach efforts that was highlighted. This program involves tutoring and mentoring elementary, middle, and high school students in the Dayton area at the Jackson Center on Abbey Avenue. ■

Congratulations!!

P&G To Host Tech. Camp

Procter & Gamble (P&G) will be holding a technical summer camp, August 7-9, 2002. This camp is for African American, Hispanic, Asian American and Native American freshman and sophomores interested in careers in manufacturing, engineering, research and development or information technology. Students must have a minimum GPA of 3.0.

- Learn about P&G and careers
- Meet P&G managers and see what they do
- Meet other students attending the camp or other P&G camps
- Interview for an internship for the summer of 2003

The deadline for applications is May 31, 2002. Go to www.pg.com "jobs" and click on "apply now" to complete the application. This is the same application used for job applicants. They use this application because students will also be applying for an internship for the summer of 2003 when they apply for the camp. When asked for a specific requisition number please use the following: NAUSMFG000100 for manufacturing, NAUSIT000725 for information technology, NAUSENG000042 for engineering, and NAUSR001501 for research and development. For more information, contact scudder.pc@pg.com. ■

Why use Linux for Engineering and Computer Science Applications?

by Todd V. Rovito

Engineers and Computer Scientists generally use computers differently than conventional computer users. Engineers write technical documentation that contain equations with mathematical symbols and complex graphs. If you have tried to use Microsoft Word for mathematical symbolic notation the result is a fight with the MS paper clip. A popular way to avoid the paper clip is with LaTeX. LaTeX is the defacto standard for the communication and publication of scientific documents. It is not a word processor, it is a document preparation system for high quality typesetting, that encourages authors not to worry about the appearance of their documents, but to concentrate on creating content. Use the text editor of your choice (vi, emacs, pico) to create the document and then run the file through the LaTeX processor. Some features of LaTeX include:

- Typesetting journal articles, technical reports, books, and slide presentations
- Control over large documents containing sectioning, cross-references, tables and figures
- Typesetting of complex mathematical notation
- Advanced typesetting of mathematics with AMS-LaTeX
- Automatic generation of bibliographies and index
- Multilingual typesetting
- Uses PostScript or Metafont fonts

Since LaTeX was originally developed for Unix it runs great on Linux. See <http://www.latex-project.org> for more details.

Scalability of the operating system is important for engineering

applications. Engineers like to solve a small part of the problem first then scale the application until the entire domain has been addressed. Because PC's are cheap it is often prudent to start development of the solution on a PC, proving the solution on more available hardware. After a solution has been created it can be "scaled" to solve a larger piece of the problem on more powerful hardware. Linux scales like no other operating system ever created. It runs on tiny watches and super computers. Almost every conceivable computer architecture has a Linux port. By using Linux the problem can first be solved on cheaper hardware, then as the problem domain expands the program can be scaled up to more powerful hardware like a DEC Alpha or even a super computer with a simple re-compile.

Linux is based on the design of Unix which has been around for more than twenty years. The system is well known and has extensive documentation plus the source code is available. If a feature of the operating system is not documented you can always reference the source code. If a program doesn't meet your needs, why not modify it? Other operating system vendors provide system documentation for a large fee, but with Linux the documentation is available for free (see the Documentation directory within the Linux Kernel tarball <http://www.kernel.org>.) Linux provides for an open extensible design which is freely available.

There are many free software programs available to engineers and computer scientists who run Linux. Below is a list of a few freely available software pro-

grams that might be of interest to the engineer or computer scientist.

- Physica
<http://www.triumf.ca/physica/html/homepage.html>
- Scilab
<http://www-rocq.inria.fr/scilab>
- Octave
<http://www.octave.org>
- MuPAD
<http://www.mupad.de>
- GRASS
<http://www3.baylor.edu/grass/index2.html>
- GCC Development Tools
<http://www.gnu.org/software/gcc/gcc.html>

***Trouble Getting Started
with Linux?
Let ACM-IEEECS help.***

***Friday, May 24, 2002
2:00 pm - 8:00 pm
146 Russ***

Since Linux rarely comes pre-installed on computers, and many people are uncomfortable installing an operating system, the ACM-IEEECS has organized an install fest for any interested computer user that would like to have a copy of Linux properly installed on their computer. Experienced Linux users will be on hand to demonstrate the use of Linux, and to answer questions. The purpose of this event is to allow attendees to get a better understanding of what Linux is, see demos of the system in action, find out about some useful Linux resources, and get free assistance from technically competent people with issues involved in the installation and setup of Linux. See the ACM-IEEECS web site (<http://www.cs.wright.edu/~csclubs>) for more information. ■

Get a Free Graduate Education at AFIT

The Air Force can send you to graduate school as your regular job and pay for it.

