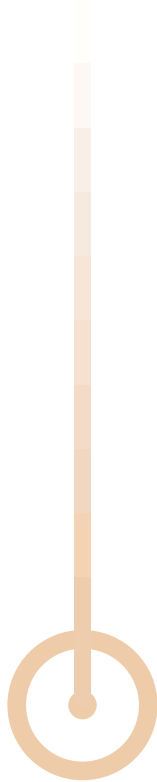


THE DEARBORN Engineer

UNIVERSITY OF MICHIGAN-DEARBORN

SPRING 2002





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News from the College of Engineering and Computer Science, University of Michigan-Dearborn
www.engin.umd.umich.edu

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FRONT COVER:

Major equipment gifts (clockwise from upper left): Electron microscope and two images, a computer chip and weld; the programmable vehicle model from Lear Corporation; Lear executives; Cray T3E supercomputer from EDS



Tim Hubbert, senior engineer; Robert Adams, director—advanced engineering; and Kenneth Shaner, vice president; of Lear Corporation's IP/Cockpit Integration Department, helped arrange the donation of a programmable vehicle model to the college. (Read more about the Lear gift to UM-D on page 3.)

MAJOR EQUIPMENT GIFTS STRENGTHEN PARTNERSHIPS

Thanks to the generosity of numerous corporations, organizations, and community partners, the College of Engineering and Computer Science has greatly enhanced its degree programs, its laboratories, and its capabilities. Much of the support received during the past few years has been in the form of gifts, grants, and other types of financial assistance. However, the college has also benefited from a succession of in-kind donations (gifts of equipment or materials) that have given it some of the most up-to-date equipment, machinery, and technology available today. With these gifts, the college has been able to offer leading-edge facilities for faculty to teach courses, conduct research, and prepare students to effectively work within industry once they graduate. Major in-kind donations from Lear Corporation, EDS, and Visteon are examples of how industry is working closely with the college to meet mutually important goals.

Automotive Systems Engineering Program Benefits from Lear Gift

Early this year, Lear Corporation donated a programmable vehicle model (PVM) to the College of

Engineering and Computer Science to support projects throughout the college, including the automotive systems engineering program. The PVM is designed to simulate the cockpit of vehicles ranging from a B-size car (smaller than a typical subcompact in the U.S.), to a full-size light truck. The PVM quickly and economically allows research within vehicles and comparisons between vehicles.

Thirty electric motors are computer controlled and work in various combinations to provide forty-two axes of adjustment. Hood length, height and slope, overall width, windshield rake angle, and tumble-home are some of the exterior parameters that can be adjusted to represent various vehicles. On the inside, the driver's seat, console, steering wheel, gage cluster, instrument panel, pedals, and even front left wheel well adjust independently in three directions. The PVM is currently worth \$500,000.

"The machine is a very useful tool for engineers to get quick feedback on how the interior space of a new vehicle will be perceived by the customers, and it can significantly shorten the product development



Left: Dean Sengupta and Tom Brady, division vice president, Applied Engineering Solutions, EDS, with the Cray

Below: Arthur Richards, automotive systems engineering student, experiments with the ergonomic design of automatic seats.



GIFTS STRENGTHEN PARTNERSHIPS
continued

time," says Vivek Bhise, professor of industrial and manufacturing systems engineering. Professor Bhise will be working on several projects on the PVM, including a project evaluating Ford products. If you own a Ford Taurus or Explorer, and would like to participate in a study evaluating six PVM configurations, please contact Dr. Bhise at 313-593-0365 or vbhise@umich.edu.

Cray Supercomputer Gift from EDS is Hard at Work

The Cray T3-E supercomputer, donated by EDS last year, has been hard at work since being installed in the Engineering Lab Building. About the size of four refrigerators, the Cray T3-E is an air-cooled parallel processing supercomputer with extreme scalability and performance. Its vast application capabilities include electromagnetism, chemistry, fluid dynamics, weather prediction, cryptography, and 3D seismic processing. It is used extensively to solve numerically intensive problems in the aerospace, automotive, and other industries and has the ability to simulate large explosions or car crashes. The Cray is currently valued at \$2 million.

The Cray has made it possible for a group of engineering faculty members to submit a proposal to the Information Technology Research Program of the National Science Foundation on the use of supercomputing in engineering research, says Ghassan Kridli, assistant professor of industrial and manufacturing systems engineering.

Pravansu Mohanty, assistant professor of mechanical engineering, is using it on a laser-welding modeling project. "This is a very complex process involving the interaction of vapors, liquids, and solids within the same system," says Dr. Mohanty. "With the Cray, we can exploit the power of computing to simulate the complex interaction physics involved."

Visteon Gift of Powerful Excimer Laser Advances Materials Research

Visteon's contribution of a LAMBDA 3000 Series excimer laser gives a significant boost to research into materials interaction, says Pravansu Mohanty. Designed for manufacturing applications by LAMBDA Physik, this high-power excimer laser has pulse repetitions of 300 Hz and high-intensity ultraviolet radiation of 308 nm. It is valued at approximately \$200,000.

