Memorial Scholarship Created To Honor Derek Blume '03

A new scholarship has been created in memory of **Derek Hans Blume**, a 2003 computer engineering alumnus who passed away in his sleep on July 29, 2006, at the early age of 25.

Derek was a talented student who displayed his engineering prowess early in life. By the age of three, he was already dismantling his children's cassette player and putting it back together. By the age of 17, he had rebuilt a car engine. He had an enthusiasm for all things electrical and mechanical.

While a student at the University of Maryland, Derek worked at the University's Tawes Theatre, where he was able to combine his affection for technical theater and engineering. Derek served as the lighting designer for major cultural, dance, and theatrical events.

He was a member of Eta Kappa Nu (HKN), Gamma Xi Chapter, for which he was a chairperson. Derek had an affinity for lab courses, and was particularly skilled with the digital logic and microprocessor design projects.

To honor Derek's memory and assist students at his alma mater, his family and friends established an endowed fund to support undergraduate students enrolled in Maryland's Department of Electrical and Computer Engineering.

According to his family, Derek was an avid skier and ultimate frisbee player, an incessant tinkerer, an adventurous cook, a budding wine geek, a brewmaster, a retro audiophile, and a lover of both cutting edge technologies and antiquated machines, especially his beloved MG; with all, keeping friends ever close at hand. It is their hope that the Derek Blume Memorial Scholarship will allow the spirit of Derek to live on in those who share his interests.

To make a gift the scholarship fund, please visit **www.greatexpectations.umd.edu**.

DEREK BLUME

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greatEXPECTATIONS

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Ted Knight
Electrical and Computer Engineering Department
2457 A.V. Williams Building
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CONN**E**CTIONS

DEPARTMENT of ELECTRICAL & COMPUTER ENGINEERING

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A NEWSLETTER FOR ALUMNI AND FRIENDS OF THE DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING AT THE A. JAMES CLARK SCHOOL OF ENGINEERING, UNIVERSITY OF MARYLAND, COLLEGE PARK.

A New Paradigm for the Next Generation of Computers

ECE Professor Introduces "Desktop Supercomputing" Prototype, Invites Public to Help Name New Parallel Processing Technology

A prototype of what may be the next generation of personal computers has been developed by researchers in the University of Maryland's Electrical and Computer Engineering (ECE) Department. Capable of computing speeds 100 times faster than current desktops, the technology is based on parallel processing on a single chip.

Parallel processing is an approach that allows the computer to perform many different tasks simultaneously, a sharp contrast to the serial approach employed by conventional desktop computers. The prototype developed by **Uzi Vishkin** and his colleagues uses a circuit board about the size of a license plate on which the researchers have mounted 64 parallel processors. To control those processors, they have developed the crucial parallel computer organization that allows the processors to work together and make programming practical and simple for software developers.

Parallel processing on a massive scale, based on interconnecting numerous chips, has been used for years to create supercomputers. However, its application to desktop systems has been a challenge because of severe programming complexities. Vishkin's team found a way to use single chip parallel processing technology to change that.

Vishkin, a professor in the ECE Department and the university's Institute for Advanced Computer Studies (UMIACS), explains the advantage of parallel processing like this:

"Suppose you hire one person to clean your home, and it takes five hours, or 300 minutes, for the person to perform each task, one after the other," Vishkin said. "That's analogous to the current serial processing method. Now imagine that you have 100 cleaning people who can work on your home at the same time! That's the parallel processing method.

"The 'software' challenge is: Can you manage all the different tasks and workers so that the job is completed in three minutes instead of 300 minutes? Our algorithms make that feasible for general-purpose computing tasks for the first time."

Vishkin and his team are now demonstrating their technology, which in future devices could include 1,000 processors on a chip the size of a finger nail, to government and industry groups. To show how easy it is to program, Vishkin is also

UZI VISHKIN

departmentNEWS

ECE CELEBRATES CENTENNIAL ANNIVERSARY: 1908-2008

September 2008 will mark the 100th anniversary of the electrical engineering curriculum at the University of Maryland. To celebrate the historic event, the department is planning an ECE Centennial weekend to be held in September 2008, which will feature a range of activities, including a large alumni reception, panel discussions and workshops, industry speakers, and a major gala event. More information will be available soon on the ECE website at www. ece.umd.edu. ECE's 100th year will kick off with an Alumni & IEEE GlobeCom Networking event on Monday, November 26, 2007, in the Jeong H. Kim Building on the College Park campus. For more information, or to RSVP, contact **Ted Knight**, director of public relations, at 301.405.3596 or teknight@umd.edu.

ECE TEAM WINS UMD INVENTION OF THE YEAR AWARD

Professor **Rama Chellappa** and his advisee, Ph.D. student **Aravind Sundaresan**, won the University of Maryland Invention of the Year Award in the Information Science category for their invention, "Markerless Motion Capture," on April 19, 2007.

Markerless motion capture is the process of analyzing and expressing human motion in mathematical terms. The researchers model the human body as a set of three-dimensional objects that are connected in an articulated structure, and propose algorithms to estimate the parameters of the model from video sequences. This marks an advancement from previous, more intrusive human motion capture methods, which require passive markers to be attached to different body parts of the subject.

This technology has important applications in biomechanics, computer animation, and human-computer interaction. Specifically, the researchers' software can be used in homeland security initiatives, sports instruction, such as improving one's golf swing, motion picture animation and simulation, and patient rehabilitation. The team's ultimate objective is to build a completely automated markerless motion capture system. This technology is currently licensed in the field of sports. A U.S. patent application is pending.

CLARK SCHOOL EARNS MORE HIGH RANKINGS

The A. James Clark School of Engineering continues to earn high rankings from both national and international sources. The Institute of Higher Education and Center for World-Class Universities ranked the Clark School 13th in the world among all engineering programs for 2007. The institute, a unit of Shanghai Jiao Tong University in China, based the rankings on total engineering-related research expenditures, highly cited research articles, articles included in the Scientific Citation index and the percentage of articles published in the top 20 percent of engineering journals.

The Clark School was also ranked 6th in the nation in *The Princeton Review*'s first listing of the Top 20 Graduate Engineering Programs. The programs were ranked using a combination of quantitative criteria, including GRE scores, undergraduate GPA, percentage of applicants accepted and percentage of top undergraduates applying.

Earlier this year, *U.S. News & World Report* rated the Clark School 16th in the nation and 10th among all public universities.

UNIVERSITY LEADERSHIP TREADS PATH THROUGH ECE

Nariman Farvardin Named Provost

What do Maryland's current provost, former provost, and current interim dean of the Clark School have in common?

The answer is that they all served as electrical engineering faculty at the University of Maryland. There is an undeniable trend that ECE faculty find their way to significant university leadership positions.

Two months after the Rochester Institute of Technology (RIT) appointed Maryland Provost and former ECE Chair **William Destler** as its ninth president, the University of Maryland announced that Clark School Dean and former ECE Chair **Nariman Farvardin** would be its next provost and senior vice president for academic affairs. Shortly after this announcement, **Herbert Rabin**, professor of electrical and computer engineering and director of the Maryland Technology Enterprise Institute (MTECH), was named interim dean of the Clark School.

All three men can point to significant accomplishments over the course of their leadership terms.

For the last 34 years—his entire professional career—Dr. Destler worked for the University of Maryland, first as a post-doctoral research scholar, then as a faculty member in electrical engineering, and subsequently rising through the administrative ranks from department chair, Clark School dean, and three vice presidential positions—interim vice president for advancement, vice president for research and dean of the Graduate School and, since 2001, as senior vice president for academic affairs and provost.

As Clark School dean, Dr. Destler created the Gemstone Program, a multidisciplinary four-year research program for undergraduate honors students of all majors in which teams of students design, direct and conduct research exploring the

interdependence of science and technology with society. During his term as graduate school dean, student applications increased by more than 20 percent and research funding rose by more than 30 percent. While interim vice president for advancement, Destler was credited with securing a $25 million gift from Comcast Corp. for naming rights supporting the construction of the Comcast Center sports arena. As senior vice president for academic affairs, retention increased and the graduation rate rose from 62 percent to 80 percent over five years. Other achievements at Maryland include leading a faculty team in the creation of a cross-disciplinary master's degree program in telecommunications; originating the Hinman CEOs Program, a living-learning entrepreneurship initiative for undergraduate students; and involvement in the President's Promise, an outside-the-classroom experiential program for freshmen.