To begin, apply for the Officer Training School (OTS). This fast-paced school is located at Maxwell Air Force base in Alabama. If you are selected, you will be challenged at every turn. Your studies will include classes in professional knowledge, leadership and management, defense studies, and communication skills. You will take part in organized sports and physical conditioning to develop your confidence and teamwork abilities.

To be eligible for OTS you must be a U.S. citizen, 18-34 years of age, and meet certain physical requirements. You must have excellent moral character and score competitively on the Air Force Officer Qualifying test. In addition, you must be a graduate of an accredited college or university. You may apply for OTS if you are within 365 days of graduation.

For more information, contact:
Douglas Fields
Officer Accessions
2940 Presidential Drive, Suite 160
Fairborn, OH 45324
(937) 427-3158
Email: douglas.fields@rs.af.mil

AFIT offers MS degrees in the following areas:

- Acquisition management
- Engineering physics*
- Aeronautical engineering*
- Information resource management
- Applied mathematics*
- Logistics management
- Applied physics*
- Materials science and engineering*
- Astronautical engineering*
- Meteorology
- Computer engineering*
- Nuclear engineering*
- Computer systems*
- Operational analysis
- Electrical engineering*
- Operations research*
- Electro-optics*
- Systems engineering*
- Engineering and environmental management
- Space operations

* AFIT offers the doctor of philosophy degree in this area

AFIT is just one of the several competitive educational programs the Air Force has to offer.

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Career Service's

Spring Training 2002

Tuesday, May 7, 2002

Student Union Multipurpose Room

Step up to the plate and swing with confidence when you compete for jobs!

Mixin' & Minglin' with DTN Productions

10:00 AM - 11:15 AM
156 Student Union

Professional Development with Area Retailers

11:15 AM - 12:00 PM
Student Union Skylight Lobby

Etiquette Luncheon with DTN Productions

12:00 PM - 1:30 PM
Student Union Multipurpose Room
(Reservations require \$10 pre-payment, Sign-up in E334 SU)

Mock Interviews with Professional Recruiters

2:00 PM - 4:00 PM
Student Union Multipurpose Room
(Sign-up for Mock Interview in E334 SU)

**Deadline to register is
Friday, April 26, 2002**

For more information and to register, contact:

CAREER Services
E334 Student Union
(937) 775-2556
<http://career.wright.edu>

BITs & PCs

College of Engineering and Computer Science
Wright State University



Dean

James E. Brandeberry, Ph.D., P.E.

Editor

Jenny Garringer

BITs & PCs is a monthly newsletter published by the College of Engineering and Computer Science to inform students about activities, news, opportunities and changes occurring in the College. It reports on the achievements of faculty and students; changes in organization, policy and curriculum; scholarship and employment opportunities; and engineering and computer science student club activities.

The current issue of *BITs & PCs* is available on the Web at <http://www.cs.wright.edu/bitsandpcs/>. Copies are also available in the College office, any Department office, literature racks in the Russ Center Atrium, Russ Center Study Lounge, or the Student Club Room.

The next issue of *BITs & PCs* will be published the week of May 6, 2002. To submit items for this issue, call the College of Engineering and Computer Science at (937) 775-5001, or send email to jgarringer@cs.wright.edu by April 22, 2002. The College of Engineering and Computer Science reserves the right to edit all material for publication.