"Ultraviolet laser light is an ideal tool for many micromachining applications," says Professor Mohanty. "The short wavelength allows for the production of very small features with minimal effect on the surrounding material because of the non-thermal interaction. It is particularly useful in the area of micromachining of the composites and alloys used in the automobile and electronic industries."

Specific applications include the drilling of printed circuit boards, nozzle drilling for ink-jet printers, and microelectromechanical systems (MEMS). At the College of Engineering and Computer Science, the laser will specifically benefit MEMS and surface modification research.

"I have been working on materials interaction for some six or seven years but never had the luxury of having this essential tool so accessible," says Mohanty. "This is the first time a laser of this power has been available to us."

National Science Foundation Grant Funds Purchase of Electron Microscope

Pravansu Mohanty is the principal investigator in the major research instruments grant that resulted in the acquisition of a state-of-the-art variable pressure Hitachi scanning electron microscope. Ghassan Kridli, assistant professor of industrial and manufacturing systems engineering, and Pankaj Mallick, professor of mechanical engineering and director of interdisciplinary programs, participated on the grant team, along with faculty from the physical sciences. The microscope is valued at approximately \$150,000.

"This has been an interdisciplinary effort that will benefit the entire university," says Dr. Mallick. "For the College of Engineering and Computer Science, it is the first time we will have materials characterization equipment that will significantly increase our knowledge about the characteristics of the materials used in the automobile industry."

"This microscope can operate under various conditions with high resolution and magnification," says Dr. Mohanty. "It can be used to examine biological as well as metallic samples. One can examine a living fruit fly at 300,000 times magnification. The microscope is also equipped with an energy dispersive X-ray sensor, which allows for the determination of the chemical composition of materials. Obtaining this microscope tremendously enhances our ability to conduct advanced materials research. It is a great benefit to our program and our students."



Professor Pravansu Mohanty and Zehua (Christina) Qin, a graduate student research assistant, operate the electron microscope.

THE PROGRAMMABLE VEHICLE MODEL (PVM) LEAR

The programmable vehicle model (PVM) Lear Corporation donated to the College of Engineering and Computer Science grew out of a study Lear did in the late 1990s, says James Masters, president, Lear Electronics and Electrical Division. The gift supports the automotive systems engineering program.

"The PVM represented a concentrated effort to understand the significant shifts we were seeing in the buying habits of the aging baby boomer generation," Masters explains. "This was a different, more active 'senior citizen' than we had seen before. We knew we needed to design cars that would appeal to a group wanting youthful styling but needing greater comfort and safety, and the PVM helped us do that."

The result was the Transgenerational Vehicle, a technical laboratory that traveled throughout the world. Masters explains that the PVM enabled engineers to design swivel seats that did not interfere with peripheral vision acuity, control buttons of a comfortable size, back window pillars that improved space perception, and colors and graphic elements that were appealing.

"We are happy the PVM has found a new home," says Masters, who sees it as a "great tool for engineering students."

Lear Corporation, a Fortune 150 company headquartered in Southfield, Michigan, focuses on integrating automotive interiors, including seat systems, interior trim, and electrical systems. With annual net sales of \$13.6 billion, Lear ranks as the world's fifth-largest automotive supplier. The company's products are designed, engineered, and manufactured by more than 115,000 employees in more than 300 facilities located in 33 countries. Information about Lear and its products is available on the Internet at <http://www.lear.com>.

AUTO MATS FINDS A PARTNER AT UM-D

The research team, including Profs. Mahmut Eksioglu, Vivek Bhise, Kiumi Akingbehin, and student research assistants, explain new software development to Jeff Manns, AutoMATS engineer.



When leadership at AutoMATS Software needed cutting-edge knowledge and expertise to expand the company's products, they looked toward universities for an institution with long-established ties to industry and the research capabilities to support their efforts. They decided to build a partnership with the College of Engineering and Computer Science at the University of Michigan-Dearborn.

"We chose the University of Michigan-Dearborn over other schools because its College of Engineering and Computer Science has a full range of capabilities that meets our company's needs," says Katherine Gorno, AutoMATS president. "This factor and the college's proximity to the center of the automotive industry made it an excellent candidate for our research projects."

In the College of Engineering and Computer Science, industry has found a resource that can provide high-quality research, faculty consulting, cooperative education students, and well-trained graduates. In turn, the college receives a wide range of benefits that only industry can offer, including guidance in developing curriculum and degree programs, direction in developing and using technology, support within the corporate community and at all levels of government, and, of course, valuable financial support.

Over the past several decades, the college has developed long-term, multi-level partnerships with

hundreds of global and local companies, including Ford Motor Company, General Motors Corporation, DaimlerChrysler Corporation, Visteon Corporation, ASC Incorporated, Lear Corporation, Siemens Automotive, and many other leaders of industry.

