ROBERT BRAYTON
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kPOINT FOUNDER SUNIL GAITONDE
ON TAKING RISKS (PAGE 10)

CONNECTIONS

SUMMER SEMESTER 2013

CHIP CHANGE

DESIGNING MICROCHIPS THAT ACT LIKE
SMALL CITIES

IOWA STATE UNIVERSITY
Department of Electrical and Computer Engineering

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Greetings from Iowa State. The Summer semester is nearly over and soon we will be beginning the 2013-14 school year. These are exciting times at ECpE; times of growth, prosperity, and transformation.

Our enrollment continues to grow and we have created a new space for our staff to work with students. Our student services staff often is the main point of contact with for prospective students and their families, making an efficient and useful service center (facing page) an important piece of the department's future success.

The new student service center isn't the only major change to Coover Hall's first floor. CyRIS, a 16-foot wide media wall (page 2), was installed over the summer in Coover Hall's East entrance. The media wall, which got its name through a department-wide student contest, features some impressive technology. It is our hope that CyRIS inspires new ideas and further collaboration among our students.

With the new student services suite, the Transformative Learning Area, and CyRIS, we have begun to update and modernize the first floor of Coover Hall; but we aren't finished yet. Plans have been drafted for renovations to the Computing Support Group area. These plans will create a more organized and up-to-date space for our technical support staff and allow the technology we provide to our students to remain at the forefront of what is available.

Our faculty members continue to earn distinction. Arun K. Somani recently was named Associate Dean for Research (page 3), while Ayman Fayed (page 4) and Namrata Vaswani (page 8) are innovating within their respective fields. Our research and education efforts remain strong, and our faculty members are the driving force behind that.

Best regards,

David Jiles

David C. Jiles
Anson Marston Distinguished Professor, and
Palmer Endowed Department Chair
Department of Electrical and Computer Engineering

IN THIS ISSUE

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STUDENT SERVICES SUITE OPENS FOR 2013-14 ACADEMIC YEAR

BY BROCK ASCHER

Student services has a new home at ECpE. The new Student Services Suite, located in Coover Hall's ground floor, is the direct result of the department's booming undergraduate student population.

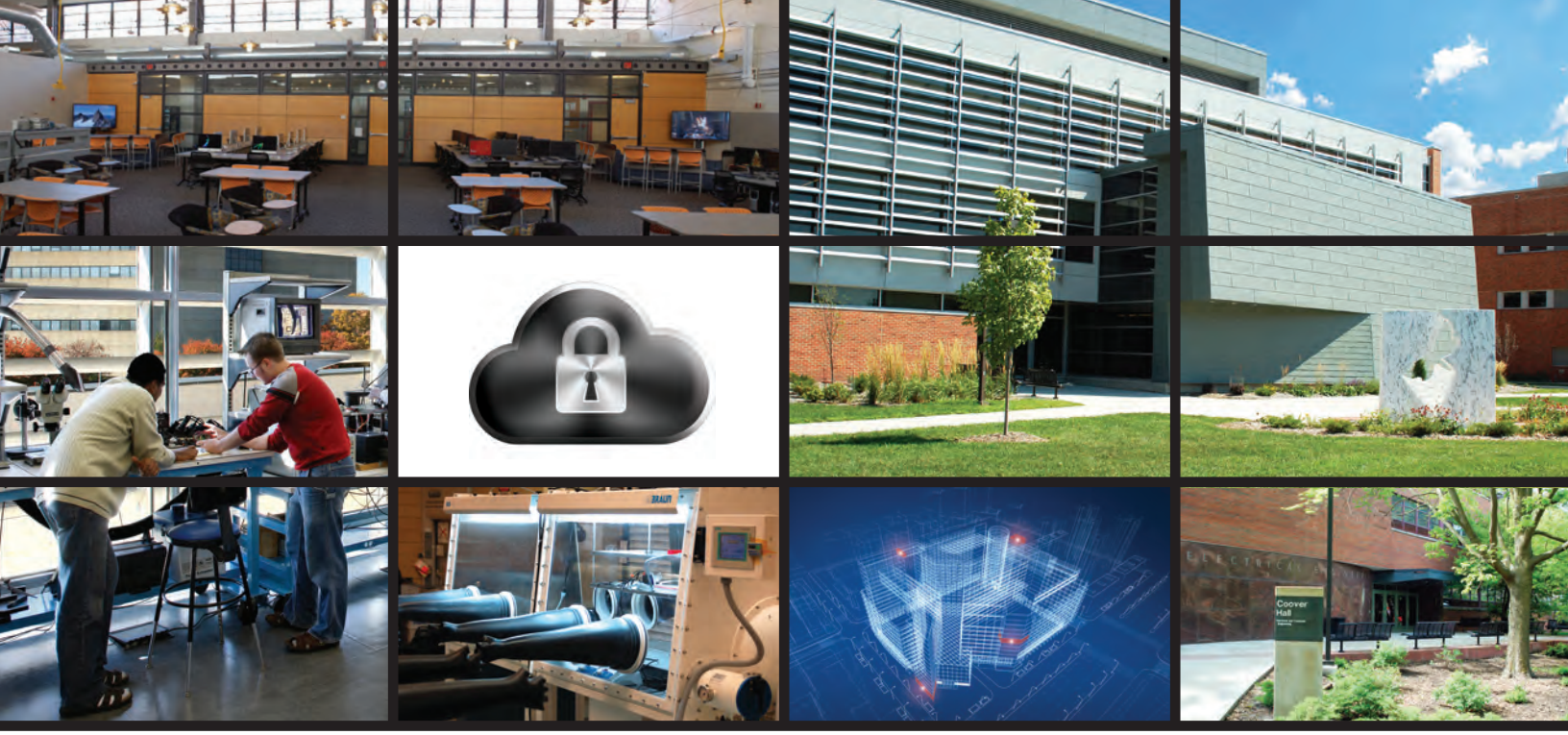
"We'll be able to meet the needs of our students in one area instead of being spread across several," says **Vicky Thorland-Oster**, Manager, ECpE Student Services. "That alone will make us more effective."