SCHOLARSHIPS AND FELLOWSHIPS

The American Public Power Association (APPA) awards scholarships each year of its DEED (Demonstration of Energy-Efficient Developments) Program. APPA will award one Technical Design Project each year intended to promote the involvement of students studying energy related disciplines and geared towards engineering students. Deadline is October 15, 2002. For more information and an application visit DEED's website at <http://www.APPAnet.org>. You may also call Elizabeth Sullivan at (202) 467-2942 or email her at DEED@APPAnet.org.

Culture Works is now accepting applications for the **Leonard P. Roberts Memorial Scholarship**. Candidates must be enrolled full-time in one of the Miami Valley four-year college programs. Only students entering their junior or senior year of study will be considered. Students must be concentrating their studies in one of the following areas: performing arts; business administration; or engineering.

The University may recommend

up to three candidates for a scholarship. *Recommendations must come from the Financial Aid office, with the endorsement of the appropriate academic dean(s) and department chair(s).*

In reviewing the candidates, the Roberts Scholarship Committee will consider the following weighted criteria for a possible 100-point score:

- GPA in the Student's Major (30 pts.)
- Overall GPA (20 pts.)
- Financial Need (20 pts.)
- Involvement in the Arts (5 pts.)
- Goals & Accomplishments (15 pts.)
- Letters of Recommendation (10 pts.)

All materials (nominations and applications) are due in the Culture Works office by *5:00 pm on Friday, May 15, 2002*. Students interested in applying should contact the Office of Financial Aid at (937) 775-5721.

The Greater Dayton IT Alliance (GDITA) is awarding scholarships to interns working in a GDITA member company (A listing of member companies is available online at [\[www.daytonitalliance.org/currentmembers.asp\]\(http://www.daytonitalliance.org/currentmembers.asp\).\) The eligibility requirements for the scholarship are listed below:](http://</p></div><div data-bbox=)

- Must have worked in an IT skilled internship or co-op position within a GDITA member company
- Must have been placed in the internship or co-op position anytime from June 2001 to the present
- Must have completed at least one year of college
- Cannot have a graduation date before August of 2002
- Must have a minimum overall GPA of 2.5 and a minimum GPA in Major of 3.0
- Must live or go to school in the Miami Valley region, including northern Butler, Champaign, Clark, northern Clinton, Darke, Greene, Miami, Montgomery, Preble, Shelby, and northern Warren counties.

The deadline for applications is May 15, 2002. Please contact Trisha West via phone at (937) 229-0054 x10 or via email at twest@daytonitalliance.org for more information on this scholarship. ■



Visit the *new and improved*



Dayton
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Graduate
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Institute



DAGSI website at
<http://www.dagsi.org>

- ✓ Learn more information about DAGSI scholarships
- ✓ Find information on upcoming events
- ✓ and much, much more!

Simulation Technologies, a cutting-edge software development company, is recruiting for individuals seeking work experience and training in technical fields. They offer flexible hours, competitive salaries, and the potential for future full-time employment. Candidates with coursework or relevant experience in the following areas are invited to apply:

- Visual Arts or related field: experience with Adobe Photoshop, MS Office preferred
- Computer Science, Computer Engineering or related field. C++ experience preferred
- Computer-related field - MIS. Experience with computer systems, hardware, software, and Intranet/Internet preferred
- Experience with MFC, ATL COM, UML, XML, fuzzy logic, and expert systems are a plus but not required; can be taught on the job

Compensation is commensurate with experience. U.S. Citizenship may be required for certain positions. Students interested should send a cover letter and resume to Simulation Technologies, Inc., Mid-City Station, P.O. Box 3, Dayton, OH 45402 or email chenon@stiusa.com.

The **SOCHE Student Research Program** has several positions for undergraduate and graduate students available in the Materials Lab at WPAFB. They offer flexible work schedules, career related work experience in their state-of-the-art labs and competitive wages (Soph. \$10.80/hr; Jr. \$12.15/hr; Sr. \$13.50/hr; Grad. \$16.55/hr). Applicants must be degree seeking students in good standing with U.S. citizenship. No experience is necessary. Positions available include the following:

Project No. AFIT9 - Haptic Operator Interface for UAV Operation and Robotic On-orbit Servicing