The AutoMATS partnership with the College of Engineering and Computer Science began in 2001 with an exploration of engineering functionality and ergonomic analysis tools that might be useful for future generations of the company's human factors and ergonomic software, says Gorno. "We recognized that the college had the experience and infrastructure we needed to conduct the research that would be helpful in advancing this highly technical area," says Gorno.

The College of Engineering and Computer Science recently increased its capabilities in this field to support both product development and process evaluation. In recent months, Dr. Vivek Bhise, an adjunct professor in the college and a 28-year industry veteran and former manager of Ford's human factors engineering and ergonomics department, and Dr. Mahmut Eksioglu, an expert in industrial biomechanics, joined the college's industrial and manufacturing systems engineering department. These new faculty members in combination with Dr. James Knight, a 22-year member of the department, provide the college with

the experience and expertise to attract students and research in human factors and ergonomics to the UM-Dearborn campus.

“Our research with AutoMATS is focused on issues related to the use of appropriate analysis tools and their effective integration into software packages,” says Dr. Bhise. “In addition, the college is offering student interns from the computer and information sciences department the opportunity to help computerize different analysis models, thereby completing a functional link between faculty, students, and industry.”

A larger link between industry and the university will expand when AutoMATS invites key members of its user group to review and comment on the progress of the research. This review will bring the perspective of the end user to the research process, a very important step in creating a functional and useful software tool, says Gorno. “It is very important to gain feedback from our customers,” she says. “This feedback is the foundation for our future vision and direction.”

The future direction for AutoMATS will continue to include the College of Engineering and Computer Science. Plans are already in place to work with Professors Bhise and Eksioglu to develop additional ergonomic, human factors, and engineering knowledge and processes that may enhance the next generations of AutoMATS software and products.

“What we are finding is that there are a number of areas in which analysis tools either do not exist or are not satisfactory, says Professor Eksioglu. “Additional research will be needed in years to come to fill these gaps.”

To broaden its close relationship with industry, the college hopes to initiate research in the areas of vehicle ergonomics and industrial ergonomics. All of this work may be included in an ergonomics laboratory in a new engineering building to be constructed over the next few years.

“We have already begun work in laying out about 2,200 square feet of space and have attracted several neighboring industries with an interest in conducting joint projects in different facets of ergonomics,” says Professor Bhise.

The support from AutoMATS and other companies will help the college to continue developing its capabilities in the areas of human factors and ergonomics, which could result in better-trained engineers for industry.



Vivek Bhise, Katherine Gorno, Jeff Manns, and Mahmut Eksioglu

AutoMATS has a long history in the field of computer analytical tools, originally performing standard engineering functions such as worker motion time, line balancing, and other functions concerning the determination of labor minute rate and pay-point. Working with Ford Motor Company during the 1990s, AutoMATS expanded to include an ergonomic analysis package that enables engineers to receive a comprehensive ergonomic analysis at the same time the engineer is determining the worker motion time.

“We created two tools in one, making proactive ergonomics possible for industrial engineers,” says Gorno. “The software allows the user to simultaneously perform ‘process time’ prediction and ‘what if’ analyses to identify when workers will exceed or approach human performance limitations.”

AutoMATS software is used in preprocess planning to develop lean processes; calculate cycle times, activity-based cost, and project cost estimates; balance production lines; and develop designs for quality and ergonomics.

WELCOME NEW VISITING COMMITTEE MEMBERS



Klaus Blickle is chief technology officer of ASC Incorporated, leading technical and engineering efforts worldwide and heading ASC's Engineering Services, ASC Europe, and Triad Services Group. Blickle is responsible for the engineering component of ASC Vehicle Technologies.

Prior to joining ASC, Blickle served as president and CEO of Cosworth Technology, a division of VW/Audi, leading the company's growth effort and developing new projects. He was executive director of an Audi joint venture in China and completed a re-engineering project with Audi's Ingoldstadt operation.

Blickle has held strategic and operational positions with major companies in the aircraft and engineering industries. His goal at ASC is to combine superior engineering solutions with the company's capabilities in concept development and manufacturing to create a premier global company for specialty vehicle development.

A native of Germany, Blickle completed his undergraduate and post-graduate training at the University of Stuttgart, where he earned master of science and Ph.D. degrees.



Tony Mascolo is the global sales director for Motorola Automotive Communications and Electronic Systems Group (ACES). In that role, he provides overall leadership and management of the company's Ford Motor Company business. He is responsible for strategic account planning to ensure sales growth.

Mascolo joined Motorola in 1990 and has more than 20 years of global automotive industry experience with a strong background in sales management. Prior to leading the Ford account, Mascolo held numerous sales management positions within Motorola, including global account director for DaimlerChrysler. His career includes assignments overseas, including positions in France and Germany, and account responsibilities in Latin America, Asia, and Europe. Prior to joining Motorola, Mascolo held sales and marketing positions with General Electric/Bosch, TRW, and Allied/Bendix Friction Materials.

