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LETTER FROM THE ALUMNI BOARD PRESIDENT

Dear CSE Alumni, Friends, Students, Faculty and Staff:

As we approach the holidays, I’m especially thankful for my UCSD CSE education. I’m also grateful for this wonderful opportunity to lead the UCSD CSE Alumni Advisory Board. The alumni and faculty involved in the Advisory Board are truly dedicated to making UCSD CSE better for everyone. Looking back on this year we had a lot of great events, sharing time with fellow alumni, students and faculty. We especially enjoyed the Annual Summer BBQ with over 150 CSE Alumni attending at three separate locations. In 2015, we’re planning many student career talks, looking forward to a great student-led hackathon, and breaking ground on the new building renovations. Rick Ord is ready to hit the road for the first in a series of alumni events this spring. Stay tuned for more details as we finalize places and dates. If you are interested in helping plan an event or being nominated for the board elections this spring, please contact us at cse-alumniboard@eng.ucsd.edu!

- LINDSEY FOWLER, PRESIDENT, CSE ALUMNI ADVISORY BOARD

ABOUT CSE ALUMNI BOARD

Founded in 2010, the CSE Alumni Board is an organization of 12 alumni who strive to develop and promote a sense of community between alumni and the CSE Department’s students and faculty. Most recently we have been gathering alumni feedback on how impacted status affected them during their time at UC San Diego and providing this information to the CSE Department. Alumni feedback is influencing the way the department is approaching impacted status – making the process as transparent as possible to students. We have also been working on putting together this newsletter for you! When we’re talking to alumni, we always hear how strongly connected CSE majors feel to the department and they want to have that connection even after they leave campus. Our hope is to send a quarterly newsletter that provides you with that connection through updates on what is happening with students, faculty, and alumni, completely focused on the CSE department. We’d love to hear your feedback on this and on the type of content you would like to see covered in this newsletter!

Please email us at cse-alumniboard@eng.ucsd.edu with any comments or questions, and read more about the UC San Diego CSE Alumni Advisory Board at http://cse.ucsd.edu/node/184.

WANT TO HELP?

How can you help? Currently, the Alumni Board is looking for alumni interested in helping put on social events in their local area. Check out this website, http://cse.ucsd.edu/alumni, for more information on how to throw a local CSE alumni event in your area. We are also currently working on putting together a student and alumni mentoring program. Keep an eye out for more in an upcoming issue of the CSE Alumni Quarterly newsletter.

COMING UP

CSE ALUMNUS AT SV’15 IN JANUARY

UCSD CSE alumnus Jeff Qin (Ph.D. ’03) is set to give the keynote address at the 14th annual Storage Visions Conference (SV 2015) in early January in Las Vegas. Qin is a senior storage engineer at Facebook, and his topic will be Facebook’s storage infrastructure, and he will also lay out how Facebook can scale its storage capacity, while controlling costs even better with advanced technologies, notably with Blu-ray storage libraries. The CSE alumnus has worked on all the major storage services at Facebook, including Haystack, Cold Storage, and most recently Hadoop. In his keynote, Qin will talk about how Facebook will build cost-effective storage systems to support the phenomenal growth of user-generated content.
Nearly 40 students from the UCSD chapter of Women in Computing – plus CSE alumnae Roshi Chandrashekhar (MS ’13), Mishika Vora (BS ’13), Kacey Coughlin (BS ’14), and Chelsea Baltierra (BS ’13) – attended the 2014 Grace Hopper Celebration for Women in Computing (GHC) Oct. 8-10 in Phoenix, AZ. The delegation was led by CSE Prof. Christine Alvarado, who was also a program co-chair of the GHC this year. It was the ninth year in a row for Alvarado to attend the conference, but the first for CSE Prof. and alumnus Andrew Kahng (MS ’86, PhD ’89) and lecturer Garo Bourjouian (BS ’05, MS ’07, PhD ’14).