The space features five individual offices for the advising staff, a reception and waiting area, a conference room, and storage for records and student files. The advising suite provides much-needed space to the student services staff, enabling staff members to serve ECpE's growing student body in more efficient ways.

"Prospective students will come to the suite, visit with our advising staff, and have their meeting in our new conference room," Thorland-Oster says. "We won't be leading them around the building anymore. It'll all happen right here."

The new space originally was included within ECpE's Phase II Construction Plan, but the economic downturn and subsequent tightening of state funding caused delays. The renovation was completed in July and utilized private donations secured specifically for renovations to Coover Hall.

"The new space will make us a more cohesive unit," Thorland-Oster says. "We'll be able to serve our growing student population in more efficient and more effective ways."



WELCOME CyRIS

Coover Hall's new media wall, CyRIS, serves as a state-of-the-art platform for high-definition video and a potential new landmark on the Iowa State campus

BY BROCK ASCHER

The East entrance of Coover Hall will look a bit different this fall to returning students. A state-of-the-art, ultra-high definition media wall will serve as the entrance's centerpiece and showcase the work being done in Coover Hall and around campus.

The display, which stands at sixteen feet wide and seven feet high, is comprised of twelve 55-inch 1080p LED displays. The screen can display a single feed or can handle multiple video streams, and is equipped with a Bose surround-sound audio system and a 32-point multi-touch interface.

"We intend for the screen to be a landmark at Iowa State, something that will draw visitors from all over campus," said **David C. Jiles**, Palmer Endowed Department Chair of the Department of Electrical and Computer Engineering. "The screen will be something that you can only find in Coover Hall."

The screen was given a name, CyRIS (Real-time Interactive System), after a vote by ECpE faculty and staff. CyRIS beat out 135 other names, all of which were suggested by students in a department-wide contest that was held in May. The contest's winner, software engineering major **William Park**, won an iPad for his entry.

CyRIS is outfitted with a stainless steel finish and was created by Live Wall Media of Silicon Valley, Calif. It runs media through a custom interface which can be augmented with any number of improvements. Part of the spirit of acquiring such a large and advanced screen was for the possibility of adding to its abilities in the future.

CyRIS will feature videos and photo galleries at first, but the content will evolve to feature a touch-controlled information kiosk with interactive components, maps, and directories. The kiosk, however, is just the beginning.

Next Spring, CyRIS will be incorporated into the semester's senior design projects. Senior design teams will be tasked with dreaming up new and innovative uses for the screen, such as facial recognition integration and gesture controls. Plans for annual senior design projects are in the pipeline.

SOMANI NAMED ASSOCIATE DEAN FOR RESEARCH

Arun K. Somani has been named associate dean for research at Iowa State University's College of Engineering. His appointment began July 1. Somani is currently an Anson Marston Distinguished Professor in the college's Department of Electrical and Computer Engineering, where he also previously served as department chair.

Somani joined the Iowa State faculty in 1997 and has held various faculty and leadership positions. Previously, Somani was on the faculty at of the University of Washington and also held professional and consulting roles in the private sector. He is recognized internationally for scholarly contributions in the areas of fault-tolerant computing, computer interconnection networks, optical networks, and parallel and distributed computer system architecture. Somani is a fellow of the American Association for the Advancement of Science and the Institute of Electrical and Electronic Engineers, as well as a distinguished engineer in the Association for Computing Machinery. He holds a doctorate degree from McGill University in Montreal, Canada.

"Arun's leadership will allow us to continue conducting high-quality research and expand our opportunities to addresses today's greatest challenges," said **Sarah Rajala**, dean of the College of Engineering. "He will create a strong and collaborative environment and help to diversify our research enterprise."

Somani says he is excited about this new opportunity. "I am very passionate about research and look forward to working with the faculty, staff, and all of our partners to further advance the great success and vision we have in the college," Somani said.

In fiscal year 2012, the ISU College of Engineering spent $84 million in externally-sponsored funding for the purpose of improving the human condition through research that addresses energy, biosciences, computing, green technology and infrastructure. Courtesy, *Engineering College Relations*

Arun K. Somani
Associate Dean for Research
Anson Marston Distinguished Professor
Jerry R. Junkins Endowed Chair Professor
Director, Dependable Computing and Networking Laboratory

DEPARTMENT HEADLINES

ECpE STUDENT SELECTED FOR NSF EAPSI AWARD

Cory Kleinheksel, IBM Ph.D. Fellow under **Arun K. Somani**, was a recipient of the East Asia and Pacific Summer Institutes (EAPSI) Fellowship from the National Science Foundation. EAPSI Fellowships are awarded to students to provide first-hand research experience in the region and to help students initiate professional relationships. Kleinheksel is spending the summer in Seoul, South Korea, working on workflow processing for bigdata and bioinformatics. Kleinheksel is the second student under Somani to earn the fellowship. Nathan VanderHorn (PhDCprE '07) was a 2005 winner.