Mascolo earned a bachelor of science degree in economics/finance from Siena College, N.Y., as well as a master of business administration degree and a master of science degree in industrial engineering from Rensselaer Polytechnic Institute, New York. He is a candidate for an international master's degree in practicing management from McGill University in Montreal. Mascolo is a member of the Society of Automotive Engineers. He lives in Chicago with his wife and two daughters.



Kregg S. Wiggins is vice president—powertrain at Siemens Automotive Corporation. He is responsible for all of the company's powertrain activities in the Detroit area, including sensors, electronic controls, drivetrain, and transmission.

Wiggins began his career with Siemens in 1985 and has held various leadership positions within the company. These include a foreign delegation as powertrain division program manager at the company headquarters in Regensburg, Germany, and director of powertrain electronics, with responsibility for the development and manufacturing of all powertrain electronics initiatives in North America. He has managed intercultural project teams and has held numerous engineering and management positions related to engine, advanced technology, powertrain, and vehicle electronic systems products.

Wiggins earned a master's degree in business administration from the College of William and Mary, in Virginia, and a bachelor of science degree in electrical engineering from Purdue University. He is proficient in the German language and he represents Siemens as a member of the Electrical and Computer Engineering Advisory Board at Oakland University.

SBC/AMERITECH GRANT STRENGTHENS MECHANICAL ENGINEERING CURRICULUM



Research
assistant Shilpa
Bhat and professor
Tariq Shamim

Many shortcomings of the traditional lecture and laboratory settings can be overcome with the use of web-based instruction, says Tariq Shamim, assistant professor of mechanical engineering. Dr. Shamim is the principal investigator on a web-based instruction project supported by an SBC/Ameritech grant. With his research assistant, Shilpa Bhat, Dr. Shamim is developing conceptual modules to demonstrate important principles and concepts that will strengthen the thermo-fluids part of the mechanical engineering curriculum. They allow instruction to be more contextualized, interactive, and collaborative, according to Dr. Shamim. The project consists of three phases:

- Development of conduction and convection heat transfer modules
- Development of radiation heat transfer and fluid mechanics modules
- Development of thermodynamics modules

In the first phase, currently in progress, several modules have been developed to support instruction in the areas of conduction and convection heat transport mechanisms. The main emphasis is on convection heat transfer.

“The Java-based interactive modules will help students develop a better understanding of the physics of these transport mechanisms,” says Dr. Shamim. “The modules will enable students to determine the effects of different parameters—such as flow type, hydrodynamic conditions, and transport properties—on the rates of heat transfer. Students will develop a better appreciation of the significance of the assumptions used in different heat transfer relations. The interactive tools will allow students with different backgrounds to learn at their own pace. In addition to enhancing their fundamental understanding of thermo-fluids, this project also will help to retain students in the mechanical engineering field.”

INTRODUCING JOHN M. COLE, P.E.

John Cole



Although his office is in Detroit, most days John Cole conducts business in his car, logging more than 2,000 cell phone minutes a month while traveling between customers across the country. His job as vice president of engineering and development for Kolene Corporation also takes him to global destinations such as Indonesia, Spain, Japan, France, and Belgium. He loves his job and sees many similarities between Kolene and his alma mater, the College of Engineering and Computer Science at the University of Michigan-Dearborn. Both organizations, he believes, generate big ideas within an environment that is relatively small and personal.

Kolene, located in Detroit, supplies a variety of industries with custom-engineered equipment and processes for metal conditioning and cleaning. Cole joined the company while earning his bachelor of science degree in industrial and systems engineering.

"Kolene was close to the campus, and being able to work in engineering while going to school certainly enhanced my education," says Cole. "I started out running blueprints and errands. About a year into the job, they found out I had a talent for drawing and put me on a board. When I graduated in 1976, they asked me to stay on. Although I had offers

from big companies, I liked Kolene. It is a small family-owned company that I could see believed in sharing its success with its employees. After 30 years, I can say my choice was a good decision."

Throughout his career at Kolene, which has led Cole to the position of vice president of engineering and development, he has been active in the engineering profession. He was chosen the 1994 Outstanding Engineer of the Year by the Michigan Society of Professional Engineers, an organization for which he has served in numerous positions. Recently, Cole was elected first vice president of the Industrial Heating Equipment Association.

Cole's interest in and commitment to professional engineering activities began at UM-Dearborn where he served as the first president of the college's chapter of the Institute of Industrial Engineers.

"We started it from scratch with only 10 members and it is still going strong today," he says. "The chapter provides a great opportunity to interact with the people in local industry who can put some real-world knowledge behind the academics students are learning." Cole has continued his active role at the College of Engineering and Computer Science

through his membership on the Alumni Industrial Advisory Committee the Alumni Board of Governors for the College of Engineering and Computer Science.

"It is essential that engineers continue to learn and stay involved professionally, just to stay current," he says. "During my engineering career, there have been amazing changes in technology. We're solving problems today that weren't even on the radar screen when I was in school. And although my work today is in a different field than my industrial and systems engineering major, the background and discipline I got at UM-Dearborn have allowed me to move comfortably into other areas, including engineering management, my role since the early 80s.