As dean of the Clark School, Dr. Farvardin promoted the development of innovative educational programs, particularly in the areas of undergraduate research and

technology entrepreneurship; reorganized infrastructure to improve service and productivity; and developed a strong public awareness effort to communicate the school's strengths and accomplishments to its many constituencies, resulting in increased partnerships with industry and strong philanthropic support.

During Dr. Farvardin's tenure as dean of the Clark School, external research expenditures increased from $70 million to over $107 million and the rankings for the school's graduate and undergraduate program have risen dramatically. The school received landmark endowments of $30 million to fund scholarships and $33 million to fund a new bioengineering department, constructed a state-of-the-art engineering building, and launched, with the School of Public Policy, an innovative Master of Engineering and Public Policy program to produce engineers skilled in policy issues. Dr. Farvardin was cited by **Aristides Melissaratos**, Secretary of Business and Economic Development for the state of Maryland, as the "best engineering dean in the country."

Dr. Rabin was the founding director of MTECH, a program established to serve as bridge between the University and industry, to foster the development of new technology-based companies, and to promote entrepreneurship among faculty and students. Since 1984, MTECH has generated $13 billion and created 5,300 jobs, and has engaged 212 Maryland companies in 2006 alone. The institute has supported the State's technology economy by bringing University innovation to Maryland companies, creating new ventures, and educating entrepreneurial technologists.

Dr. Rabin also served as the interim dean of the Clark School from 1999-2000. Prior to his current employment, Dr. Rabin served as deputy assistant secretary of the Navy (research, applied and space technology), 1979-83, and before that he served in a number of positions at the Naval Research Laboratory, the last of which was associate director of research with responsibility for space programs, 1971-79.

A national search is currently underway for the next Clark School dean.

3

ECE Professor Integrates Gait and Face Recognition Technology into New Intelligent Surveillance System

Surveillance cameras are sprouting up in more and more places, forming an ever more powerful tool for solving crimes after they happen. But what about using them to prevent or stop criminal and terrorist acts? This requires that someone, or something, watch these rapidly multiplying video feeds 24-7.

Humans tend to grow bored and lose focus staring at monitors for long periods of time, watching for suspicious behavior that may occur only rarely, if ever. Computerized monitoring would seem to be the obvious answer, but creating software programs that can recognize suspicious activities or suspect individuals has proven highly difficult.

ECE Professor **Rama Chellappa**, a pioneer in the development of pattern recognition and computer vision software, has developed a real-time monitoring system that provides some answers to this problem. Chellappa's intelligent surveillance system can reliably monitor images to detect certain suspicious movements or suspect individuals and alert human security personnel.

Chellappa's technology could have widespread applications in security surveillance, as well as non-security applications in elder care and video indexing. It could be particularly helpful as part of the security measures for sensitive locations, such as military bases, public transportation terminals and other areas that need high levels of security.

Using video data from digital surveillance cameras and corresponding algorithms, Chellappa and his research assistants have developed a compact, digital signature for characterizing human gait and corresponding activities, such as humans carrying objects like backpacks, handbags, or briefcases.
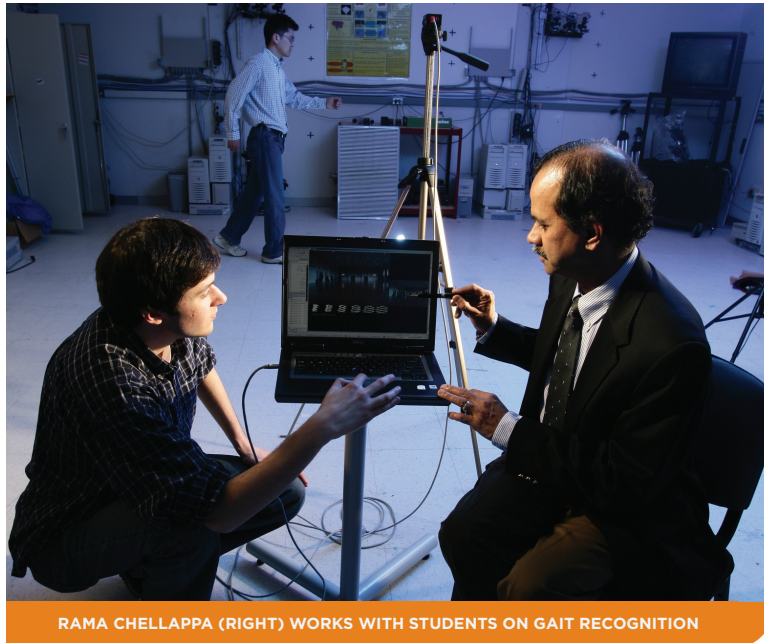
RAMA CHELLAPPA (RIGHT) WORKS WITH STUDENTS ON GAIT RECOGNITION

When a person's limbs are unencumbered, gait movements are symmetrical. Represented graphically, these movements form a twisted helical pattern resembling a "figure 8." Chellappa and his team call this pattern, which is slightly different in each individual, "human gait DNA," reflecting the unique qualities of each person's stride. An individual's gait pattern is changed by any activity that changes the symmetry of the movements, for example carrying a package. By defining these signatures, the system can recognize unique patterns in human gait and automatically detect asymmetric movement, such as an individual walking with a hidden object tied to an ankle or wrist.

Chellappa and his team have integrated human gait DNA into a real-time video surveillance system and used it to study and locate pedestrians. The experimental results have demonstrated the effectiveness of the system under lighting changes, shadows, camera motion, various viewing angles, as well as significant obstacles in the cameras' views. The results also indicate that the approach is superior to many existing methods in terms of accuracy and reliability.

"These capabilities are extremely useful in creating a surveillance system intended to address security concerns," said Chellappa.

His research team is also "teaching" their gait recognition system to identify individuals by their unique gait. This is a much more difficult task, since subjects may deliberately attempt to walk in an uncharacteristic manner in order to try and cheat the system and avoid detection. If the suspect is unaware of the surveillance system, their normal walking style is more easily identified.

The optimal camera angle for recognizing human gait is a sideways, 90-degree profile perspective, but Chellappa and his team have created automatic, corrective algorithms that can, within a certain range, compensate for different viewing angles.

Chellappa's research team has also developed advanced face recognition software that can be combined with their gait recognition technology. This face recognition technology can be used to watch for known terrorists, spies or criminals and help to identify unknown individuals who might

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turn up repeatedly in sensitive locations or who have been present during multiple criminal or terrorist acts.

Another technology recently developed by Chellappa's team detects dropped or unattended packages using a structured representation known as attribute grammars. As part of this work, which is supported by the Department of Homeland Security, Chellappa and one of his students have developed an algorithm to estimate the heights of subjects in the field of view of a camera. Chellappa's students presented a live demonstration of this technology at a recent Army Science Conference and attracted much interest and many volunteers, including many high-level army officers.

Chellappa has attracted a large amount of media attention for his research, earning coverage from *The Associated Press*, *MIT Technology Review*, MSNBC, and *USA Today* among others, and has delivered talks about his technology at many conferences and events. Chellappa gave a plenary talk at the 30th Anniversary Seminar of the Pattern Recognition Society of Finland and also participate as a lecturer in a summer workshop on Advanced Studies on Biometrics for Secure Authentication in Sardigna, Italy in June. Last October, he delivered a plenary lecture on this emerging technology at the Institute for Electrical and Electronics Engineers (IEEE) International Conference on Image Processing in Atlanta. He also recently received a patent related to his intelligent surveillance technology that offers a method of 3-dimensional object reconstruction from a video sequence of two-dimensional images.

Chellappa and his team now are working to integrate their new technologies into a comprehensive surveillance system for use in security-sensitive locations. More about his new technology can be found online at www.ece.umd.edu.

NEW PARADIGM FOR THE NEXT GENERATION OF COMPUTERS

providing access to the prototype to students at Montgomery Blair High School in Montgomery County, Md.

For years, the personal computer industry achieved advancements in computer clock speed, the fundamental rate at which a computer performs operations, thanks to innovations in chip fabrication technologies and miniaturization. Moore's Law—which dictates that the number of transistors on integrated circuits in computers will double every 18 to 24 months—was coupled with a corresponding improvement in clock speed.

But no significant advancements in clock speed have been achieved since 2004. From an early stage, Vishkin foresaw that Moore's Law would ultimately fail to help improve clock speed due to physical limitations. This guided his perseverance over his professional career in seeking to improve computer productivity by distributing the load among multiple processors, accomplishing computer tasks in parallel.