IOWA STATE, NAZARBAYEV UNIVERSITY PARTNER FOR ORGANIC SOLAR CELL RESEARCH

Vikram Dalal, Thomas Whitney Professor in electrical and computer engineering, has developed a collaborative partnership with researchers at Nazarbayev University (NU), a new university in Kazakhstan's capital city of Astana. The research-focused university is named after Kazakhstan's current President, Nursultan Nazarbayev, who seeks to bolster the Central Asian nation's scientific and technological prowess by following the recent model of Saudi Arabia. A presentation authored by both universities was given at an international meeting of the Materials Research Society.

JACOBSON FEATURED IN IOWA FARMER TODAY

Doug Jacobson, University Professor, was featured in Iowa Farmer Today, a weekly publication distributed to 70,000 farmers across the state. In the feature, Jacobson discusses cybersecurity as it pertains to paying bills, managing payrolls, and numerous other aspects of running a business or a farm. Jacobson's take on these issues and more can be found at www.iowafarmertoday.com

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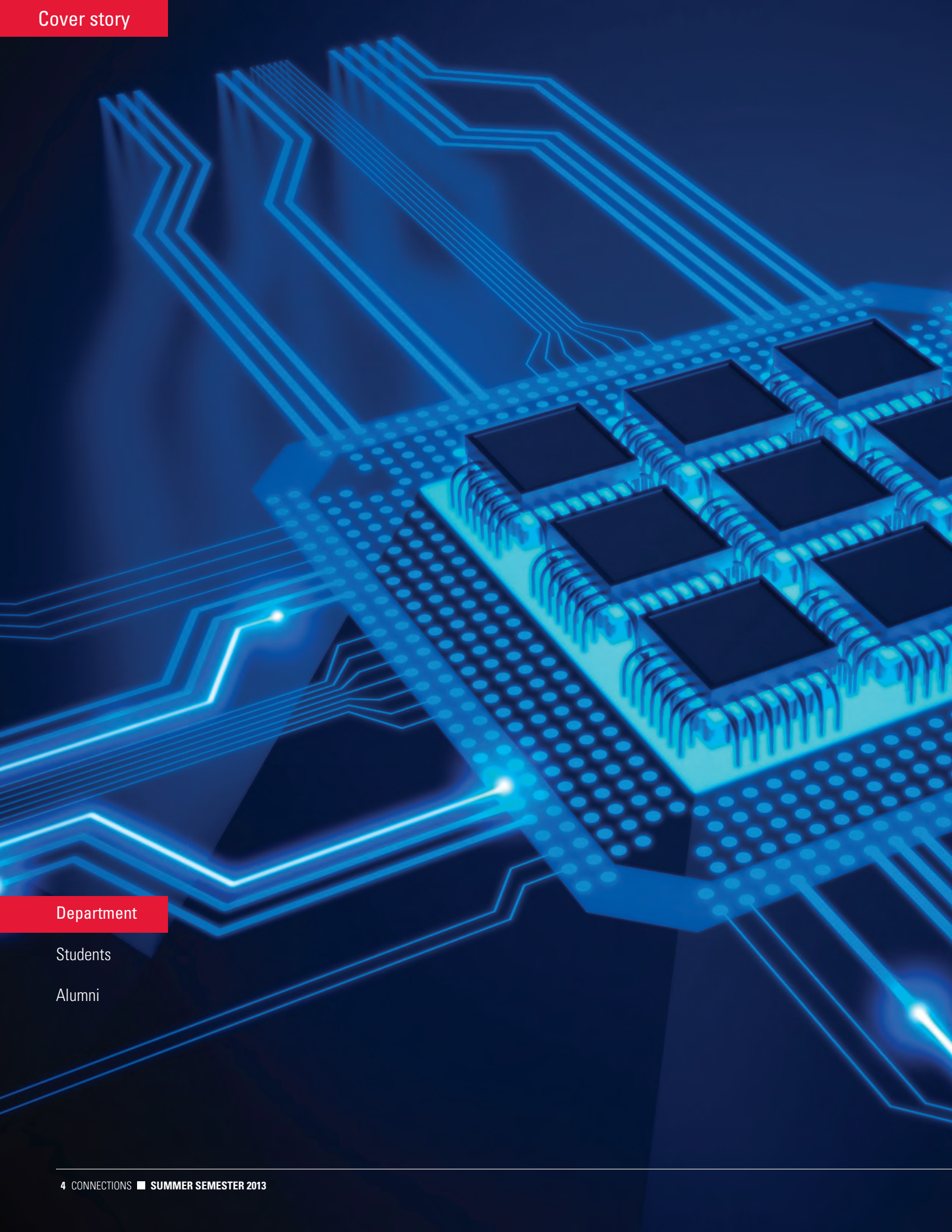
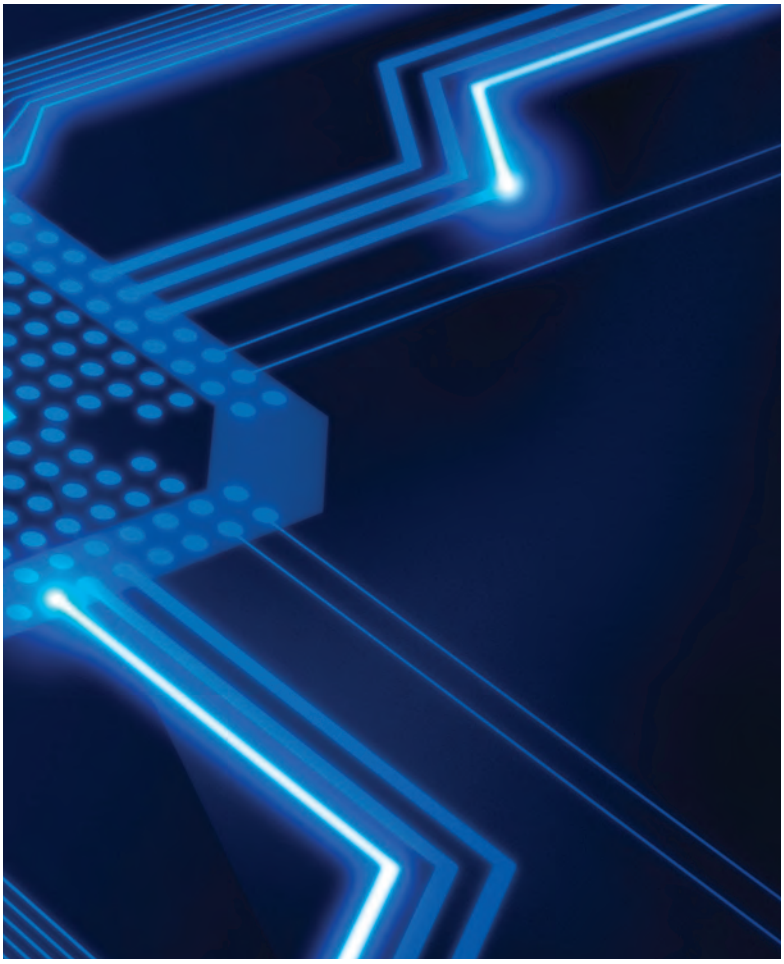