"My job here has evolved into a more direct line between the decisions I make in my leadership role and the impact of those decisions on Kolene," he continues. "In a small organization with a manufacturing or design function, it is essential that management provides that leadership."

When he is not at his desk or in his car, Cole enjoys golf and coaching hockey. He and his wife Missy, who works at a boarding kennel, have been married 14 years. They have four children: Evan, 12; Riley, 10; Hannah, 8; and Grace, 6. The Cole family lives in White Lake, Michigan.



John Cole reacquaints himself with some of UM-D's laboratory instruments.

ALUMNI UPDATE

James J. Nyeste, '68 MSE-ME, is retired and living in Pennsylvania.

Glen Alan House, '71 MSE-ME, is retired from DaimlerChrysler.

Susan M. Cischke, '78 MSE-ME, was recently named in Crain's Detroit Business magazine as one of its Most Influential Women in the automotive industry. Cischke is one of Ford Motor Company's corporate officers responsible for establishing and carrying out safety and environmental policy and strategy across all brands. She joined Ford in 2001 after 25 years with Chrysler and DaimlerChrysler AG.

Ann Soltau, '81 BSE-IS, is a quality engineer with Saint-Gobain Corporation in Stephenville, Texas. She was chosen to receive the Saint-Gobain Volunteer Recognition Award for her involvement with the Girl Scouts Heart of Texas Council.

Thomas Stroup, '91 BS-CS, is a technical sales consultant with Netarx, Inc. in Bingham Farms, Michigan.

Sarah J. James, '94 BS-CIS, is a management consultant for Ernst & Young LLP in Tampa, Florida. She was formerly Sarah J. Berger.

Ryan Bewersdorf, '97 BSE-ME, '00 MBA, is a second-year law school student at the University of Michigan.

Rachelle Delaney, '97 BS-CS, is a safety restraint engineer for Ford Motor Company.

John W. Harvey, '97 MSE-ME, develops engine systems for DaimlerChrysler Corporation. He and Elizabeth Sbaschnig, a surgical resident at the Detroit Medical Center, were married on September 15, 2001.

Hussein Bazzi, '01 BSE-CE/EE, is a control engineer at Bentech Industrial Automation in Rochester Hills, Michigan.

FACULTY RESEARCH GRANTS

Gady Alaoui,
research assistant,
and Professor
Vivek Bhise



High strain rate properties of plastics

Alan Argento, associate professor of mechanical engineering, has received a Ford Motor Company unrestricted grant in the amount of \$60,000. This grant will support the continuation of impact analysis and damage modeling research.

Human factors engineering support for automotive cockpit

Vivek Bhise, professor of industrial and manufacturing systems engineering, was awarded \$9,481 from Textron, Inc. to support research of human performance and design issues in automobile cockpits.

Evaluation of acoustics package of automobiles

John Cherng, professor of mechanical engineering, has received an additional \$63,180 from H. P. Pelzer for continuation of research on noise, vibration, and harshness in vehicles.

Optimizing the acoustic package of vehicle

John Cherng has also received an additional \$31,590 from H. P. Pelzer to continue development of vehicle acoustic package simulations using statistical energy analysis.

Reliability analysis of solder joints in electronic packing

Chi L. Chow, chair of the Department of Mechanical Engineering, has received a \$23,245 grant from the Hong Kong Polytechnic University to collaboratively develop a thermomechanical fatigue model for solder joints.

Flame spread across liquid fuel pools in airflow

Inchul Kim, assistant professor of mechanical engineering, has received \$15,000 from the Horace H. Rackham School of Graduate Studies to support his research on modeling combustion.

Advanced signal diagnostics systems

Yi Lu Murphey, associate professor of electrical and computer engineering, has received \$65,584 from Ford Motor Company to continue development of software for advanced signal diagnostics systems in vehicles.

CPU analysis

Paul Richardson, assistant professor of electrical and computer engineering, has received \$60,000 from the U.S. Army Tank-Automotive Command. This award supports analyses, comparisons, and recommendations to the U.S. Army on CPU board performance.

Vetronics Institute

Paul Richardson has also received an additional \$50,400 from the U.S. Army Tank-Automotive Command to continue the Vetronics Institute.

Modeling of NO_x trap systems for diesel engine applications

Tariq Shamim, assistant professor of mechanical engineering, has received \$10,000 from the University of Michigan Office of the Vice President for Research to support development of emission control technologies for diesel engines.

Electromagnetic comparability (EMC) laboratory

John Shen, assistant professor of electrical and computer engineering; Malayappan Shridhar, chair of the Department of Electrical and Computer Engineering; John Miller, associate professor of electrical and computer engineering; and Mark Steffka, adjunct lecturer in electrical and computer engineering, have received \$50,655 from the U.S. National Science Foundation. This course, curriculum, and laboratory improvement (CCLI) grant will be matched with campus funding to implement an instructional EMC laboratory.

Complex queries in a database management system

Qiang Zhu, assistant professor of computer and information science, has received \$18,000 from IBM to support development of complex database queries management programs.