“Having such a large group of students attend GHC, in addition to having UCSD CSE be a Silver Sponsor, sends a strong message about our commitment to and our support for our women students,” said Alvarado. “At the conference, our women students, who make up only about 18% of the CSE major, get the opportunity to feel what it is like to be surrounded by technical women, and they get to meet women near-peers who are thriving in the tech industry.”

Two of Alvarado’s undergraduates also had the opportunity to showcase their work in sketch recognition. Senior Ren Lee (far left) reported on looking for patterns in the errors produced by sketched symbol recognition techniques, while junior Eliah Overbey (near left) presented a poster on how to use a technique from computer vision to recognize hand-drawn shapes. Both of the students were fresh from doing summer internships in tech companies – Lee at Qualcomm, Overbey at Google.

A big draw for CSE and other students attending the conference was the Career Fair, which Alvarado describes as "enormous and very active.” “There’s a very real chance that they will get a job at GHC,” she added.

INDUSTRY AWARD GOES TO CSE ALUMNA

Over 2,000 people attended the 20th ACM SIG International Conference on Knowledge Discovery and Data Mining (KDD 2014), an interdisciplinary conference that brings together researchers and practitioners from data science, data mining, knowledge discovery, large-scale data analytics, and big data. Best paper awards were handed out to academic and industry papers, and this year’s Industry & Government award went to CSE alumna Diane Hu (M.S. ’09, Ph.D. ’12), who is also a wedding photographer in her spare time.

Hu and her co-authors were cited for their paper, "Style in the Long Tail: Discovering Unique Interests with Latent Variable Models in Large Scale Social E-commerce.” The CSE alumna (her Ph.D. advisor was CSE Prof. Lawrence Saul) and her co-authors, Rob Hall and Josh Attenberg, all work at Etsy, Inc., the e-commerce website that bills itself as "the world’s most vibrant" marketplace for handmade or vintage items and supplies. Etsy attracts developers with its slogan, "We believe in code as craft."

In the award-winning paper, Etsy data scientist Hu and her colleagues tackled the challenge of matching buyers to products “as the size and diversity of the marketplace increases.” With over 30 million diverse listings, Etsy must deal with the problem of capturing shoppers’ aesthetic preferences in order to steer them to items that fit their often-eclectic styles.

ALUMNA RECEIVES 2015 IEEE INTERNET AWARD

She’s an adjunct faculty member in CSE and a member of the Center for Networked Systems (CNS). Kimberly (KC) Claffy is also a CSE alumna (Ph.D. ’94), who did her doctoral dissertation on Internet traffic characterization, and she has played a leading role in Internet research for the last 15 years as co-founder of the Cooperative Association for Internet Data Analysis (CAIDA), based in the San Diego Supercomputer Center (SDSC). Claffy and UC Berkeley’s Vern Paxson are sharing in the 2015 IEEE Internet Award. The two are cited for their respective “seminal contributions to the field of Internet measurement, including security and network data analysis, and for distinguished leadership in and service to the Internet community by providing open-access data tools.” Sponsored by Nokia, the IEEE Internet Award was established by IEEE in 1999 to honor exceptional advances in Internet technology for network architecture, mobility, and/or end-use applications. According to CNS director Stefan Savage, by creating CAIDA in 1996 as a completely independent research group, Claffy “single-handedly established UCSD as a worldwide leader in network measurement.”
Texas was dangling millions in financial incentives in front of San Diego technology companies to get them to move their headquarters to the Lone Star state. The founder and CEO of iboss Network Security, Paul Martini, was tempted, before one of its biggest rivals, Websense, quit San Diego for Austin earlier this year.

Martini was shaken, but didn’t stir. Instead, he decided to stay put in California, and saw Websense’s departure as an opportunity to recruit some of that company’s employees who didn’t want to make the move to Texas.

“We saw a lot of great talent who didn’t want to relocate, so we decided to stay and grow in San Diego,” says UC San Diego alumnus Martini (B.S. Computer Science ‘01), whose company needs to double its workforce to 200 jobs as soon as possible. “We have a lot of former UC San Diego students who work here, and we’re relocating our headquarters to be across the street from UCSD, which will make it even easier to access students and engage in collaborative research as well.”