CHIP CHANGE

Professor Ayman Fayed's approach to power management in electronic devices could make microchips work like small cities

BY BROCK ASCHER



Power management is a critical aspect in many electronic devices, and **Ayman Fayed** is working on a new approach to the problem. Fayed, assistant professor of electrical and computer engineering and director of the Iowa State Power Management Research Lab, has received a National Science Foundation (NSF) CAREER award to develop dynamic on-chip power grids for energy-efficient and cost effective-power conversion in integrated circuits.

"The industry has been focused on reducing the power consumption of circuit functions for the last 15 to 20 years, but this is now yielding diminishing returns," Fayed says. "We're unable to reduce the power consumption of most circuit functions much further beyond what we have been able to achieve at this point. Now we're seeing that the only way we can further reduce the overall power consumption of the system is by revisiting the way we convert power from the main energy source to the circuit functions."

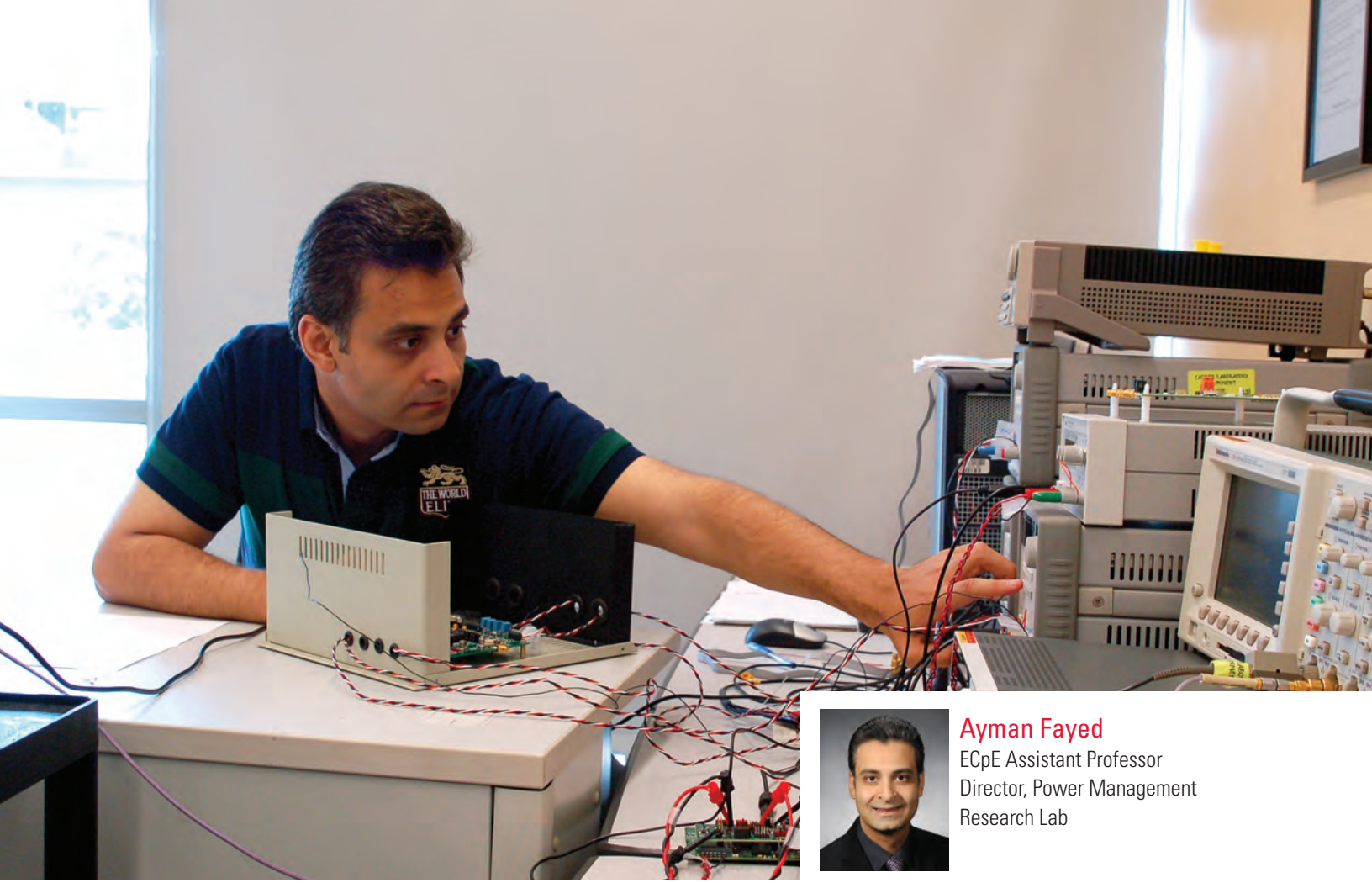
In any electronic device, the voltage level of the energy source used to power the device must be converted to the voltage level required by the various circuit functions within the device. This power conversion process, in addition to wasting significant power itself, is difficult to dynamically adapt at high speeds.