Large-eddy simulation of magnetohydrodynamic turbulence

Oleg Zikanov, assistant professor of mechanical engineering, has received \$9,000 from the Horace H. Rackham School of Graduate Studies to support investigation of large-eddy simulations of anisotropic turbulent flows of liquid metals in metallurgical applications.

VETRONICS INSTITUTE EXPANDS COLLEGE PARTNERSHIP



Paul Richardson and Larry Sieh, TARDEC research assistant, demonstrate the spectrum analyzer equipment.

The Vetronics Institute (VI) is a collaborative research initiative sponsored by the U.S. Army Vetronics Technology Center (VTC), an arm of the U.S. Army TARDEC (Tank-Automotive Research, Development, and Engineering Center) in Warren, Michigan. Vetronics is an acronym for “vehicle electronics” and encompasses all engineering aspects related to vehicle electronic, electrical, and computer systems. The VTC is the organization responsible for vetronics research and development activities for the U.S. Army. The VI’s primary objective is to support organizational research activities through collaborative workshops and sponsored research activities at universities.

“The workshops allow university faculty to present relevant research activities to the VTC research associates,” says Paul Richardson, assistant professor of electrical and computer engineering and VI-team leader. “This enables VTC personnel to broaden their research foundation and university faculty to gain insight into the needs and problems faced by the VTC. The workshops provide an opportunity for university faculty to personally

meet with VTC research associates. The sponsored research activities allow individual university personnel to collaborate with VTC personnel on specific problems of mutual interest.”

Entering its second year, the VI has conducted two workshop series and sponsored a number of individual research activities. Most recently, the VI hosted the Winter-Workshop-Series 2002 at the Warren facility. This event featured ten individual workshops conducted by faculty from five universities, including John Shen and Chris Mi, assistant professors from the UM-Dearborn Department of Electrical and Computer Engineering. More than 150 engineers and scientists from TARDEC, industry, and academia attended the workshops. A summer series is planned. For more information about VI activities, visit the VI web site at www.engin.umd.umich.edu/vi or contact Paul Richardson at richarpc@umich.edu.



MANRICO "RICO" LOLLIE JOINS ADVISORY STAFF

The College of Engineering and Computer Science welcomes student advisor, Manrico "Rico" Lollie. He comes to UM-Dearborn from American Intercontinental University in Atlanta, Georgia, where he was senior admissions advisor. Lollie grew up in Southfield and graduated from Southfield-Lathrup High School.

"I am very happy to join the staff of the University of Michigan-Dearborn College of Engineering and Computer Science and look forward to helping tomorrow's engineers successfully achieve their educational goals," says Lollie. "Through my experience as a math teacher, I understand what is important to prepare students to succeed while in school and after they graduate."

After receiving a bachelor's degree in 1997 from Louisiana State University Agriculture and Mechanics College, Lollie taught math at Morrow High School in Morrow, Georgia, and Devry University in Decatur, Georgia. He earned a master's degree in business administration in 2001 from American Intercontinental University in Atlanta, Georgia. Lollie is a member of Alpha Phi Alpha Fraternity, Inc.

NEW FACULTY



Jie Shen, assistant professor of computer and information science, received his master's degree in computer science in 1997 and his Ph.D. in 2000 from the University of Saskatchewan. He also has a Ph.D. in vehicle engineering, a master's degree in dynamics of ground-vehicle systems, and a bachelor's degree in manufacture and design of automobiles and tractors. Dr. Shen's areas of interest include computer graphics, computer geometry, computer vision and image processing, computer-aided design, and finite element methods. He has authored a book on finite element methods.



Mohsen Madi, assistant professor of computer and information science, received his master's degree in computer science in 1996 and his Ph.D. in 2000 from the University of Manitoba. He received a bachelor's degree in computer science from the University of Victoria. Dr. Madi's areas of interest include computer graphics, image processing, numerical analysis, CAD applications, and object-oriented software development.

NEW BUILDING CONTINUES EXPANSION OF CECS

Thanks to an allocation from the State of Michigan, the College of Engineering and Computer Science (CECS) will soon be breaking ground for a new engineering building to be constructed over the next two years. The building will continue the unprecedented growth of the college's usable space, an expansion that has continued for more than a decade.

The new building is being designed by an architectural firm that is working with University of Michigan-Dearborn administrators Subrata Sengupta, dean of the College of Engineering and Computer Science; Keshav Varde, associate dean of the college; and other college officials. Also included in the planning are industry executives from a wide range of corporations that work closely with the college on a variety of projects and programs.

"We have relied on the insight of our corporate partners in developing two other buildings during the past twelve years," says Dean Sengupta. "We think their guidance is crucial to designing a building that includes laboratories and facilities that are needed to most effectively educate students and make them a valuable asset to industry." The counsel and support of industry executives helped the college design the Engineering Complex, which opened in 1993, and the Manufacturing Engineering Laboratory Building, which opened in 1988.