Making the decision to stay in San Diego was made easier because iboss is growing rapidly, with revenues doubling last year to $20 million, and they could soar as high as $80 million in 2014.

“We are in an extreme growth phase,” explains Martini. “We want to be the next billion-dollar company in terms of revenue.”

In part because of his background in computer science, the UC San Diego alumnus saw a real business opportunity in providing security as a service to large organizations. Specifically, iboss specialized in the lucrative market for secure gateways linking company intranets with the Internet. “We focused on algorithms versus using hardware or something that’s more commoditized to do the job,” says Martini. “A lot of our skills and background from UCSD especially helped us to look at the problem in a different way. So we’ve been able to scale to massive amounts of bandwidth, massive amounts of devices, which leave our competitors behind.”

Martini was also quick to take advantage of the mobility trend, as more and more corporate employees were using their smartphones on the go, creating a new spectrum of security threats that could only be repelled with cloud-based solutions that essentially safeguard the data no matter where it originates. At the same time, large organizations need to safeguard their high-bandwidth channels. Martini notes that iboss recently won large contracts from five states which operate 10 Gigabit-per-second network channels. “That’s ten billion bits every single second, and we have to decide whether we are going to let those bits through or stop them,” notes Martini. “It’s a really interesting, challenging problem.”

The entrepreneur says he has always been excited by computing. Martini grew up in Los Angeles, toying with electronics from an early age. He was attracted to UC San Diego because of its star faculty in computer science. “There were a lot of great professors and researchers, and I got to do a paper with Walter Burkhardt,” he notes. “The avenues that UCSD offers in terms of access to knowledge, research and faculty is second to none.”

The CSE alumnus says that his company mirrors some of UC San Diego’s best qualities: “We are a very laid-back environment, but at the same time a very driven environment. To compete at the global scale, it takes a lot of hard work and passion. We’re having fun, but also having an impact on the world. We hire extremely talented people and we have a good core group of five or six extremely senior people who are CSE alumni,” says Martini, pausing, with a broad smile, and “I get to work with them every day.”

As iboss revenues have grown, so has Martini’s public visibility. This year he became a member of the San
Diego Regional Economic Development Corp., he sits on the State of California’s Cybersecurity Task Force as a member of its economic development committee, and with his brother Peter, Paul Martini was named Ernst & Young’s 2014 San Diego Entrepreneur of the Year in Technology. The Wall Street firm Goldman Sachs also named him one of its 100 Most Intriguing Entrepreneurs of 2014.

Martini remains highly involved in iboss R&D efforts. He is the primary inventor on more than 50 current or pending U.S. patents, and the company is amassing new patents at a rate of more than two per month. “We’re thinking two or three years ahead,” says Martini. “But as we become more creative, the opposition becomes more creative as well. It’s a never-ending cycle.”

According to the entrepreneur, computer security can be a dream job for researchers who also want a career in industry: “This is one of those spaces where you get the best of both worlds.”

With its move to across from the campus, iboss expects to expand the number of students doing summer internships at the company, and to increase the ranks of CSE alumni in the company’s workforce. Martini is also proactive about developing research partnerships, and he has held preliminary discussions about a collaboration that would bring together researchers from iboss, CSE, and the San Diego Supercomputer Center. Stay tuned.

CSE alumna Sarah Esper (Ph.D. ’14) was front and center when the administrator of the Small Business Administration, Maria Contreras-Sweet, visited the UC San Diego campus to announce a $50,000 grant to The von Liebig Center and Rady School of Management for their joint MyStartupXX program, one of 50 winners of the SBA’s Growth Accelerator Fund competition.

Esper was an early beneficiary of the MyStartupXX program. “The funding from MyStartupXX was the first money we put into our bank account,” remembers Esper. The support from the program came at a critical moment, helping Esper and her co-founders launch a company called ThoughtSTEM as a computer-science education startup. It also helped them get their first game-based computer science courses for kids up and running.