Earlier this month, Vishkin and his Ph.D. student, **Xingzhi Wen**, published a paper about the newly-built parallel processing technology for the Association for Computing Machinery (ACM) Symposium on Parallelism in Algorithms and Architectures, and showcased it at a major computing conference, the ACM International Conference on Supercomputing (ICS) in Seattle. At the ICS event, Vishkin allowed conference participants to connect to the device remotely and run programs on it in a full-day tutorial session he conducted, offering colleagues and student participants the opportunity to experience the prototype technology firsthand.

Vishkin also participated in a panel discussion at a special invitation-only Microsoft Workshop on Many-Core

Computing on June 20-21 in Seattle, Wash.

"This system represents a significant improvement in generality and flexibility for parallel computer systems because of its unique abilities," said **Burton Smith**, technical fellow for advanced strategies and policy at Microsoft. "It will be able to exploit a wider spectrum of parallel algorithms than today's microprocessors can, and this in turn will help bring general purpose parallel computing closer to reality."

Vishkin has filed several patents on his parallel processing technology since 1997. Funded by the National Science Foundation and the Department of Defense, his research has also received widespread media attention from over 100 news sources and significant interest from the computer industry, which he believes his technology will revitalize.

In addition to Xingzhi Wen, Vishkin's research teams includes electrical and computer engineering and computer science students **Aydin Balkan**, **George Caragea**, **Mike Detwiler**, **Tom Dubois**, **Mike Horak**, **Fuat Keceli**, **Mary Kiemb** and **Alex Tzannes**, as well as electrical and computer engineering professors **Rajeev Barua** and **Gang Qu**.

NAMING CONTEST

To increase awareness of his new technology, Vishkin is inviting the public to propose names for it. The name should reflect the features and bold aspirations of the new machine and its parallel computing capabilities, Vishkin said.

The winner will receive a $500 cash prize and be credited with the naming of the innovative technology. Visitors can submit their ideas online at the Department of Electrical and Computer Engineering website, http://www.ece.umd.edu/supercomputer/.

The deadline for submissions is September 30, 2007.

5

ECE Team Develops Superlens Plasmon Microscope

A University of Maryland research team led by Professor **Christopher Davis** and former ECE Research Scientist **Igor Smolyaninov** have earned widespread attention in the scientific community for their work in developing a powerful new plasmon microscope. Plasmons, electron waves generated when light strikes a metallic surface, are utilized in the microscope to help scientists see very fine, nano-scale details that were previously undetectable.

Davis and his research colleagues' two-dimensional plasmon microscope is ideal for imaging living cells, and could operate much like a point-and-shoot camera. The new
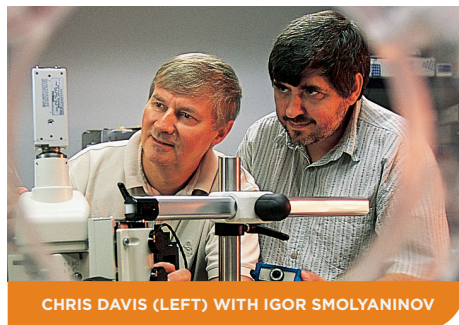
CHRIS DAVIS (LEFT) WITH IGOR SMOLYANINOV

technology could reveal much more detail than existing imaging techniques. Davis believes his team can improve the resolution of their microscope images down to around 10 nanometers. Capturing movies might

also be possible, since each microscope image is taken all at once, rather than one pixel at a time.

The team recently published an article in the journal Science, documenting their pioneering efforts in developing a superlens and integrating it into a conventional optical microscope to image objects smaller than the limit determined by the diffraction of light waves. Smolyaninov was selected among *Scientific American*'s "SA 50" list for his role in developing the new technology. The researchers were also highlighted on the Nature website and featured in American Physical Society news for their innovation. ⊏

Chitosan Nano-Sensor Detects Dangerous Substances

Chitosan, a substance found in crab shells, is the key component in a nanoscale sensor system developed by researchers at the University of Maryland's A. James Clark School of Engineering. The sensor can detect minute quantities of explosives, bioagents, chemicals, and other dangerous materials in air and water, potentially leading to security and safety innovations for airports, hospitals, and other public locations.

Clark School engineers are using chitosan to coat components of the microscopic sensor system because of the material's unique properties.

Reza Ghodssi, associate professor in the Department of Electrical and Computer Engineering and the Institute for Systems Research (ISR), and a member of the Maryland NanoCenter, is one of the investigators leading the project. He explained the benefits of chitosan.

"Chitosan is interesting because it is a biological compound that can interact with a wide variety of substances, and also works well in a complex, sensitive device," Ghodssi said.

Ghodssi is joined by a multidisciplinary group: **Gary Rubloff** from ISR and the NanoCenter, **Bill Bentley** from the Fischell Department of Bioengineering and **Greg Payne** from the University of Maryland Biotechnology Institute (UMBI). Ghodssi's graduate students, **Nathan Siwak**, **Stephan Koev**, **Jonathan McGee** and **Mike Fan**, are working to develop the nanoscale "system on a chip" for the nano-sensor.

The technology employs multiple miniature vibrating cantilevers, similar to tiny diving boards, which are coated with chitosan, plus optical sensing technology that can see when the cantilevers' vibrations change. These devices are commonly referred to as micro-electro-mechanical systems or MEMS.

Different cantilevers can detect different substances and concentrations. When a targeted substance enters the device from the air or water, the chitosan on a specific cantilever interacts with the substance and causes that cantilever's vibration to change its characteristics. The optical sensing system

sees the vibration change and indicates that the substance has been detected.

The technology was developed and initially tested at the Laboratory for Physical Sciences (LPS) in College Park, Md., and is currently sponsored by LPS and the National Science Foundation. The researchers have recently submitted a proposal to the National Institutes of Health (NIH) to develop a sensor system to detect the presence of avian flu. The research was featured on radio and TV news, in an *Associated Press* article, and other mainstream media sources, as well as in the Journal of Micromechanics & Microengineering in April 2006 and the journal Biomacromolecules in November 2005.

"This is an exciting and complex microsystem that bridges biotechnology and nanotechnology to address critical needs of homeland security applications. My colleagues and I are expecting this work to become a product in the near future," says Ghodssi, who has to date filed for six patents on the technology. For more information, visit www.ece.umd.edu/MEMS. ⊏

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faculty NEWS

Clare Boothe Luce Fellow Kris Rosfjord Joins ECE Faculty

The Department of Electrical and Computer Engineering welcomed new faculty member **Kristine Rosfjord**, who joined the Department as the Clare Boothe Luce Assistant Professor in January 2007.

"We are delighted to have Kristine join our department," said ECE Department Chair Dr. **Patrick O'Shea**. "She will be an excellent addition to our faculty, and will provide a new dimension to the quality of our research and education programs."

Rosfjord received her B.S. degree in electrical engineering from the Georgia Institute of Technology and her M.S. and Ph.D. degrees in electrical engineering and computer science from the University of California, Berkeley, where she studied under Professor **David Attwood**. Most recently, Rosfjord served as a post-doctoral fellow in the Massachusetts Institute of Technology (MIT) Department of Electrical Engineering and Computer Science, where she worked with Professor **Karl K. Berggren** in the Quantum and Nanostructures and Nanofabrication Group on nanowire single-photon detectors. She was supported by a Clare Boothe Luce Fellowship during her time at MIT.

KRIS ROSFJORD

Sponsored by the Henry Luce Foundation, the Clare Boothe Luce Program is the single most significant source of private support for women in science, engineering and mathematics. The program offers funding for undergraduate scholarships, graduate fellowships, and tenure-track appointments at the assistant or associate professorship level, encouraging women to achieve distinction in the fields of science, engineering and mathematics, where traditionally there have been obstacles to their advancement.

Rosfjord's research interests include photodetectors, nanofabrication, x-rays, and optical properties of materials. When she is not in the lab, she enjoys skiing, hiking, and mountain biking.

Liu Named Distinguished Scholar-Teacher, Fellow of the Academy of Excellence in Teaching and Learning

Professor **K. J. Ray Liu**, Associate Chair for Graduate Studies and Research, was selected as a 2007-2008 University of Maryland Distinguished Scholar-Teacher, a program that recognizes faculty members who demonstrate outstanding scholarly achievement along with equally outstanding accomplishments as teachers.

The Scholar-Teachers "[bring] a passion for learning to their colleagues and students, and... serve as models of what a professor at a fine research university should be," former Provost **William Destler** said in a written statement.

