University at Buffalo The State University of New York
[FALL 2016]
A publication of the University at Buffalo **Computer Science and Engineering Department**

CSE LINKS

[FACULTY NEWS]

Chen, Ren and Ko honored for academic excellence

Three CSE researchers – **Chang Wen Chen**, **Kui Ren** and **Steven Ko** – were honored Oct. 20 at UB's annual Celebration of Academic Excellence.

Chen, who joined CSE in 2008, is a professor who conducts research in multimedia analysis, encoding, transmission, search, adaptation and security. He was one of five UB researchers to receive the SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities.

The award honors "outstanding academic and creative achievements" of faculty members who "consistently go above and beyond their teaching and professional duties to make extraordinary contributions to their respective fields."

[CONTINUE **AWARDS** PAGE 2]


Chen


Ren


Ko

[FACULTY RESEARCH]

THIS NECKLACE 'HEARS' WHAT YOU EAT

FOOD-TRACKING WEARABLE DEVICE MAY HELP FIGHT DIABETES, OBESITY AND MORE

Carrots and apples not only taste different. They make distinct sounds when chewed.

This may seem trivial, but not in the lab of assistant professor **Wenyao Xu**, who is developing a wearable device called AutoDietary that catalogues the unique sounds that foods make as we bite, grind and swallow them.

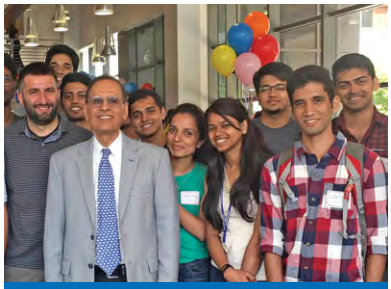
AutoDietary is like Fitbit, only instead of tracking burned calories, it monitors caloric intake – in other words, what we eat.

[CONTINUE **AUTODIETARY** PAGE 3]

> ***Each food, as it's chewed, has its own voice"***
> **— Wenyao Xu,** assistant professor

A prototype display of the mobile app.

[STUDENT EVENTS]


President **Satish K. Tripathi**, *front left*, welcomes graduate students at orientation in Davis hall.

CSE welcomes new graduate students

GROUP GETS A CLOSE UP LOOK AT NORTH CAMPUS, CSE LABS AND MORE

Nepal. Italy. Taiwan. Iran. India.

While it may sound like a United Nations summit, it's actually just a glimpse of where CSE's newest graduate students come from.

The students – all 232 of them – gathered on Aug. 26 to tour parts of North Campus, hear from CSE faculty and learn what to expect when the fall semester kicked off a few days later. They even had the chance to chat with UB President **Satish K. Tripathi**, a computer scientist himself, who

[CONTINUE **GRAD STUDENTS** PAGE 2]

[VOICES]

A Message from the Department Chair

Dear CSE Alumni and Friends,

Although computer science is a relatively new field, we are one of the nation's earliest departments to offer a computer science program—and we will be celebrating our 50th anniversary in 2017. We are proud of our heritage and that our department has grown from five faculty in 1967, to the largest department in UB's School of Engineering and Applied Sciences with 45 faculty and 11 staff members. We are equally proud of our alumni and their achievements, as well as many talented students who embody the hope of tomorrow.

*We kicked off our 50th anniversary Sept. 27 with a condensed version of our promotional video (**http://bit.ly/2eRfhT5**) at an alumni event in Mountain View, California (photos here: **http://bit.ly/2dSDdo1**). Attendees were super excited about our anniversary celebration, which includes a year-long Distinguished Speaker Series featuring very successful female computer scientists. The series starts Nov. 10, 2016 with Nancy Amato of Texas A&M University (an all-female lineup allows us to commemorate the 110th birth year of Grace Hopper, a pioneer in computer science.)*

Our main celebration will be Sept. 28-Oct 1, 2017, and feature a welcome reception, fun social events and great panels, talks and discussions.

I know you will also be thrilled to join us in celebrating our excellence in creativity, scholarship and education over the past 50 years. So please come to our next event Nov. 4 in Davis Hall on North Campus to meet students, local alumni, board members and friends, and corporate partners.

Finally, I want to thank our alumni and friends who have generously donated funds, time and effort the past few decades to support students and faculty, and help build a department as strong as we are today. The popularity of CSE as a discipline has led to a skyrocketing increase in student enrollment. Consequently, we face many challenges offering high-quality educational programs and conducting world-class research with limited lab space, fellowships and named/endowed positions. Your continued support is essential to enable us to position the department well for the future. "A stronger CSE@UB, Better you and me!"