As a result, this conversion hinders the ability to limit the power consumption of the circuit functions within a device to their real needs at any given period of time. Fayed's research attempts to reduce the power waste associated with power conversion and to enable adaptive, high-speed dynamic powering of integrated circuits used inside all electronic devices.

"The process itself is quite inefficient at this point," Fayed says of power conversion. "Improving the efficiency of the conversion process by a few percent can make a huge difference in terms of the overall power consumption of your system. However, if you are also able to make it dynamically adaptive to the circuit loads, you can further reduce the power consumption dramatically. This load-aware powering of integrated circuits is going to be the path forward."

Adaptive, dynamic powering relies on dividing the system into numerous circuit subcomponents; each with its own independent power supply that can be dynamically adapted to the exact power demand of the circuit subcomponents. This results in eliminating a large amount of wasted power, but also requires the implementation of a large number of separate power supplies on the chip.

"The number of power supplies that you need in the system becomes really large," Fayed says. "Instead of having one or two static power supplies on the chip, now I need fifty or sixty dynamic, load-aware power supplies. Now when you look at it, it becomes more like a smart power grid on a chip, if you will. Similar to the smart grid that you use for the



Ayman Fayed
ECpE Assistant Professor
Director, Power Management Research Lab

Above
Ayman Fayed adjusts equipment in the Power Management Research Lab in the ECpE Addition.

distribution of electricity in cities; only your city is the chip, and your power levels are only few watts."

Implementing a large number of dynamic power supplies at a reasonable cost with high efficiency has numerous hurdles, but Fayed is working to develop ways over those hurdles. Power supplies have very slow dynamic response and require bulky and expensive inductors and capacitors, so creative architectures are needed. Fayed is proposing a Multi-Frequency SIMO (Single Inductor Multiple Output) architecture, which would resolve many of these issues.

"Using multiple frequencies in a power supply has some very interesting advantages," Fayed says. "You can achieve much faster dynamic performance with very small capacitors without adversely impacting efficiency, which is not the case in typical single frequency power supplies. That essentially enables you to implement the on-chip smart power grid in a very cost effective manner."

In addition to improving power conversion in integrated circuits, Fayed is leading VLSI education at Iowa State in a new direction.

"On one hand, the VLSI and integrated circuits curriculum at Iowa State and many other institutions covers almost nothing about power management or power electronics in general," Fayed says. "On the other hand, traditional power electronics curriculum does not cover VLSI or integrated circuits," he adds. "This is creating a serious shortage in graduates who have sufficient background in both fields. This background combination is highly sought after, and critically needed in the integrated circuits industry. We are trying hard to fill in that gap."

Fayed's curriculum development activities, which also are supported by his NSF CAREER Award, would address this knowledge gap by teaching power conversion principles as part of the VLSI program at Iowa State. He proposes that this approach be integrated into both undergraduate and graduate courses.

"The idea is for the students to start saying 'Oh, that power supply is actually critical for the performance of my circuit. And I have to decide what the power supply needs to be before I even design my circuit, because otherwise if I change my power supply even a little bit, my circuit may fail,'" He says. "So you bring to their attention the importance of that power supply for the circuits they're designing and they should not just look at it as this VDD line they draw on the board, they should look at it as part of the overall circuit. That's the goal."

Keep in touch

We want to hear about your career moves and personal news for future issues of *ECpE Connections*! Please fill out the form below or online at *www.ece.iastate.edu/alumni* (click Alumni News Form) to share your news.

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The ECpE department relies heavily on the support of our alumni and friends to ensure that students have access to scholarships and the latest lab facilities and classroom spaces, that faculty can continue to support graduate students and conduct state-of-the-art research, that department facilities remain updated for staff to do their jobs efficiently, and that student organizations and department events can continue to thrive.

If you would like to help the department continue to be one of the best in the country, you can support the department through several funds. Additional opportunities are available to support endowments and building space. Please check the appropriate box below if you want to offer your support today, or visit *www.foundation.iastate.edu*. For more information about the funds, contact the ISU Foundation's Adam Laug at 515 294-4883 or alaug@iastate.edu.

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Namrata Vaswani
ECpE Associate Professor
Associate Editor, IEEE Transactions on Signal Processing

IOWA STATE UNIVERSITY
Dept. of Electrical and Computer Engineering
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Ames, IA 50011-3060

WORK CITED

Namrata Vaswani's paper on Modified-CS has enabled provably-exact sparse recovery with much greater efficiency. Fellow compressive sensing researchers have noticed.

BY THANE HIMES

Namrata Vaswani has had a wide influence these last few years. This year Vaswani, associate professor of electrical and computer engineering, has been nominated for a College of Engineering Young Faculty Award for her research in sparse recovery algorithms. Her papers on the subject have been heavily cited over the last three years.