In the last two years, ThoughtSTEM has expanded from one location on the UC San Diego campus to two dozen locations spread across San Diego, the Bay Area and Boston. It did so while Esper was juggling her company duties, finishing her Ph.D., and completing a round of crowdfunding for ThoughtSTEM’s CodeSpells game to teach programming skills. Esper and her co-founders (including CSE Ph.D. student Stephen Foster) sought $50,000 but the month-long campaign brought in more than $164,000 from nearly 5,500 supporters.

That success means the team will be able to ramp up production and expansion of CodeSpells much faster, undertaking a makeover of the game’s look and feel, gameplay and coding interface. The game will become a multiplayer experience by early 2016, which means that students will be able to learn programming while dueling each other in wizardry battles and coding their own mini-games to play with their friends. Also promised for 2016: a new artificial-intelligence system for non-player characters that populate the game world, along with a dialogue system so players can create new story-based adventures within CodeSpells. The ‘alpha’ version of the game is set for release this December—less than two years since Esper and Foster, advised by CSE Prof. Bill Griswold, began to develop CodeSpells to teach software programming to young children.

/ TANER HALICIIOGLU

Who were the first non-founders at today’s top tech companies, including Apple, Amazon, Google and Facebook? Business Insider magazine tracked some of them down, noting that "some made millions, others saw fortunes slip through their fingers, and some have joined or founded other startups."

The list was also published in the Nov. 1 issue of Entrepreneur.com, leading with UC San Diego CSE alumnus Taner Halicioglu (B.S. ’96), who was Facebook’s first “real” employee outside of the founders. “He juggled a bunch of operations roles,” notes the magazine. Halicioglu worked for Facebook from 2004 to late 2009. He had many roles to juggle, ultimately as senior software and operations engineer when he left. The article goes on to say that “after Facebook, Halicioglu joined Blizzard Entertainment as a lead reliability engineer. Halicioglu is now a computer science and engineering lecturer at UC San Diego. He is also an angel investor and startup advisor.” And, the magazine could have added, a major philanthropist, as well as a member of the CSE alumni board.
STUDENT ENROLLMENT AND FACULTY HIRING ARE UP

Driven by the burgeoning impact of computer science on applications ranging from energy and the environment to health care, student interest in computer science classes and majors at UC San Diego is reaching new heights. Undergraduate enrollment in CSE hit an all-time high this year, topping 2,000 students, more than double the level in 2010. An ambitious effort to boost hiring pushed the faculty headcount back to where it was in 2010. Hiring for the 2014-15 academic year focused on three groups to address teaching needs while continuing to grow research in select areas:

- **Tenure-track faculty**: Full professor Ravi Ramamoorthi (at left) and assistant professors George Porter and Julian McAuley have strong research orientations in their areas of visual computing (computer graphics and vision), computer networks and data-intensive computing, and social networking, respectively;
- **Assistant teaching professors**: Mia Minnes Kemp and Leo Porter (see profile on next page); and
- **Joint appointments**: CSE enhanced its faculty by collaborating with other departments to hire young professors whose work straddles two fields: Daniel Kane in mathematics and computer science, and Nuno Bandeira in bioinformatics and computational biology, jointly with the Skaggs School of Pharmacy & Pharmaceutical Sciences.

FULL PROF. RAVI RAMAMOORTHI JOINED CSE ON JULY 1, 2014.

HONORS & AWARDS

CSE Prof. **VICTOR VIANU** is one of only 16 new members elected to the Informatics section of the Academia Europaea, the Academy of Europe, which is their version of the combined U.S. National Academies. The Academy elected 229 members this year across all areas. "It was indeed a nice surprise," says Vianu, "especially since very few non-Europeans are elected." In announcing the honor, the Academy noted Vianu's fields of scholarship in database systems and theory, computational logic, and automatic verification. Through November 2018, Vianu also holds a five-year INRIA International Chair at INRIA-Saclay, just southwest of Paris.