Liu was one of six Maryland professors to receive this honor. Nominees for the award were selected by their peers, and the six winners were chosen by a panel of former Distinguished Scholar-Teachers.

K. J. RAY LIU

Winners receive a $5,000 cash award to support instructional and scholarly activities, and make a public presentation in the fall semester on a topic of scholarly interest. Liu will speak on November 16, 2007 on the subject of information forensics.

Liu was also selected to become a Fellow of the Academy of Excellence in Teaching and Learning (AETL) at the University of Maryland, beginning Fall 2007. AETL was created in November 2000 by a faculty-led initiative to build a community of scholars committed to fostering a culture of excellence in teaching and learning. The group serves as an advisory body to the Provost and the campus leadership on a broad range of issues pertaining to teaching and learning, promoting scholarly dialogues, innovative projects, and educational excellence and scholarship. Ray Liu joins a group of 33 AETL Fellows, including Professor **Anthony Ephremides**. For more information about AETL Fellows, visit www.aetl.umd.edu.

Dr. Liu was also in the news recently for his work with area company Pharad, LLC to develop and optimize a portable system for detecting concealed weapons on individuals from a distance. Liu's state-of-the-art signal processing algorithm first detects if a weapon is present, then classifies what kind of weapon it is. The research was funded through the Maryland Industrial Partnerships (MIPS) program.
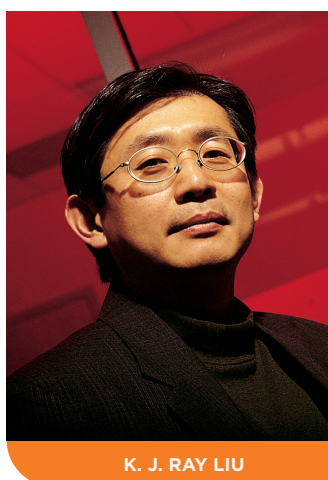
COMPUTERWORLD HONORS MULTIMEDIA FORENSICS RESEARCH, NAMES WU IN "40 UNDER 40" LIST

Min Wu and **Ray Liu** received honorable mention in the 2006 *Computerworld* Horizon Awards for their digital fingerprinting research. The ECE faculty members are developing multimedia forensics technologies that protect digital resources and trace those who attempt to steal or misuse them.

Wu and Liu's new, interdisciplinary digital fingerprinting technology prevents the unauthorized redistribution of multimedia content by embedding a unique ID that leaves a distinct fingerprint on each user's copy without compromising the quality of the multimedia product or inhibiting legitimate uses. This ID can identify which users have contributed to a piracy attack.

Computerworld also selected Min Wu for their feature on 40 innovative IT people to watch, under the age of 40, which appeared in *Computerworld*'s 40th anniversary issue in July. Wu was chosen for her innovative research in information security forensics.

"Without a way to protect intellectual property, we will see a lot of hurdles to new technology put up," Wu told *Computerworld*. "My focus is working toward further innovation of new technologies."

KRISHNAPRASAD RECEIVES IEEE BODE PRIZE IN CONTROLS

Professor **P. S. Krishnaprasad** was chosen as the winner of the 2007 IEEE Control Systems Society Hendrik W. Bode Prize. As this year's recipient, Krishnaprasad will deliver a one hour Bode Prize Lecture at the 2007 IEEE Conference on Decision and Control on December 14, 2007 in New Orleans. Krishnaprasad also delivered the Fall 2006 Munich Mathematical Colloquium on October 24 at the Technical University of Munich, Germany. His subject was "Geometric Control, Cohesion and Pursuit," which included theoretical work on swarming and pursuit, as well as specific analysis of the pursuit of insect prey by the echolocating bat Eptesicus Fuscus.

SRIVASTAVA WINS AWARD FOR COMPUTER ENGINEERING RESEARCH

Prof. **Ankur Srivastava** was featured in *EE Times* for his paper, "Variability-Driven Formulation for Simultaneous Gate Sizing and Post-Silicon Tunability Allocation," for which he recently earned a best paper award at the ACM International Symposium on Physical Design (ISPD 2007).

ANKUR SRIVASTAVA

The paper, authored by Srivastava and his graduate student advisee, **Vishal Khandelwal**, proposes the use of tunable clock buffers in computer chips that could be used to fix specification violation problems that arise after silicon is manufactured due to fabrication randomness. This process could prove to be a very important milestone in the design and fabrication process of micro and nanoscale chips, offering the novel approach of integrating both post-silicon and pre-silicon optimizations into one flow.

MURPHY RECEIVES DARPA YOUNG FACULTY AWARD

The Defense Advanced Research Projects Agency (DARPA) selected Prof. **Thomas E. Murphy** as one of 24 rising stars in university microsystems research, honoring him with a Young Faculty Award. Murphy and each of his fellow award recipients will receive a grant of approximately $150,000 to be used to further develop their research during the coming year.

Murphy received the funding for his research project, titled "Linearized Electro-optic Phase Modulation." Prof. Murphy's research project seeks to develop a new type of optical modulator that can be used to transmit analog signals over optical fibers, which are lighter, smaller, and less susceptible to electromagnetic interference than conventionally used coaxial cables.

GOMEZ NAMED DISTINGUISHED KEYSTONE PROFESSOR

ECE Professor **Romel Gomez** was one of three Clark School faculty selected to join Keystone: the Clark School Academy of Distinguished Professors. Now in its second year, the Keystone program fosters exemplary undergraduate teaching skills and a commitment to excellence in fundamental engineering courses. Keystone aims to help improve student retention and graduation rates by ensuring students the best learning experiences in the early, formative stages.

O'SHEA, EPHREMIDES, ALUMNI RECEIVE NRL RESEARCH AWARDS

ECE Department Chair **Patrick O'Shea**, Professor **Anthony Ephremides**, and ECE alumni **Jonathan Neumann** and **Nathan Moody** earned Alan Berman Research Publication Awards from the U.S. Naval Research Laboratory (NRL) for recent papers they co-authored.

Dr. O'Shea, along with his former advisee and 2006 Ph.D. graduate, Moody, and lead author **Kevin Jensen** (NRL/IREAP) and **Donald Feldman** (IREAP), co-authored a paper titled "A Photoemission Model for Low Work Function Coated Metal Surfaces and Its Experimental Validation." Ephremides, along with **Gam Nguyen** and **Jeffrey Wieselthier**, co-wrote "Accurate Capture Models and their Impact on Random Access in Multiple-Destination Networks." Neumann, a 2005 Ph.D. graduate and 2000 B.S. graduate, and a former advisee of Dr. O'Shea, co-wrote a paper titled "VNIR/SWIR Target Detection Comparison from the MAT Data Collect."

GHODSSI INVITED TO PARTICIPATE IN NAE FRONTIERS SYMPOSIUM

Prof. **Reza Ghodssi** is among 83 of the nation's outstanding young engineers invited to attend the National Academy of Engineering (NAE) 2007 U.S. Frontiers of Engineering Symposium in Redmond, Wa., September 24-26, 2007. NAE's Frontiers of Engineering Symposium is a three-day meeting that brings together a select group of the nation's outstanding young engineers, aged 30-45, from industry, academia, and government to discuss pioneering technical and leading-edge research in a variety of engineering fields.

MARTINS EARNS NSF CAREER AWARD

Prof. **Nuno Martins** is the recipient of a 2007 National Science Foundation Faculty Early Career Development (CAREER) Award for "Distributed control of dynamic systems using a wireless communcation medium: two new paradigms." Dr. Martins' research will introduce two new paradigms for designing distributed control systems with wireless communication capabilities.

ECE FACULTY WIN MURI GRANTS

The Department of Defense awarded multi-million dollar grants to two Maryland research teams consisting of ECE faculty through the Multi-disciplinary University Research Initiative (MURI) program.

The first team's proposal, titled "Designing Reliable and Secure Tactical MANETs (Mobile Ad hoc Networks)," was selected for an estimated $6.25 million in MURI funding over five years. The team included Principal Investigator (PI) and ECE Professors **Virgil Gligor**, **John Baras**, and **Jonathan Katz** from UMD, along with Prof. **Adrian Perrig** of Carnegie Mellon University, Prof. **Nitin Vaidya** of the University of Illinois Urbana Champaign, and **Radha Poovendran** a 1999 ECE Ph.D. alumnus and Professor at the University of Washington, Seattle.