Sparse recovery, commonly known as compressive sensing, is a signal processing technique that is used in, among other things, medical imaging technology. It involves taking measurements of a cross-section of the subject, and reconstructing those measurements a small piece at a time. The goal of sparse recovery is to reduce the measurements needed to make an accurate image, as fewer measurements mean faster scans.

"Most people think that with an MRI, what you measure is the image of a cross-section directly, but that isn't correct," Vaswani says. "What you measure actually is a function of the image. You need to design algorithms to recover the image from these measurements. What we are working toward is using fewer measurements to still get an accurate reconstruction. We're making the process more efficient."

Vaswani's 2010 paper, "Modified-CS: Modifying compressive sensing for problems with partially known support," was one of the first papers written on recovering sparse signals when the sparsity pattern is available. Vaswani introduced a simple but very powerful approach called Modified-CS, which enables provably-exact sparse recovery using far fewer measurements than existing techniques. In practice, this means that if something is known about the sparsity pattern of an MRI image, it can be acquired much more quickly.

Vaswani's paper is the 2nd most-cited among all papers published in September of 2010 or later, and the 5th most-cited among all papers from 2010 or later in *IEEE Transactions on Signal Processing*, according to Google Scholar metrics. Other researchers have used Vaswani's algorithm for many different applications within MRI, video, and optical coherence tomography, which is used for retinal imaging, among other things.

"It feels very good that many people are interested in the problem that I first looked at," Vaswani said. "Even more so because it's work done at Iowa State with one of my first two PhD students."

The algorithm Vaswani developed currently is being applied to real data at the University of Illinois in Chicago. This algorithm is being tested on real brain functional MRI scan data provided by Vaswani's collaborator at University of Illinois in Chicago.

Vaswani was the first researcher to look at this problem. Cross-sectional images of the brain, heart, larynx, or other human organs are smooth and thus can be modeled as approximately sparse in a certain transform domain. In a time sequence, their sparsity patterns (sets of indices of significantly nonzero entries) generally change slowly with time. Vaswani noted this in a 2009 paper, and then verified it in the 2010 paper.

This time factor is the key reason that Vaswani's proposed algorithms can achieve accurate reconstruction from far fewer measurements compared to existing approaches. Most existing algorithms are either batch methods, which are much slower; or online methods, which need many more measurements and longer scan times.

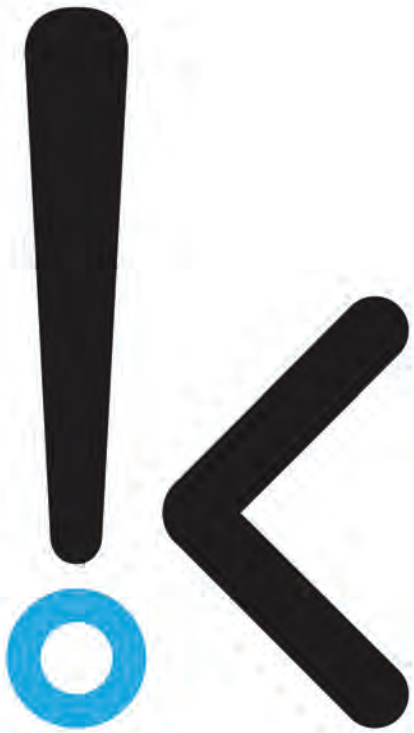
Vaswani's proposed algorithms provide the best of both worlds. Their complexity is comparable to other online methods; but in proof-of-concept experiments, they have been demonstrated to cut scan time by a factor of five when compared to existing technology, and a factor of two when compared to existing research literature.

The proposed algorithms also are provably stable over time under mild assumptions. Stability is critical for any recursive algorithm since it ensures that the error does not expand over time. Thus, if the proposed algorithm is used in an MRI-guided surgery application, stability means that the reconstructed images the surgeon sees will always be a good approximation of reality. On the other hand, a potentially unstable algorithm has the possibility of fatally misguiding the surgeon with inaccurate images.

Vaswani's paper is the 2nd most cited among all papers published in September of 2010 or later, and the 5th most-cited among all papers from 2010 or later.

Vaswani joined the ISU ECpE faculty in Fall 2005, after receiving a Ph.D. from the University of Maryland, College Park in 2004 and working as a postdoc at Georgia Tech for a year after that. Her research interests are in signal processing, biomedical imaging, and computer vision. In particular, she has made significant contributions on research problems in sparse recovery (compressive sensing), robust principal component analysis, and on applications in dynamic MRI and video analysis. She was promoted to associate professor in 2011.

From 2009 to 2013 Vaswani served as an Associate Editor for *IEEE Transactions on Signal Processing,* which is the premier journal in signal processing and a top 15 journal among all Engineering and Computer Science journals.



RISKY BUSINESS

ECpE alum Sunil Gaitonde's story of betting it all and coming out on top

BY ELENI UPAH

Sunil Gaitonde (MSCprE '85; PhDCprE '88)

Co-Founder, Internet Junction (1994)
Founder, Sarvega (2000)
Co-Founder and CEO, Great Software Laboratories, (2003-Present)
Founder and CEO, kPoint Software (2007-Present)

Growing up in Mumbai, India, **Sunil Gaitonde** had to choose a career by age 18, and without any engineers in his family, his decision to go into electrical engineering was the first risk of many that paid off in the end.

In 1983, he chose to pursue his master's at Iowa State after talking with a friend who studied here and enjoyed the university. He adds that the engineering program being among the top 50 in the nation at the time also helped his decision.