Major: Mechanical, Electrical, Biomed. Engineering
Description: This research will develop haptic interfaces to enhance operator effectiveness in remote control of unmanned aerial vehicles and space manipulators. Haptic interfaces that provide an operator with kinesthetic and touch feedback offers the potential of more effective control of remote systems such as UAV's and space manipulation devices. This task will involve the development and evaluation of alternative implementations of haptic feedback in a search for combinations of input and output variables that produce better control and reduce operator workload and training time. Engineering disciplines that this work may utilize are: aircraft flight, sensor and fire control; robotics and real time computer control; spacecraft attitude control; and human factors. Applicants should have experience in one or more of these and an interest in exploring and learning in all of them. Computer-related skills likely to be required or that must be acquired include: use of software including Matlab/

Simulink, Mathematica and Robotica, the latter a Mathematica-based package to generate symbolic equations of motion; code writing in C and C++; and implementation of computer graphical displays.

Project No. AFIT 12- Computer-Aided Design and Certification of Sensor-Craft

Major: Engineering with Computer Skills (Willingness and interest to do indept research of literature and databeses)

Description of Work: The objective of this project is to evaluate advanced technologies that enhance asset visibility within the supply chain. These systems improve overall supply chain performance. This study will identify average payback time frames, best practices in Information Technology (IT) adoption, barriers to implementation, and problem resolution from industrial and DoD organizations having undertaken adoption of these advanced systems. Specific tasks for the research assistant will be to evaluate literature for relevance to this and related topics for possible inclusion in the subject research, code to a database and analyze data acquired by a survey for statistical significance, interface with respondents in written and personal forums as required. Familiarity with logistics concepts is required. Computer experience is required. Familiarity with basic statistical packages and theory is necessary, as well as familiarity with research literature databases and the Microsoft Office Professional suite of applications. Database development skills are strongly desired.

Project No. 333A - Microstructure Evolution During SPD of 4N A1

Major: Chem. Engineering, Mat. Science, Chemistry

Description: The effect of deformation processing path on the grain size developed in 99.99% (4N) aluminum will be determined. Samples will be subjected to severe plastic deformation (SPD) via rolling, ECAE, conventional extrusion, and forging to different levels of strain at nominally identical strain rate. Following processing, samples will be prepared from each route for SEM examination to determine the average grain-subgrain size, grain-size distribution, and misorientation distribution via orientation imaging microscopy. The results for the various deformation methods will be analyzed to determine that method which produces the finest grain size.

Interested students can get an application via the SOCHE website at: <http://www.soche.org>. Applications must be submitted with a resume and transcript. For more information, call (937) 258-8894. ■

Upcoming Dates

On-Campus Interviews

Listed below are companies interviewing on-campus during spring quarter. Students should contact Career Services to sign-up for interviews and to get more information regarding eligibility requirements. More companies may be on-campus during the quarter, so check the Career Service website (<http://career.wright.edu>) frequently for updates.

- April 18* *Walt Disney World*
Co-Op Positions (All Majors)
(Must attend presentation on April 17 from 4 PM to 9 PM in 156 SU to schedule interview with recruiter)
- April 23* *U.S. Air Force*
Civilian Careers: Telecommunications
Computer Systems (MIS, CS, CEG, EE)
Sign-up: 4/6/02 - 4/12/02
- April 24* *Weastec, Inc.*
Design Engineer (EE)
Sign-up: 4/6/02 - 4/12/02

May 14

Inverness Group, Inc.
Construction Supervisor Trainee
(ISE, ME, MSE)
Sign-up: 4/27/02 - 5/3/02

ITRI Annual Spring Workshop

Mark your calendar for the 5th Annual ITRI Spring Workshop and the WSU Technology Showcase 2002 on April 11, 2002. This year, ITRI and the Office of Research and Sponsored Programs have joined forces to bring local businesses and University researchers together for a one-day interactive exhibition of new inventions. ITRI's workshop will focus on "The Role of Government in the Academic-Industry-Government Partnership." Guest speakers from Wright-Patterson Air Force Base, the State of Ohio, National Science Foundation, and NASA will be presenting. This spring's workshop will be just a half-day in length to allow attendees to tour the Technology Showcase. ■

Office of the Dean

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College of Engineering and Computer Science