The second team, whose proposal was titled "Exploiting Nonlinear Dynamics for Novel Sensor Networks," consisted of PI and ECE Professors **Edward Ott**, **Tom Antonsen**, **P. S. Krishnaprasad**, and **Thomas E. Murphy**, and **Jim Yorke** (MATH/PHY/IPST), **John Rodgers** (IREAP), **Dan Lathrop** (PHY/IREAP), **Raj Roy** (PHY), and **Brian Hunt** (MATH) of Maryland, as well as **Dan Gauthier** of Duke University.

LA, ESPY-WILSON PROMOTED

Two ECE faculty who share joint appointments with the Institute for Systems Research (ISR) were recently promoted, effective July 1, 2007. Dr. **Richard La** was promoted to the rank of Associate Professor with tenure, and Dr. **Carol Espy-Wilson** was promoted to the rank of full Professor.

BARAS SELECTED FOR IEEE PRIZE, DELIVERS KEYNOTE

Professor **John Baras**, along with his Ph.D. advisee, **George Theodorakopoulos**, were selected as winners of the 2007 IEEE Communications Society (ComSoc) Leonard G. Abraham Prize in Communication Systems for their paper "On Trust Models and Trust Evaluation Metrics for Ad Hoc Networks," which appeared in the IEEE Journal on Selected Areas in Communications in Feb. 2006. Their award was presented at the International Conference on Communications (ICC2007) in Glasgow, Scotland on June 25.

Baras also delivered the invited keynote address at the Control over Communication Channels Workshop (ConCom07), part of the 5th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt07), April 16-20, 2007, in Limassol, Cyprus. The title of Dr. Baras' keynote was "Robust Feedback Control vs Uncertainty Model Complexity: from Information Theory to Networked Control." He was also an invited featured speaker at the MIT Enterprise Forum (MITEF)-hosted Tech Transfer Lab on May 22, held in Arlington, Va. This year's MITEF Transfer Lab focused on mobile technologies, showcasing the area's hottest technologies developed at area universities and federal labs.

EPHREMIDES DELIVERS PLENARY, DISTINGUISHED LECTURES

Professor **Anthony Ephremides** presented a plenary lecture titled "At the Crossroads of Layer Crossing" at the 37th IEEE Communication Theory Workshop in Sedona, Arizona, on May 22. He also delivered a series of talks last fall on wireless networks through the IEEE Communications Society Distinguished Lecturers program. He also spoke at the Washington Chapter of the IEEE Communications Society annual meeting on "The Essence of a Theory for Wireless Networking."

FORMER ECE PROFESSOR DAYAWANSA REMEMBERED

Former ECE Professor **Wijesuriya ("Daya") Dayawansa** passed away in October 2006. Dr. Dayawansa was an ECE and ISR faculty member from 1989 to 1996 as Assistant


W. "DAYA" DAYAWANSA

and then Associate Professor. He moved on to Texas Tech University where he was Paul Whitfield Horn Professor of Mathematics and Statistics. He was a highly accomplished researcher and educator in the area of nonlinear control systems with interest in smart structures control and walking machines. He is survived by his wife Samanmalee and their four children.

Prof. **William Levine** was among the speakers at a memorial conference for Dr. Dayawansa held in Lubbock, Texas in April 2007, titled "Emerging Frontiers in Control Theory Research and Innovative Applications."

NEW BOOKS BY FACULTY AND ALUMNI

Professor **Isaak Mayergoyz** and ECE Ph.D. alumnus **Chun Tse** ('03) co-authored a new book titled "Spin-stand Microscopy of Hard Disk Data," published by Elsevier Science. The book provides an in-depth analysis of spin-stand microscopy of hard disk data, a new technique recently developed and extensively tested by Mayergoyz and Tse. Spin-stand microscopy is the first magnetic imaging technique where imaging is performed "ex-situ," outside of its native drive, on a rotating disk mounted on a spin-stand. This technique is one of the fastest scanning-based microscopy techniques. It is also non-invasive and provides nano-scale resolution, offering unique capabilities for the visualization of magnetization patterns recorded on hard disks.

Isaak Mayergoyz and Chun Tse

SPIN-STAND MICROSCOPY OF HARD DISK DATA

A Volume in the Elsevier Series in Electromagnetism
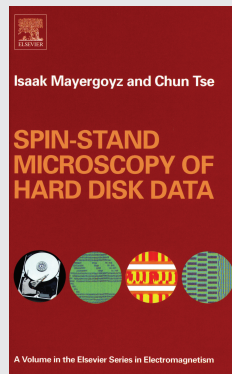
ECE Emeritus Professor **Chi H. Lee** co-authored a book with University of Maryland Physics Professor **Wendell Hill** titled "Light-Matter Interaction: Atoms and Molecules in External Fields and Nonlinear Optics," published by John Wiley and Sons, Ltd. The book explores the principal ideas that form the basis of atomic, molecular, and optical science and engineering, offering exercises, bibliographies, and important physics and mathematical definitions to supplement each chapter.

A new book titled "Simulation-based Algorithms for Markov Decision Processes" was co-written by four authors with ties to the ECE Department: former ECE Chair and current Professor **Steve Marcus**; Professor **Michael Fu** (BUS/ECE/ISR); former Maryland postdoctoral researcher **Hyeong Soo Chang**, who now teaches at Sogang University in Seoul, Korea; and ECE alumnus **Jiaqiao Hu**, who was advised by Marcus and Fu and is now assistant professor at SUNY Stony Brook University. The new book explores Markov decision processes (MDPs), which are widely used for modeling sequential decision-making problems that arise in engineering, economics, computer science, and the social sciences.

John A. Gubner, a 1988 Ph.D. alumnus in electrical engineering and associate professor at the University of Wisconsin-Madison's Department of Electrical and Computer Engineering, is the author of a new academic textbook, titled "Probability and Random Processes for Electrical and Computer Engineers." Gubner was advised by Professor **Prakash Narayan** during his M.S. and Ph.D. study at UMD.

NEW FACULTY EDITORSHIPS

Professor **Virgil Gligor** was appointed the Editor-in-Chief of IEEE Transactions on Dependable and Secure Computing (TDSC), one of the top journals in the field of computer engineering. TDSC is a quarterly journal focusing on research related to designing, modeling, and evaluating systems and networks that are dependable and secure without compromising performance. Gligor is also the Associate Editor for IEEE Transactions on Mobile Computing, and serves on the boards of IEEE Transactions on Computers and ACM Transactions on Information Systems Security.

NEW FACULTY PATENTS

Professor **Christopher Davis** was issued U.S. Patent No. 7,106,971 for his invention, "System and Method for Optical Wireless Communication." Davis' system facilitates optical wireless communication with fading resistance. His approach reduces fading significantly by sending data in a set of light signals which each have a different polarization and/or a different wavelength. Each light signal is carried over a different, uncorrelated "channel" through the atmosphere. The receiver adjusts and combines the signals into a single signal.

Professor **Kazuo Nakajima** was part of a research team that received U.S. patent number 7,075,827 for their reconfigurable semiconductor device and integrated circuit invention. The object of the invention is to decrease or eliminate use of a memory element or a memory circuit such as SRAM for storing data in the programmable hardware so that the space used for implementing the device and circuit can be decreased.

10

SHIHAB SHAMMA RECEIVES ISR FACULTY AWARD

Professor **Shihab Shamma** received the Institute for Systems Research (ISR) Outstanding Faculty Award. Dr. Shamma has been a member of the University of Maryland faculty since 1984. His research deals with issues in computational neuroscience, euromorphic engineering, and the development of microsensor systems for experimental research and neural prostheses.

WILLIAM LEVINE HONORED AT RETIREMENT CELEBRATION

Faculty and staff from the ECE Department gathered with friends and family on May 23 to celebrate the retirement of Professor **William Levine**. Outgoing Maryland Provost **William Destler** was on hand to present him with a signed letter of honorary citation from Maryland Governor **Martin O'Malley**. Dr. Levine served as a faculty member in the ECE Department for 38 years, specializing in controls research. Levine will continue on with the Department as a research professor.