The new building, slated to open by mid 2004, will house laboratories, offices, and other facilities for the Institute for Advanced Vehicle Systems (IAVS). Currently, IAVS is spread throughout three different engineering buildings. In addition, the building will contain many different teaching and research labs as well as open bay space to conduct projects. Some facilities already being planned include:

- Automotive Electronics and EMC Lab
- Computer Science Labs
- Design Competition Labs
- Design Conference Rooms
- Distance Learning Classrooms
- Electron Microscope Lab
- Ergonomics Lab
- Integrated Learning Rooms
- Intelligent Systems Lab
- Offices for Faculty/Principal Investigators

- Seminar/Workshop Auditorium
- Structural Crash Dynamics Lab
- Transmission and Gearing Lab

"I am quite excited about the addition of a new ergonomics lab," adds Vivek Bhise, professor of industrial and manufacturing systems engineering. "The lab will accommodate the PVM (programmable vehicle model) that was donated last year by Lear Corporation. The equipment is currently being kept in an unrelated lab and its use is limited. However, it will be fully operational and available to faculty, students, and industry once the new building is open."

The college is presently meeting with executives from automotive and manufacturing companies to develop plans for additional laboratories and facilities that will be useful to practicing engineers and companies from the region. The construction of a new building also gives industry a unique opportunity to provide support for leading-edge labs, teaching facilities, and research areas that will ultimately benefit companies from the region.

Adds Dean Sengupta, "Our corporate partners may find that having a specialized lab located within the college will provide a wide range of benefits to students, faculty, and practicing engineers while still providing a satisfactory level of accessibility to the companies. We hope that industry will take advantage of this opportunity."

Pictured in background: An architectural concept of the CECS building expansion

SENIOR DESIGN TEAM 'GOING TO DISNEY WORLD'

FAST team members
Aaron Cahill,
Brian Schaar, and
Heather Young



Demonstrating the value of an interdisciplinary approach to engineering creativity, a team of seniors representing different departments within the college has designed and produced FAST, a “fully autonomous smart transporter.” FAST is entered in the Intelligent Ground Vehicle Competition (IGVC), to be held July 6 through 8, at the Coronado Springs Resort, Walt Disney World. Students Aaron Cahill, Aghapi Mordovanaki, Joseph Najor, Amanpreet Sandhu, Brian Schaar, and Heather Young, with their advisor, Dr. Natarajan Narasimhamurthi, worked for two semesters to produce the vehicle.

“This has been a great learning experience for all of us,” says Heather Young. “Some of us had computer engineering backgrounds and some of us had electrical engineering backgrounds. This was the first time we had the opportunity to combine the disciplines and skills of both on such a big project.”

The IGVC has been held annually since 1993. Sponsors of the competition include: U.S. Department of Transportation, General Motors, General Dynamics, U.S. Army Tank-Automotive Command, FANUC Robotics North America, Inc., Society of Automotive Engineers, United Defense, Defense Advanced Research Projects Agency, and Motorola.



“We are entering FAST in the obstacle course event,” says Heather Young. “This event consists of a 10-foot-wide lane marked by two white lines. A digital camera will detect the lines. The course will have construction barrels that must be avoided. Using both the vision system and range and proximity sensors, our vehicle has been designed to detect the construction barrels and other obstacles, such as potholes marked as white discs.”

For more information on this project, contact Dr. Natarajan at narasim@engin.umd.umich.edu.