CSE Ph.D. student **DUSTIN RICHMOND** is an ARCS Scholar for the 2014-15 academic year. ARCS stands for Achievement Rewards for College Scientists, and the one-year award carries with it a $7,500 stipend. Richmond joined the Ph.D. program at UC San Diego in 2012 after finishing his electrical and computer engineering undergraduate degrees at the University of Washington. Richmond first learned about the ARCS program from his Ph.D. advisor, CSE Prof. Ryan Kastner. The student believes that a key to landing the ARCS fellowship was his involvement in CSE activities. "I've been active in a variety of capacities, including as chair of the Graduate Community Council, as lead for graduate student visit day, and various other opportunities," observes Richmond. "These volunteer experiences have helped me meet all sorts of people in the department, and in return, they were willing to nominate me for the award." In his first year, Richmond worked with Cognex to design an ultra-high-speed image processing pipeline for active 3D scanners using a system based on field-programmable gate arrays, or FPGAs, to decompress and process 20,000+ images per second. Richmond has also participated in the Engineers for Exploration program, most recently joining an expedition to Guatemala to survey Mayan ruins (at left) using laser scanners.
RANKINGS WATCH

UC San Diego is one of only five public universities in the U.S. to make the top 20 list in a new ranking of the world’s top 500 colleges. The campus took the #18 spot in U.S. News and World Report’s first-ever global ranking of universities, which measures factors such as research, global and regional reputation, international collaboration as well as the number of highly-cited papers and doctorates awarded. The five U.S. public universities cracking the global top 20 were UC Berkeley at #3, UCLA #8, followed by the University of Michigan, University of Washington and UC San Diego.

Computer Science

U.S. News also published its "computer science indicator rankings" for the same universities, and the computer science program at UC San Diego ranked #11 worldwide. Research publications and citations, taken together, represented more than 50% of the weight on which computer science programs were graded, a major factor behind our #11 overall ranking in computer science. Separately, the 2014 Academic Ranking of World Universities (ARWU) also released its field-by-field rankings, and in the computer science category, UCSD tied with USC for the #11 spot and up from #16 in 2011.

Cryptography and Theoretical Computer Science

According to an authoritative study by professors from MIT and the University of Maryland, CSE at UCSD has the #5-ranked program in theoretical computer science in the country. The new ranking is based on the number of papers accepted to major algorithms and theory conferences, and they are weighted according to whether the conference is considered a Rank 1 venue or Rank 2 (Rank 3 and unranked conferences were not taken into consideration). Buried in the data was more good news: CSE is #1 in cryptography, because CSE Prof. Mihir Bellare and fellow UCSD faculty had more papers accepted to the top conferences in cryptography than any other U.S. university.

MIHIR BELLARE

NEW LECTURER ISN’T NEW TO CSE

On his way to assuming his new position as an assistant teaching professor and lecturer in CSE, Leo Porter took a circuitous route via Glasgow, Scotland. That’s where the CSE alumnus (M.S. ’07, Ph.D. ’11) received the Chair’s Award at the conference on International Computing Education Research. The best-paper award was in recognition of his research in the field of teaching computer science, specifically, peer instruction and “predicting student success using fine-grain clicker data.”

Porter and colleagues from Canada and Australia used data derived from the use of clickers in the classroom to demonstrate that such data can help predict which students are likely to succeed, or fail, on the final exam in an introductory computer science course. “Our results identify performance during the first three weeks of the term as a significant predictor of their success,” notes Porter, who joined the CSE faculty in the Jacobs School of Engineering, as of July 1 from Skidmore College. “It also allows us to identify which individual questions were most meaningful.”

In fall 2014, Porter was back in a CSE classroom, teaching one of his favorite courses, CSE 141 -- Introduction to Computer Architecture. “I’m excited to be working with UCSD students again,” he enthused. “I also look forward to bringing the lessons learned in my computer science education research to my classes at UCSD.”