WILLIAM LEVINE

ECE FACULTY IN THE NEWS

HORIUCHI FEATURED IN *WIRED* MAGAZINE

PROF. **TIMOTHY HORIUCHI** WAS FEATURED IN AN ARTICLE ON THE *WIRED* MAGAZINE WEBSITE ABOUT MILITARY RESEARCH AIMED AT CREATING SMALL DRONES, OR MICRO-AIR VEHICLES, THAT CAN TAKE ON THE POWERS AND SHAPES OF ANIMALS. RESEARCHERS LIKE HORIUCHUI ARE WORKING TO DEVELOP ROBOTS THAT ARE ABLE TO SEE LIKE BUGS AND HEAR LIKE BATS. THE ARTICLE MENTIONS HORIUICHI'S EFFORTS TO GET COMPUTERS TO EMULATE BATS' ECHOLATION CAPABILITIES, CITING THE ROBOTIC "BATMOBILES" HE HAS BUILT TO TEST HIS CIRCUITS.

JAJA IN THE NEWS FOR DIGITAL ARCHIVING AND PRESERVATION TECHNOLOGY

PROF. **JOSEPH JAJA** WAS FEATURED IN THE *FEDERAL TIMES* FOR HIS EFFORTS IN HELPING THE NATIONAL ARCHIVES PRESERVE FEDERAL RECORDS. HIS RESEARCH TEAM'S PRODUCER–ARCHIVE WORKFLOW NETWORK (PAWN) SOFTWARE WILL ENABLE FEDERAL AGENCIES TO SUBMIT THEIR RECORDS EASILY AND WITH THE ASSURANCE THAT IT IS TRANSMITTED CORRECTLY AND SECURELY.

alumniNEWS

Clark School Honors Innovator Laroia

On October 16, the Clark School inducted alumnus **Rajiv Laroia**, M.S. '89 and Ph.D. '92, electrical engineering, into the Innovation Hall of Fame in a ceremony at the Kim Engineering Building attended by campus leaders, faculty, staff, students and past Hall of Fame inductees. Laroia, who is also a member of the ECE Advisory Board, was presented with a medallion commemorating his induction and a panel describing his work was revealed.

Laroia is a leading developer of wireline and wireless technologies who recently sold his company to communications giant

RAJIV LAROIA

QUALCOMM. He was honored for his inventions, which helped to double the speed of data over landline modems and will allow companies to bring enhanced internet functions to mobile phones.

As a student, Laroia was advised by newly-appointed Maryland Provost Nariman Farvardin. Both conducted research for the Communication and Signal Processing Laboratory at the Institute for Systems Research.

Alumnus and Sirius Satellite Radio Co-Founder Receives AIAA Award

ECE alumnus **Robert Briskman**, the co-founder of SIRIUS Satellite Radio, received the 2007 American Institute of Aeronautics and Astronautics (AIAA) Aerospace Communications Award. The award, presented at the 25th AIAA International Communications Satellite Systems Conference in Seoul, South Korea on April 12, recognizes outstanding contributions in the field of aerospace communications. Briskman was honored for his pioneering efforts in developing the Satellite Digital Audio Radio Service (SDARS), known widely today as satellite radio.

Briskman, who received an M.S. in electrical engineering at the University of Maryland in 1961, co-founded SIRIUS Satellite Radio in 1991. He served as Chief Technical Officer and Executive Vice President, Engineering of SIRIUS and has been involved with communication satellite systems since their inception. As

the technical innovator of mobile satellite radio services, he was responsible for the development, implementation and operation of SIRIUS' broadcast distribution system. His technology development responsibility included design of low cost satellite receiving terminals for automobiles. Briskman also supervised the launch of three SIRIUS satellites into a unique operational orbital constellation which he designed.

Over the past 32 years, Briskman directed the implementation of satellite telecommunications systems at COMSAT and NASA. He holds engineering degrees from University of Maryland and Princeton University and is a Fellow of IEEE and AIAA, the largest professional aerospace engineering society in the world. He has published over 50 technical papers, holds a number of patents, and has been inducted into the Space Foundation and SSPI Halls of Fame.

Protagoras ("Tag") Cutchis, a senior engineer at the Johns Hopkins University Applied Physics Laboratory (APL) in Laurel, Md., was selected by *Scientific American* magazine as a Research Leader in the 2006 "Scientific American 50" (SA 50) list.

Cutchis was cited for developing a device that may enable amputees to communicate desired movements simply by thinking about them. His invention involves an array of electrodes implanted radially around the sheath of a peripheral nerve, recording pulses that travel up and down nerve endings and thus recreating precise stimulations that could be used to control prostheses.

A University of Maryland alumnus four times over, Cutchis earned a B.S. in electrical engineering (1979), a B.S. in physics (1979), and an M.S. in electrical engineering (1990), and an M.D. from the University of Maryland at Baltimore (1983).

Cutchis delivered an ECE Seminar on April 18 about the development of biomedical devices from 1984 to the present. The lecture is available online, and can be found in the news archive of the ECE website, located at www.ece.umd.edu.

ALUMNUS GOTOFF RECEIVES NATIONAL INTELLIGENCE HONOR

ECE alumnus **Steven Gotoff**, B.S. '78 (zoology) and '82 (electrical engineering), has received a Director of National Intelligence (DNI) Fellows Award in recognition of his outstanding technical achievement within the intelligence community. Director **John D. Negroponte** was on hand to present the DNI Fellows Awards to Gotoff and nine other recipients on December 15, 2006.

Gotoff currently oversees technology development and fielding efforts for the Directorate of Measurement and Signature Intelligence and Technical Collection at the Defense Intelligence Agency.

THREE ECE ALUMNI NAMED IEEE FELLOWS

Three ECE alumni were recently named Fellows of the Institute of Electrical and Electronics Engineers (IEEE).

Hamid Jafarkhani was named an IEEE Fellow "for contributions to space-time coding." Jafarkhani is a professor in the Department of Electrical Engineering and Computer Science at the University of California, Irvine. He earned his Ph.D. in Electrical Engineering in 1994 and was advised by newly appointed Provost **Nariman Farvardin**. He was the winner of the 2006 IEEE Marconi Prize Paper Award in Wireless Communications.

Naomi Leonard was named an IEEE Fellow "for contributions to control of underwater vehicles." Leonard, Ph.D. electrical engineering '94, is a professor of mechanical and aerospace engineering at Princeton University. Leonard won a MacArthur Fellow "genius grant" in 2004 for her underwater robotics research. Her advisor was Professor **P.S. Krishnaprasad**.

Leandros Tassiulas, Ph.D. electrical engineering '92, was also named an IEEE fellow for his contributions to algorithms, protocols and architectures of wireless communication networks. He is currently a faculty member at the University of Thessala, Volos, Greece. His advisor was Professor **Anthony Ephremides**.

ECE ALUMNI EARN TENURE, PROMOTIONS

Ph.D. alumnus **Wade Trappe** was appointed Associate Director of the Wireless Information Network Laboratory (WINLAB) at Rutgers University. WINLAB is an industry-university cooperative research center focused on advancing the development of wireless networking technology by combining the resources of government, industry and academia. Trappe joined Rutgers as assistant professor of electrical and computer engineering in 2002,

and was recently named associate professor with tenure in May 2007. He received his M.S. in 1999 and his Ph.D. in 2002 from Maryland, and was advised by Professor **K. J. Ray Liu**.

Dr. **Saswati Sarkar**, Ph.D. '00 electrical engineering, was promoted to associate professor with tenure in the University of Pennsylvania's Electrical and Systems Engineering Department. Sarkar's Ph.D. advisor was former ECE faculty member **Leandros Tassiulas**.

Alumnus Dr. **Radha Poovendran**, Ph.D. '99 electrical engineering, was promoted to associate professor with tenure by the University of Washington's Electrical Engineering Department. He won a Presidential Early Career Award for Scientists and Engineers (PECASE) in 2005. Poovendran's Ph.D. advisor was Professor **John Baras**.

Alumnus **Ram Venkataraman Iyer** has been promoted to associate professor with tenure in the Department of Mathematics and Statistics, Texas Tech University, Lubbock. Iyer earned his Ph.D in electrical engineering in 1999, advised by Professor **P. S. Krishnaprasad**.

RECENT ECE ALUMNI ACCEPT FACULTY POSITIONS

Alumnus **Fumin Zhang** accepted a position as assistant professor in the School of Electrical and Computer Engineering at the Georgia Institute of Technology. He will join the faculty at the recently established Savannah campus. Zhang earned his Ph.D. in Electrical Engineering from the University of Maryland in 2004. He was advised by Professor **P. S. Krishnaprasad**.

Azadeh Faridi, advised by Professor **Anthony Ephremides,** will join the Universitat Pompeu Fabra (Department de Tecnologia) in Barcelona, Spain, as a faculty member after her graduation in August. Currently she is working on cross-layer distortion control for delay-sensitive sources.