EPD TECHNICAL SHORT COURSES

SUMMER 2002 SCHEDULE

MAY

Intermediate Visual Basic

May 8, 13, 15

Advanced Topics in MATLAB

May 1, 3, 6

Metal Machine Processes

May 6, 7, 8, 9

Introduction to MATLAB and It's Toolboxes

May 7, 9, 14, 16

Engineering and Technical Leadership

May 13

Value Engineering/Value Management

May 14, 16, 21

Math Review with MATLAB

May 15, 17, 20, 22

JUNE

Advanced Visual Basic

June 12, 17, 19

Design of Experiments—Classical

June 3, 4, 10, 11, 17, 18

Automotive Manufacturing Processes

June 10, 11, 12, 13

MATLAB Toolbox: Optimization

June 14, 21, 28

Intro to Stateflow as Applied to Modeling and Simulation

June 17, 18, 20

JULY

Fuzzy Logic

July 1, 2

Value Engineering/Value Management

July 23, 25, 30

AUGUST

Fundamentals of Finite Element Linear Analysis in Solid/Structural Mechanics

August 9, 16, 23

Fundamentals of Vehicle NVH

August 22, 23, 26, 27

FALL 2002 SCHEDULE

SEPTEMBER

P-Spice

Sept. 10, 12, 13, 16

Introduction to MATLAB and It's Toolboxes

Sept. 17, 19, 24, 26

Engineering and Technical Leadership

Sept. 20

Reconfigurable Computing and FPGA Design

Sept. 27, 30, Oct. 2, 4

OCTOBER

Introduction to Digital Signal Processing

Oct. 1, 3, 8, 10

Value Engineering/Value Management

Oct. 1, 3, 8

Automotive Manufacturing Processes

Oct. 1, 8, 15, 22

Fundamentals of NVH

Oct. 2, 4, 9, 11

Design of Experiments—Classical

Oct. 7, 8, 14, 15, 21, 22

Applied Numerical Analysis

Oct. 7, 9, 14

Modular Design

Oct. 10 and 11

Fuzzy Logic

Oct. 10 and 11

A Processed Based Business Planning and Implementation Guide

Oct. 16 and 17

Introduction to MATLAB GUI and Advanced Programming Techniques

Oct. 17, 18, 21

Vehicle Crash Mechanics: Theory and Practices

Oct. 22, 24, 29, 31

Modern Probabilistic Design Methods

Oct. 25

NOVEMBER

Design of Digital Filters and Applications with MATLAB

Nov. 1, 4, 6, 8

Overview of Multi-Variate Data Analysis Techniques

Nov. 1, 4, 6, 8

Overview of Nonparametric Data Analysis Techniques

Nov. 14

DECEMBER

Value Engineering/Value Management

Dec. 3, 5, 10

VEHICLE ELECTRONICS SERIES

Computer Networks in Embedded Systems

September 17, 18

Automotive Power Electronics: Devices, Circuits, and Systems

October 3 and 4

Automotive System EMC (Electromagnetic Compatibility)

October 8 and 9

ACOUSTICS SERIES

Vibro-Acoustic Modeling and Analysis

Oct. 23, 24, 25

Automotive Sound Quality

Nov. 13, 14, 15

Fundamentals of Vehicle NVH

Dec. 4, 6, 11, 13

MANAGEMENT OF TECHNOLOGY

Fall 2002 (Dates TBD)

Systems Thinking

Marketing New Technology

Financial Justification of New Technology

Supply Chain Management

Relationship between Technology Innovation and Strategy

Lean and Agile Manufacturing

Management of Product and Process Design

6 Sigma Quality and Profitability

Product Liability Issue

Organizational Architectures for the Development and Implementation of Innovation

Engineering Professional Development (EPD) courses are offered from 8 am to 5 pm (except as noted) and are held on campus.

For more information or to register, contact Theresa Ceccarelli at

(313) 593-4000

or visit our web site at

<http://epd.umd.umich.edu>

GRADUATES ENJOY ANNUAL ALUMNI GATHERING



RIGHT: Engineering students displayed the latest technology on the Mini Baja and Formula One vehicle projects, which were also presented at the SAE World Congress.

BELOW: Dean Subrata Sengupta with Timothy Morbach, president of UM-Dearborn Alumni Society

The College of Engineering and Computer Science (CECS) held its annual gathering for alumni of all graduating classes on March 6, 2002, at the Crowne Plaza Pontchartrain Hotel in Detroit. Graduates from the mid-1960s to the most recent class of 2001 attended the event, which was hosted by the college's Alumni Affiliate Board of Governors.



The reunion coincided with the 2002 Society of Automotive Engineers (SAE) World Congress, which took place at the nearby Cobo Convention Center during that week. A large number of college alumni are employed within the automobile industry and other related industries. Many graduates who were at the SAE Congress took advantage of the close proximity and timing to attend the alumni gathering as well.

Dr. Subrata Sengupta, dean of the college, spoke to alumni and visitors about the evolution of the college and its role in preparing students to enter industry. He also provided an update on plans for a new engineering building and a brief overview of recent activities designed to connect CECS with universities and corporations throughout the world.

Guests also heard from Richard Anderson, '74 BSE-IS, '82 MSE, president of the college's alumni board; Chancellor Daniel Little; and Timothy Morbach, chair of the University of Michigan-Dearborn Alumni Society Board of Governors.

**Mark your calendars
for the next alumni
event, scheduled
for March 2003
at the
Pontchartrain Hotel.**

*For more information,
please contact the college's
development office
at 313-436-9141.*

Keep in Touch

Help us keep in touch by making sure our alumni information is up to date. Use the form below to send changes to the address at the right.

Dean's Office
 College of Engineering and Computer Science
 University of Michigan-Dearborn
 4901 Evergreen
 Dearborn, MI 48128-1491

Name

Address

City

State

ZIP

Phone

Year of Graduation

Degree

Department

Occupation

Employer

Employer's Address

City

State

ZIP

Please list any activities or recent honors you would like reported in future issues of the Dearborn Engineer.

Keep in Touch On-Line

The "keep in touch" form is now available on-line. College of Engineering and Computer Science alumni are invited to visit <http://www.engin.umd.umich.edu/alumni> to update or add information about themselves, including career moves, recent honors, and address changes.



The UM-Dearborn Mini Baja Team placed first overall in the SAE West Mini Baja Competition held in Logan, Utah, April 25-27, 2002. Team members from left to right: James Perrin, Rob Hyden, Andy Woodrich, Jessie Crozier, Eric Smolen, and Jim Szymusiak.



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