After receiving his Ph.D. under Prof. Dean Tullsen, Porter shifted his focus from multi-core computer architectures to research into computer-science education. While still a professor at Skidmore, Porter and CSE assistant teaching professor Beth Simon won the best-paper award at the 2013 Technical Symposium of the Special Interest Group on Computer Science Education (SIGCSE). They reported on a trio of best practices in introductory computer science courses that allowed programs to retain nearly one-third more majors in computer science. The trio of practices included peer instruction, pair programming, and a media computation context for teaching computer science at the introductory level.

As co-principal investigator on an NSF grant for peer instruction in computer science, Porter works with other faculty on how to use peer instruction as a “student-centric pedagogy which uses targeted conceptual questions (often with clickers) to identify student understanding,” he says. Porter’s other research interests include active learning, program evaluation, flipped classrooms, and concept inventories.

Porter did his undergraduate degree at the University of San Diego, earning a B.A. in computer science in 2000. From then until enrolling in grad school at UC San Diego in 2004, he was a surface warfare officer and veteran of Operation Iraqi Freedom, primarily posted aboard the USS Milius destroyer in the U.S. Navy’s Pacific fleet.

LEO PORTER (M.S. ’07, Ph.D. ’11) IS NOW AN ASSISTANT TEACHING PROFESSOR AND LECTURER.
Hush Technology

SMART EARPLUGS MAKE BIG NOISE

Hush Technology is a Moxie Center incubator startup founded by CSE senior Daniel Lee (far left), who expects to graduate next spring, and two other students named Daniel: Daniel Synn, a senior in structural engineering; and a second Daniel Lee (same name, different person), getting his degree this year in mechanical and aerospace engineering. The three made a splash with their Kickstarter campaign. They set out to raise $100,000, and within days, over 1,650 supporters had contributed more than $200,000 with four weeks left in the campaign.

What does Hush do? It is developing wireless noise-making earplugs that let you block out the world while still letting you hear the things that matter most (as the Kickstarter appeal spells out). Hush combines sound eliminating foam with noise masking to isolate you from your surrounding environment. If you want to sleep you should be able to fall asleep and stay asleep regardless of the noise around you. Hush connects wirelessly with your smartphone so you can fully power off with the peace of mind knowing that you’ll be awakened when you’re needed. As a wireless miniature device that has to play sounds and stay connected to the phone for over 10 hours, battery life was one of the team’s biggest concerns. To do this they designed everything with low power in mind. By using Bluetooth Low Energy and playing back locally stored audio files, Hush says its smart earplugs can surpass this requirement on a battery that other wireless, in-ear products exhaust in two hours.

Spark Aerial

PILOTING DRONES FOR VIDEOGRAPHY

A group of CSE alumni have started a new company called Spark Aerial, and launched a small campaign on the Kickstarter crowdfunding platform to fund one of their projects. In early September, they raised just over $9,000 from 123 supporters, almost double their target, to start production on the Aerial Cinematography Flight School, a video series to teach newcomers how to capture video using small drones.

Spark Aerial President and CEO Radley Angelo (B.S. Computer Science '12), Chief Operating Officer Kurt Selander (B.S. Computer Engineering '13), and Chief Financial Officer and Lead Software Engineer Austin Hill (B.S. Computer Engineering '13) bill Spark Aerial as a full-service shop for unmanned aerial vehicles (UAVs). They offer custom-built quadcopters and other flying UAVs, and also provide aerial cinematography services and training. As CSE students, Angelo, Selander, and Hill all participated in the Engineers for Exploration program, co-directed by CSE Prof. Ryan Kastner and Qualcomm Institute research scientist Albert Lin. Angelo even accompanied Lin on a National Geographic expedition to Mongolia in search of Genghis Khan's tomb. Since then, the students' work has been featured on CNN, BuzzFeed, etc.

The Kickstarter funds will primarily allow the team to make an aerial cinematography video training series, including Aerial Photography 101, and Quadcopter/UAVs 101. According to their crowdfunding appeal, the students “want to teach the world how to have fun, fly safe, and capture amazing content.” The series will cover everything from the basics (such as choosing a copter and taking off for the first time), to more advanced piloting maneuvers. The funds will also allow Spark Aerial to begin building an online resource center for aspiring drone pilots.