Chunming Qiao, PhD, IEEE Fellow
Professor and Chair
You can contact Dr. Qiao at **qiao@buffalo.edu**

[AWARDS]

CSE leads $630K effort to improve Wi-Fi

The proliferation of wireless devices and bandwidth-hungry computing applications has created wireless traffic jams that slow the transmission of data.

UB engineers are working to solve that problem.

Koutsonikolas

A research team led by **Dimitrios Koutsonikolas**, CSE assistant professor, has received a $630,000 National Science Foundation (NSF) grant to create a one-of-a-kind testbed featuring software, hardware and other tools that takes advantage of unoccupied, high-frequency bands (60 gigahertz) that provide an opportunity to greatly increase the rate at which wireless data is shared.

Co-principal investigators include **Dimitris Pados**, **Josep Jornet** and **Zhi Sun** — all faculty members in UB's Department of Electrical Engineering.

The grant, which will support educational outreach programs, aligns with President Barack Obama's Advanced Wireless Research Initiative. The $400 million effort aims to spur computing innovations that lead to mobile devices that can download movies in seconds, livestream high-resolution video from ambulances to emergency rooms, improve the performance and safety of self-driving vehicles and other advancements.

The work also aligns with a NSF CAREER award, the agency's most prestigious grant for young investigators, recently awarded to Koutsonikolas.

"UB has long been at the forefront of innovation and leadership in computer science and engineering. Support from the NSF and other organizations is critical to helping us advance our mission of scholarly excellence and research that benefits society as a whole," said **Chunming Qiao**, professor and chair of CSE.

[FROM **AWARDS** PAGE 1]

Ren, who joined CSE in 2012, is a professor who conducts research on security and privacy in cloud computing and wireless networks. He was one of seven UB faculty members to receive the UB Exceptional Scholars Award for sustained achievement in research.

The award recognizes work that has "garnered public and/or professional accolades beyond the norm." Recipients are selected based on their body of work in recent years.

Ko, who joined CSE in 2010, is an assistant professor who conducts research on distributed systems, networking and operating systems. He was one of two UB researchers to receive the UB Exceptional Scholars Award for teaching innovation.

[FROM **GRAD STUDENTS** PAGE 1]

stopped by during lunch at the Bansal Atrium inside Davis Hall.

"The graduate student orientation is all about helping our students further acclimate themselves to UB. It also helps them learn about the exciting research opportunities they'll have here," says **Murat Demirbas**, associate professor and director of graduate studies at CSE.

The students also learned about UB programs offered outside of the classroom, such as engineering clubs, library services, information technologies and career services, as well as the role in which UB is playing in role in Buffalo's resurgence.

CSE trains the next generation of cyber security experts

TEENS DEFEND AGAINST SIMULATED CYBERATTACK

Home Depot. Target. Sony Pictures.

The list of companies – as well as governments and individuals – that fall victim to cyberattacks continues to grow.

That is the reason why CSE, the School of Management and other UB entities hosted a free, weeklong summer camp in July called GenCyber that introduces dozens of bright teenagers to cybersecurity as a future career option.

Each day, the students participated in hands-on activities, learning about cybersecurity topics including firewalls, denial-of-service attacks, encryption, phishing and more.

One lesson involved 10 things not to do on social media, including listing your full name, date of birth and important contact information such as phone numbers and home addresses. Another activity involved building a miniature closed-circuit internet, where students moved around the room delivering code, cyberattacks and more to approximating how the internet acts.

"With businesses, government and other organizations struggling to deal with these attacks, there is an every-growing need to train people with the technical and managerial skills required in cybersecurity," says **Shambhu Upadhyaya**, CSE professor. "This is a field that will only continue to grow."

Upadhyaya is director of the UB Center of Excellence in Information Systems Assurance Research and Education (CEISARE), which along with the National Science Foundation and the National Security Agency acted as camp sponsors.

Students who successfully completed the camp received a certificate of achievement at an awards presentation.

Since an earlier incarnation of the program began in 2009, UB has taught thousands of middle school students, high school students and college students the basic principles of cybersecurity.

GenCyber is one of many programs that UB's School of Engineering and Applied Sciences hosts to promote STEM education among women and other underrepresented groups.

For more info about UB GenCyber Camp visit:
ubgencyber.camp

[AWARDS]

FACULTY GRANTS

Oliver Kennedy, an assistant professor who joined CSE in 2012, is the principal investigator of a $2.7 million grant to be split between CSE, New York University and the Illinois Institute of Technology. Project members from all 3 universities will develop a software tool called Vizier that aims to streamline curation and quality control for data (big and small) and enable users to make sense of this data without computer science expertise. The tool will have applications in government, industry, and science.