Personal computers were just coming out when Gaitonde came to campus, and they instantly drew his attention. With an interest in computer programming, he switched his major from electrical to computer engineering and went on to get his PhD at Iowa State, as well.

After college, Gaitonde worked at IBM for 5 years, all the while thinking about building his own company. He moved to Silicon Valley and started Internet Junction in 1994. Putting endless hours into his new business and working full-time was stressful, especially when the outcome was so uncertain.

"I could have been on the street if my first business didn't work out," says Gaitonde. "I didn't have any family here to back me up if it didn't work."

It turned out to be a good gamble for him, as he sold Internet Junction to Cisco in 1995 and worked with the company until 2000, when he co-founded a second business called Sarvega. Intel acquired Sarvega five years later.

> "I could have been on the street if my first business didn't work out. I didn't have any family here if it didn't work."

Gaitonde currently runs two of the companies he founded: Great Software Laboratory (GS Lab), which is based in India and the US, and kPoint, which was incubated by GS Lab. kPoint is a platform that helps product companies build customer-centric videos using existing collateral and making them searchable on the Internet without any extra effort.

While kPoint is open to anyone, it is mainly geared at business videos—although it would be an ideal resource for college lectures. "If you miss a class or you have to watch the video for the class, you might want to skip over some parts," Gaitonde explains. "Our videos allow you to search a word and jump right there and listen to that part."

Since the company is still in its early years as a startup, Gaitonde says he hasn't been pedaling it to many colleges yet. He is focused on his businesses now and is excited about the potential.

Gaitonde's high hopes for kPoint are not hindered by its location in the Midwest because he sees many possibilities for cultivating a business in the area.

Living in California for several years gave him insight into the Silicon Valley, and currently living in Chicago, he now has some experience in what has been called the 'Silicon Prairie.'

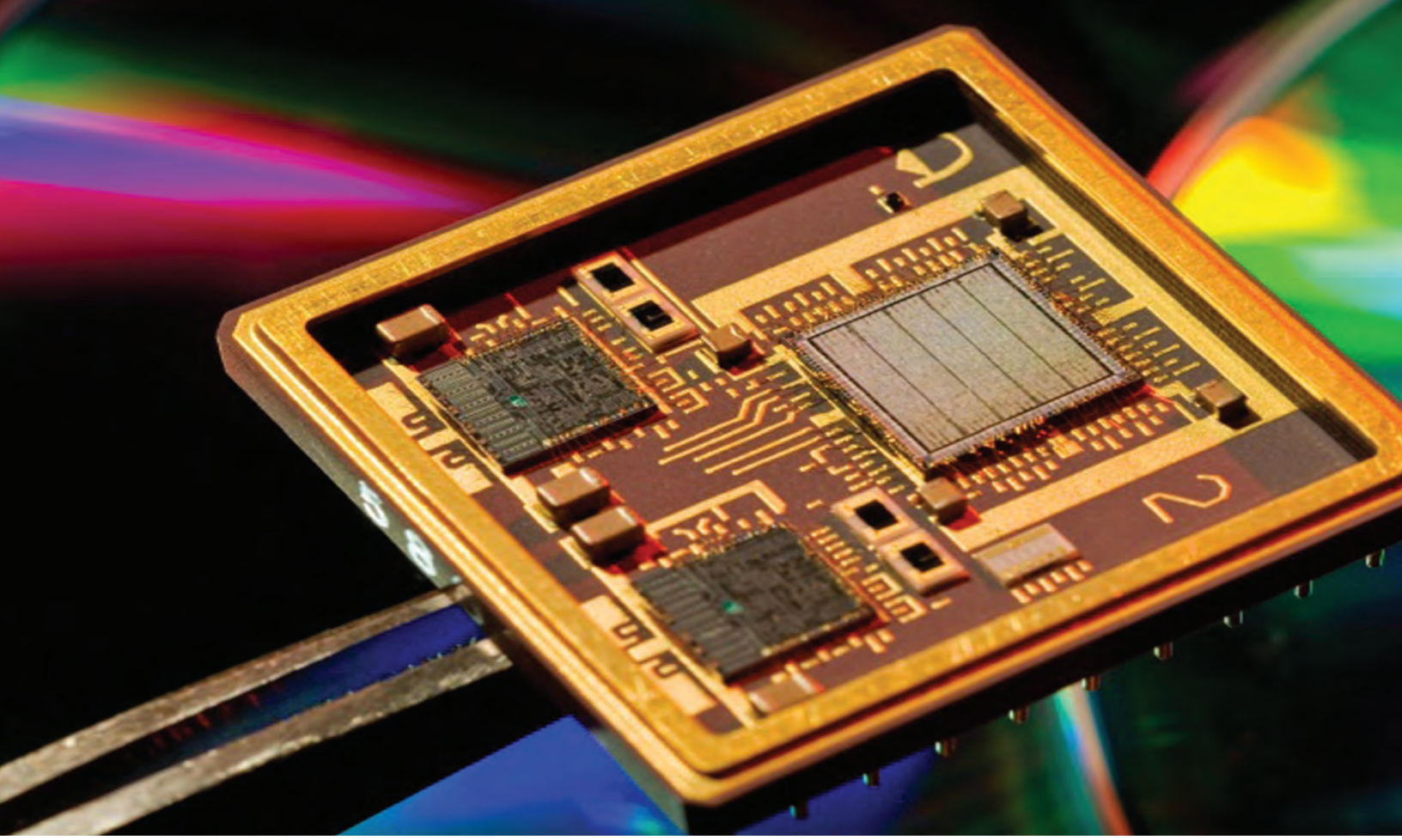
The Midwest has become an ideal place for new businesses, with incubators such as Startup City Des Moines or 1871 in Chicago helping to develop them. While Gaitonde admits the Silicon Valley isn't in any danger of being taken over by the Midwest right now, he does believe there is potential for the area.