Her research interests are in communication networks and information theory, with a focus on cross-layer design.

Tolga Girici, also advised by Prof. Ephremides, will join the faculty of the Tobb University of Economics and Technology (Department of Electrical and Electronic Engineering) in Ankara, Turkey, this fall. He will be working on topics related to resource allocation, queueing theory and optimization in wireless multiple access and energy efficient communications in the near future.

Alumna and current ECE postdoctoral researcher **Mounya Elhilali** has accepted a faculty position in the ECE Department at Johns Hopkins University, beginning January 2008. Elhilali earned her Ph.D. in 2004. She was advised by Professor **Shihab Shamma**, with whom she has also been working during her postdoctoral appointment.

Steve Haga has been appointed as an assistant professor in the Department of Computer Science and Engineering at National Sun Yat-Sen University, Taiwan. Haga received his Ph.D. in 2005. His advisor was ECE Professor **Rajeev Barua**.

ECE postdoctoral researcher **Vijay Gupta** has accepted an assistant professor position in the Electrical Engineering Department at the University of Notre Dame, beginning January 2008. As a postdoc at Maryland, Vijay has worked with Professor **John Baras** and Assistant Professor **Nuno Martins**.

ALUMNA YAN SUN WINS NSF CAREER AWARD

ECE Ph.D. alumna **Yan Lindsay Sun** '04, an assistant professor in the ECE Department at the University of Rhode Island, has received a National Science Foundation (NSF) Faculty Early Career Development (CAREER) Award. Dr. Sun, a former advisee of Professor **K. J. Ray Liu**, received the honor for her research initiative, titled "Building Trust in Distributed Networks: Theories, Architecture and Applications.

ALUMNA CHIU WINS MACRONIX GOLDEN SILICON AWARD

Ching-Te Chiu, a 1992 ECE Ph.D. graduate advised by Professor **K. J. Ray Liu** and current associate professor at National Tsing-Hua University in Taiwan, won both the first place award and the innovation award in the 2006 Macronix Golden Silicon Awards competition for her group's work on "Loaded Balanced Birkhoff Von Neumann Symmetric TDM Switch IC." Her research team worked to implement a new switch architecture that is capable of providing both high scalability and high throughput rate.

CHEN'S TECHNOLOGY REGROWS MISSING TEETH

Alumnus **Jie Chen** (Ph.D. '98), associate professor of electrical engineering at the University of Alberta, has developed patent-pending technology that enables the regrowth of teeth and dental tissue. Dr. Chen and his colleagues designed a tiny wireless device for insertion into a patient's mouth which can gently massage the gums to stimulate the growth of the tooth root. Dr. Chen was an advisee of Professor **K. J. Ray Liu**.

ECE ALUMNI HONORED AT GALA

The University of Maryland Alumni Association honored five Clark School alumni and friends during its annual awards gala on April 14, including two ECE alumni.

Sudhitham Chirathivat, B.S. '71, electrical engineering, was presented with the university's international alumnus award in recognition of his career in the retail industry around the globe. Chirathivat is president and CEO of Central Pattana Public Co., Ltd. in Thailand.

Emilio A. Fernandez, B.S. '69, electrical engineering, was presented with the Engineering Alumnus of the Year Award for his accomplishments in industry. Fernandez, an entrepreneur who co-founded Pulse Electronics, is already a member of the Clark School's Innovation Hall of Fame and is also a member of the school's board of visitors.

Additional honorees included **Linda Gooden** of Lockheed Martin, **Michael D. Griffin**, Ph.D. '77, aerospace engineering; and **Marilyn Berman Pollans**, former associate dean of the Clark School.

ECE ALUMNI ADVANCE IN INDUSTRY

ECE alumnus **Elias Shams**, B.S. '90, was named the new CEO of Searchles, an intelligent social search platform that integrates popular Internet tools like bookmarking, tagging and sharing content with in-depth search features. Shams will be responsible for providing leadership and overall direction for the company.

Robert L. Richmond, B.S. '73, was hired as Chief Operating Officer for SteelCloud, Inc., an engineering and manufacturing company based in Herndon, Va.

Eric Oganesoff, B.S. '72, has joined FOCUS Enterprises, Inc. as a Partner. Oganesoff has previously served as the CEO or President of nine companies. FOCUS Enterprises, Inc. is a national investment banking firm with an emphasis on mergers, acquisitions, divestitures and corporate finance.

David Tahmassebi, B.S. '86, has been named the new President and CEO of LedEngin, a company that produces ultra high-power Light Emitting Diodes (LEDs).

William J. Schaefer has been appointed vice president of business development for Northrop Grumman Corporation's Integrated Systems sector. Schaefer earned his bachelor's degree in 1970 and master's degree in 1972, both in electrical engineering at the University of Maryland.

Akhlesh Kaushiva, B.S. '72, has joined Avineon, Inc. as vice president of the company's Commercial IT Services division.

Harold "Hal" C. Smith, B.S. '80, has joined Computer Sciences Corporation (CSC) as vice president and general manager of intelligence and law enforcement for the company's North American Enforcement, Security and Intelligence (ESI) division.

IN MEMORIAM

Ernest Norman Hernandez (Ph.D., E.E., 1969), 66, died July 14, 2007 in a plane crash after encountering engine trouble while flying his single-engine plane back from an air show near Seattle. After graduating from University of Maryland, he worked with the Navy and moved to Colorado, where he worked at the U.S. Geological Survey. He later relocated to Seattle to become a professor at the University of Washington, where he researched high-speed data communications and started the Optics Communications Lab in 1972. He was chairman and chief executive of AuBeta Networks, a Seattle technology company with more than 90 employees. The company was just one of many he founded or co-founded since 1973, including Terra Technology, HiComp, Terra Computer Systems, Applied Computer Technology, Atec, Cybermedic and AuBeta.

James Reid Gouge Jr. (B.S., E.E., 1953), 78, died of multiple myeloma Oct. 11, 2007 at the Capital Hospice in Falls Church. Mr. Gouge enlisted in the Navy and served during World War II and the Korean conflict. During his time at Maryland, he was a member of Phi Kappa Phi, Eta Kappa Nu and Omicron Delta Kappa. He worked for several engineering firms before retiring from the MITRE Corp.

Luigi Anthony Vagnoni (B.S., E.E., 1953) died June 18, 2007 at the age of 84 at his home in Annapolis. Mr. Vagnoni joined the Navy Department in 1941 as a Washington Navy Yard machinist. He served in the Navy in the North Atlantic during World War II. He spent much of his career at the Naval Ordnance Laboratory in White Oak designing and testing missiles launched by submarines.

Alfred J. Rugo (B.S., E.E., 1949) died Jan. 19, 2007 at the age of 84. He earned an electrical engineering degree from the University of Maryland and a master's degree in business from George Washington University. During World War II, he served in the Army. Mr. Rugo was director of sales for the lighting division of the GTE Sylvania Corp. at its headquarters in Danvers, Massachusetts, and worked there for 35 years before retiring.

ECE Students Sweep $50K Business Plan Competition

ECE Team Creates New Wireless Device To Monitor ER Patients, Attracts Attention from CNN

ECE students and faculty competed on all three winning teams and were runners-up on two others in the University of Maryland's $50K Business Plan Competition, organized annually by Maryland Technology Enterprise Institute (MTECH) Ventures, a unit of the A. James Clark School of Engineering. Competition finals were held on April 27, 2007 at the University of Maryland, in the Jeong H. Kim Engineering Building. The competition, now in its seventh year, offers participants the chance to earn start-up money for entrepreneurial ideas, and has awarded a total of $385,000 in prizes to faculty, students and alumni with the best plans for innovative ventures.

Current ECE undergrad **David Crawford** (B.S. '09) and a 2002 ECE alumna wishing to remain anonymous were winners in the Young Alumni Division for their business plan, titled Aid Networks LLC, winning $10,000. Aid Networks is a seed stage medical device R&D company developing small, portable, wireless, wearable vital sign monitors for hospital patients in emergency waiting rooms. Currently, the average patient's wait time in American hospitals is 222 minutes—well over three hours. The system could send an alert to ER nurses or doctors if the vital signs showed

something was seriously wrong with the patient. The team's patent-pending monitors are 15 times less expensive than existing products. The invention was in the news recently after the team won second place and the Entrepreneurial Vision Award at the Spirit of Entrepreneurship and Enterprise Development (SEED) competition in Santa Barbara, Ca. The team was recently featured on CNN and in *The Baltimore Examiner* for their invention.