Shi Li, an assistant professor who joined CSE in 2015, has been awarded a $175,000 National Science Foundation grant to study approximation algorithms, which are used to find approximate solutions to optimization problems. Specifically, he will use the funds to explore how linear programming–based algorithms, called the "round-or-cut" paradigm, can improve approximation algorithms.

Lu Su, an assistant professor who joined CSE in 2014, has been awarded a two-year, $175,000 National Science Foundation grant to develop software that intelligently integrates data from distributed sensors so that the highest quality information can be extracted within the constraints of the system's resources. The research has applications in a wide variety of fields that rely on distributed sensing systems for the collection, transmission and analysis of sensory data.

Wenyao Xu, an assistant professor who joined CSE in 2013, has been awarded a four-year, $300,000 National Science Foundation grant to evaluate the strengths and weaknesses of brain biometrics. Traditional biometrics such as fingerprints are vulnerable to theft because they cannot be replaced if stolen. Brain biometrics, on the other hand, are a novel, cancellable hard biometrics which offer vast and unique neural networks that can be used to identify people.

[FROM **AUTODIETARY** PAGE 1]

It wraps around the back of the neck like a choker necklace. A tiny high-fidelity microphone records the sounds made during mastication and as the food is swallowed. That data is sent to a smartphone via Bluetooth, where food types are recognized.

In preliminary tests involving apples, carrots, potato chips, cookies, peanuts and walnuts, AutoDietary worked 85 percent of the time.

"Each food, as it's chewed, has its own voice," says Xu, who is designing the device to help people suffering from diabetes, obesity, bowel disorders and other ailments by enabling them to better monitor their food intake and, thus, improve how they manage their conditions.

While promising, AutoDietary cannot differentiate similar foods such as frosted corn flakes and regular corn flakes, or the ingredients of complex foods like chili.

To address this, Xu is developing a complementary biomonitoring device to determine the nutritional value of the food via blood sugar levels and other measurements. The system then gathers and presents the information on a smartphone, while providing suggestions on healthier eating.

University at Buffalo
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CSE IS CELEBRATING ITS 50th ANNIVERSARY!

CSE50

1967–2017

Please keep your calendar open:

SEPT. 28–OCT. 1, 2017

We are planning events that will highlight 50 years of excellence at CSE, and we want you join us. More details to come.

ATTN: CSE ALUMNI

We want to hear from you! Keep us updated on your personal and professional lives. Visit: **bit.ly/28lqakd** and complete the **"STAY IN TOUCH"** survey.

Also, feel free to send news, photos, videos, awards, achievements and other related content to **cse-dept@buffalo.edu** or

FACEBOOK
facebook.com/ubcompsci

TWITTER
@UBCompsci

We'd like to thank all the alumni who responded to our previous message, including Amazon card winners **Sarbani Banerjee** ('89), **Derek Falter** ('12), **Mukul Patil** ('06) and **Reid Simmons** ('78).

[ALUMNI NOTES]

CSE hosts Silicon Valley alumni event

Momentum is building for CSE's 50th anniversary bash. On Sept. 27 in Mountain View, California, a record-breaking crowd of 69 alumni, faculty and industry members discussed the future of computer science and, of course, UB. Don't be surprised to see a few of these faces in Buffalo next fall!

Above: The event's panelists *(from left)*: **Milind Bhandarkar**, founder and CEO of Ampool, Inc.; **Pratap Subrah manyam**, fellow at VMware; **Raghu Ramakrish nan**, CTO for data and a technical fellow in the cloud and enterprise division at Microsoft; **Venu Govindaraju**, UB vice president for research and economic development; and **Andrew Mendelsoh n**, executive vice president for database server technology at Oracle.

PHOTOS BY CHI FANG

Above left: **Pratap Subrah manyam** *(left)*, fellow at VMware, and **Chunming Qiao**, chair and professor of UB CSE.

Above right: *(from left)* **Debashish Niyogi**, director of programs at Silicon Valley Product Management Association, **Venu Govindaraju**, and **Kannan Govindarajan**, co-founder and chief product officer of DxContinuum.

Below left: CSE graduates *(from left)* **Mohit Virendra** ('08), **Duc Ha** ('09), **Joy Ghosh** ('06), **Anantharaman Ganesh** ('04), and **Nirmal Thangaraj** ('07).