"If you look at the people who start companies in the Silicon Valley, many are from the Midwest," he says. "The education system here is great, much better than the coast—barring a few exceptions."

Gaitonde mentioned two things holding back the development of new businesses in the Midwest: capital and willingness to take risks.

"Risk-taking is not at the same level," he says. " Some people that go to the coast are able to take risks, but they are not as easily taken here."

But living in the Midwest didn't prevent Gaitonde from building a full résumé, and it shouldn't stop future entrepreneurs. His advice for students: "If you feel you're an entrepreneur, start early. You can take the most risks when you're young."



DIGITAL DREAMER

ECpE alum's career represents a lifetime of contributions to microchip design

BY LAURA MILLSAPS

Iowa State alumnus Robert Brayton says his engineering education laid a foundation for a "dream job" as a mathematics researcher at IBM when the computer industry was in its infancy.

Brayton graduated from Ames High School in 1951, and it was clear to him then that he would be attending Iowa State's engineering college. It just took him a while to settle on a discipline.

"I started in aeronautical engineering and saw immediately that it wasn't a good fit," Brayton says, "so I switched to mechanical engineering. Then I took some electrical engineering classes and thought that was even better. I was a double-major for three years. Then I found I really enjoyed mathematics and physics. I picked up additional coursework in those subjects and dropped the mechanical engineering major."

What seemed like a lot of indecision ended up being a solid foundation for his career and academic achievements, Brayton believes.

"All that switching around meant I got a lot of exposure to different disciplines, and that made a big difference in my career," he says. "I've always believed that if you're doing mathematics without

Robert Brayton (BSEE '56)

Mathematical Sciences Department, IBM T. J. Watson Research Center (1961-87)
Cadence Distinguished Professor of Engineering, UC-Berkely (1987-Present)
Buttner Endowed Chair in Electrical Engineering, UC-Berkely (1996-99)
Fellow: IEEE, AAAS; NAE Member

a good understanding of the applications, you're at the mercy of other people. Knowing the applications means you're able to understand what the real problems are and find truly relevant solutions."

Brayton also credits the academic environment of his Iowa State fraternity chapter, Phi Delta Theta, for not only longstanding friendships but also a lifelong standard of excellence. He even collaborated with one fraternity brother, Gordon M. Shepherd, now a professor of neurobiology at Yale School of Medicine, on a study of neural networks.

After Iowa State, Brayton entered MIT to study electrical engineering and computers. He graduated from MIT with a Ph.D. in mathematics instead.

During his time there, he worked as a graduate research assistant in electrical engineering department on a team that developed what would be one of the earliest computer programming languages called LISP.

He also interned for IBM, and later joined the company to work at the Thomas J. Watson Research Center in Yorktown Heights, New York. The now widely respected facility was brand new, just like Brayton's career in mathematics research.

At the time, IBM was a rising computer manufacturing powerhouse, and Brayton was part of an extensive corporate research program.

"I was doing research that wasn't necessarily targeted at any one product line. It was pure research, which IBM invested in heavily in those years. The company believed that good things could come out of it in the long term, and since they had a monopoly on large computers at the time, they could afford to support in-house research," he explains.

"I've always said it was the best job you could ever have. I was free to work on the problems of my choice, do research, write and publish papers."

With that freedom, Brayton and other researchers began in 1966 to develop the numerical methods needed to solve integrated electrical circuit design challenges. His work led to the development of IBM's Advanced Statistical Analysis Program (ASTAP), an analog electronic circuit simulator that was used by the company for 30 years.

In 1978, he began tackling the challenges of logic synthesis of digital circuits. He developed some of the early methods still influencing the industry today, and is widely known as a leading expert in computer-aided design and electronic design automation.

"Everyone knows that computers are, right down at the nitty-gritty level, zeroes and ones. How you get what you want on a microchip, translated into logic gates of zeroes and ones but optimized so that it's small and fast—that's one challenge called logic synthesis," Brayton explains. "After that, how do you know you got what you wanted and can you prove it, that's called verification, and another challenge."

Nearly 10 years later, IBM was offering early retirement. Having spent a year previously at the University of California, Berkeley while on a sabbatical from IBM, Brayton chose to retire to join the Electrical Engineering and Computer Sciences Department in 1987, where he was the Cadence Distinguished Professor of Engineering and the director of the SRC Center of Excellence for Design Sciences.

He was able to integrate his experience at IBM into his work at Berkeley, developing ESPRESSO, a computer program that reduces the complexity of digital electronic circuits. And with other faculty, Brayton developed the first course to be offered in logic synthesis, which he taught for many years.

"Logic synthesis was a hot area, and I had a lot of top notch graduate students. It was a time when there were many good ideas to pursue, and the research just went on and on. It was a very productive time for me in my career."

> "I've always said it was the best job you could ever have. I was free to work on the problems of my choice, do research, write and publish papers."

During his career, he published 10 books and more than 450 papers. He is a member of the National Academy of Engineering and a fellow of the IEEE. He's an Iowa State Outstanding Alumnus and a winner of the Anson Marston Medal from Iowa State's College of Engineering, among other awards. He was recently recognized by the European System Design Show in Grenoble, France, with a tribute to his contributions to computer-aided design and electronic design automation, and he will be a keynote speaker at the Haifa Verification Conference in Israel in November.

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"We intend for the screen to be a landmark at Iowa State, something that will draw visitors from all over campus."
-David C. Jiles