ECE Research Associate **Will Plishker**; ECE graduate students **Yashwanth Hemaraj** (May '07) and **Omkar Dandekar**, and ECE Adjunct Professor **Raj Shekhar** were winners in the Faculty and Graduate Student Division, earning $10,000 in prize money. The team has put together a new company called Accelign that is developing technology that quickly fuses or "registers" medical images from multiple sources to create a single, three-dimensional image. Fusing images through Accelign's hardware accelerator gives doctors the ability, using existing imaging equipment, to see the metabolic activity of positron emission tomography (PET) scans, as well as the high resolution anatomical structure of computed tomography (CT) scans, all in one image. This innovation can help doctors provide

more accurate diagnoses and pre-operative planning.

In the Undergraduate Student Division, the winning team, IMPACT Education LLC, won $5,000. IMPACT develops low-cost educational kits that university professors can use to teach MEMS fabrication outside of expensive laboratory facilities. While those facilities can cost millions of dollars to build, IMPACT's educational kit will cost only $500. The team is comprised of undergraduates **Ryan Herrera**, electrical engineering ('07); **John Karvounis**, computer engineering ('07); **Peter Orlicki**, Hinman CEOs, computer engineering and finance ('08); **Travis Young**, electrical engineering ('07); **Kristin Freese**, Hinman CEOs and government and politics, ('07); **Steven Hoffenson**, mechanical engineering ('07); **Kate Imp**, criminal justice alumna ('06); **Paul Kang**, marketing and logistics ('07); **Jamie Kim**, finance and accounting, ('07); **Wei-Liang William Lai**, computer science and math ('07); **Fred Perrotta**, economics ('07); **Jennifer Thompson**, mechanical engineering ('07); **Joe Wakeman-Linn**, psychology ('07); and **Ben Worku**, information systems and finance ('07).

Finalists were selected from 18 semifinalists, and nearly 60 initial entries.

Recent Clark School Grads May Have the Next YouTube

Three Clark School students hope their new web site may be the next YouTube. Their site, doFlick, features short videos that show users how to do all kinds of things, from how to bend a tube for a science lab to how to make guacamole. The site also includes videos that demonstrate scientific principles, including talking with helium, as well as other activities, including a demonstration of a drum and bass music

groove. Users can submit their videos to doFlick and watch others' videos, all at no cost. Advertising sales will support the site, which can be visited at www.doflick.com.

The brains behind doFlick are **Rama Sreenivasan**, who received his Ph.D. in chemical engineering in May; **Shiva Pandit**, who received his Master of Engineering specializing in electrical and computer engineering in May; and **Luis Corzo**,

'05, Master of Engineering specializing in Project Management. They met in an entrepreneurship class offered by the Clark School's Professional Master of Engineering program and Maryland Technology Enterprise Institute (MTECH), each looking to create a business they could get excited about that could benefit people.

"With doFlick, our goal is to spread knowledge beyond boundaries," said Pandit.

KENNETH HO NAMED TEXAS INSTRUMENTS SCHOLAR

ECE M.S. student **Kenneth Ho** was selected as a 2007 Texas Instruments (TI) Scholar. The TI Scholar program is made possible by a gift from the Texas Instruments branch located in Germantown, Maryland through their Industrial Affiliate partnership with the ECE Department. The program supports talented graduate students in electrical and computer engineering with a tuition grant, stipend, and benefits.

Ho is an advisee of Associate Professor **Min Wu**. Texas Instruments Senior Fellow **William Witowsky**, ECE Chair Dr. **Patrick O'Shea**, Dr. **Steve Tretter**, Dr. Wu, and Ho were on hand for a TI Scholar certificate presentation ceremony (see photo above) at the Jeong H. Kim Engineering Building on December 4. For more information about the ECE Industrial Affiliates program, visit www.ece.umd.edu.

FROM LEFT: MIN WU, BILL WITOWSKY, KENNETH HO, PATRICK O'SHEA

KOEV RECEIVES AVS GRADUATE RESEARCH AWARD

ECE Ph.D. student **Stephan Koev** was a recipient of the 2007 American Vacuum Society's (AVS) Graduate Research Award, a prestigious prize that draws nationwide competition each year. Stephan is advised by Associate Professor **Reza Ghodssi**, and is the third student from Ghodssi's MEMS Sensors and Actuators Lab to be honored with the award in the last five years; **Nima Ghalichechian** won the award in 2006 and **Alireza Modafe** won it in 2002. Both Nima and Alireza were also advised by Dr. Ghodssi—who coincidentally won this same award when he was a graduate student.

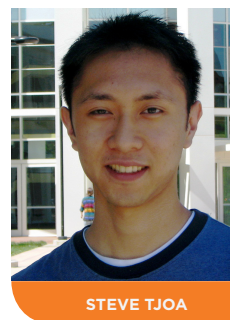## GHALICHECHIAN RECEIVES ISR OUTSTANDING STUDENT AWARD

Nima Ghalichechian, electrical engineering '07, received the Institute for Systems Research (ISR) 2007 George Harhalakis Outstanding Systems Engineering Graduate Student Award. He was nominated by Associate Professor **Reza Ghodssi**, his faculty advisor. Nima's research focuses on the development of next generation Power MEMS devices based on micro ball-bearing technology for miniatur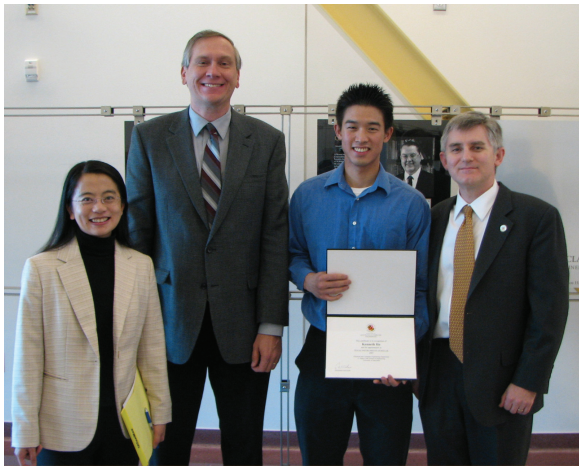e battery applications. Nima has designed, modeled and tested the world's first rotary micro-motor supported on micro ball bearings.

STEVE TJOA NAMED NEW PRESIDENT OF ECEGSA

Ph.D. student **Steve Tjoa** was named the new President of the Electrical and Computer Engineering Graduate Student Association (ECEGSA). Steve succeeds **Song Li** as President. He received a B.S. degree in computer engineering in 2004 and an M.S. degree in electrical engineering in 2006, both from the University of Maryland. Steve currently serves as a graduate research assistant in the Signals and Information Research Group, and is advised by Prof **K. J. Ray Liu**. His research focuses on multimedia signal processing and forensics.
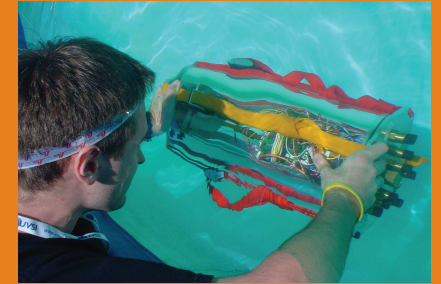

STEVE TJOA

UNDERGRADS GOLDMAN AND CHEN SELECTED AS NCMR SCHOLARS

Two ECE undergraduate seniors were selected as National Consortium for Measurement and Signals Intelligence Research (NCMR) Scholars. **Marc Goldman**, who worked in the Computational Sensorimotor Systems Laboratory with Associate Professor **Timothy Horiuchi**, received a $10,000 scholarship, while **Eric Ying-Che Chen**, part of Assistant Professor **Pamela Abshire**'s Integrated Biomorphic Information Systems Laboratory, received $5,000. NCMR is a Defense Intelligence Agency program that provides cutting-edge research to the intelligence community. The scholarship help promising undergrads with tuition, textbooks, room and board.

MEGHIRBI NAMED GRADUATE ASSISTANT ADVISOR OF THE YEAR

The ECE Department's **Meriam Meghirbi** (B.S., E.E. '04, M.S. in Telecommunications '07) was selected as the 2006-2007 Provost's Graduate Assistant Academic Advisor of the Year for the University of Maryland. She was nominated by her supervisor, Associate Director of Undergraduate & Administrative Affairs **Steve Norton**, for her "consummate professionalism... and infectious enthusiasm."