Dear CSE Alumni, Parents and Colleagues,

The year of 2017 is ending soon, and I welcome you to read the Fall Issue of the CSE Buckeye Blog. Computing technology is changing rapidly, which makes direct impact on the progress of the society and our daily life. You will read related innovative activities of CSE faculty, students and alumni in this issue.

The demand for computing technology talents and professionals continues to drive the growth of enrollment in both the undergraduate and graduate levels. We are making the best efforts to provide high quality teaching to a large number of students. We have recently been given additional space for classrooms and research labs. This new space will help us to further improve the learning experiences of our students and their interactions among each other. Not to mention the assistance to faculty in their research projects. We continue to hire new faculty in several critical areas of data sciences along with the foundation of computer science.

Please continue to keep us informed about your progress and accomplishments, and we will share it and celebrate you in the next Buckeye Blog.

Best Wishes,

Xiaodong Zhang
Chair and Robert M. Critchfield Professor
Computer Science and Engineering
Research in Focus: Conversational Agents

On July 17, 2017, Microsoft’s Lucy Vanderwende and Bill Dolan along with Ohio State’s Alan Ritter talked about deep learning algorithms that help machines converse in lifelike ways, drawing from social media conversations. They talked about training AI to ask questions, speak, and respond like a person would, and what to expect next in this field.

Future Computing within and beyond CMOS

More than 100 years ago, Henry Ford asked his future customers about their expected transportation products. The consistent answer was that they wanted to have faster horses. If we consider conventional computers as the engine of horses, they are no longer running faster today for three reasons. First, the Moore’s Law is ending due to the physical limit, thus the CPU speed would not be raised periodically. Second, Conventional processor chips are designed for general-purpose computing, which have shown their increasingly low efficiency in both performance and power. Finally, on top of the general-purpose microarchitecture, we have built a deep software stack from instruction set all the way to the programming interface. Although this stack creates a flexible programming environment for various applications, it also adds increasingly high and unnecessary processing overhead. Our computing ecosystem in both hardware and software is in a critical transition time from a general purpose of “one size fits all” platform to diverse, specialized, and customized platforms.

Professor Xiaodong Zhang moderated and participated in a panel of Future Computing and a dialogue with the public in the Future Forum Annual Conference in Beijing, China on October 28-29, 2017. The panel consists of a group of distinguished computing experts in both hardware and software and one venture capital investor from the US. CMOS is a powerful technology to build integrated circuits for various chips including processor chips. The discussions and presentations in the panel included new research and technology within CMOS, such as specialized hardware accelerations by GPU, FPGA, RDMA, ASIC and others, and research beyond CMOS, such as quantum computing and DNA storage. The panelists also conducted a dialogue with the public including high school students who are interested in science and computing.

More than 2,000 people attended the Future Forum, and over 7 million viewers watched the event online through 10 streaming platforms in China. More than a million K-12 students engaged in the online discussions, including the Future Computing panel.
In this year’s election for the IEEE Signal Processing Society Speech and Language Technical Committee, Professor Eric Fosler-Lussier was elected Vice Chair for 2018, rotating into the Chair position for 2019-2020. The committee has 50+ members and helps to organize all speech and language processing activities within the IEEE. Members of SLTC are elected by the committee among the most active and accomplished researchers and technologists in the field.

The Speech and Language Processing Technical Committee (SLTC) extends its influence to the technical areas of speech and language processing. Besides the typical activities in which all of TCs are involved, the main focus of the committee is the organization of technical sessions related to speech and language technologies at ICASSP. Other activities include the selection of proposals for workshops such as ASRU Workshop (Automatic Speech Recognition and Understanding), SLT Workshop (Spoken Language Technologies), and Odyssey, the Speaker and Language Recognition Workshop.

Speech and Language processing is assuming a very relevant role in today’s industry. Speech recognition, text to speech synthesis, spoken language understanding, speech to speech translation, spoken dialog management, speech indexing, information extraction, and speaker and language recognition are only a few examples of the range of interests in this area of science and technology. Their applications are being adopted in different markets in a variety of industrial, scientific, and commercial contexts. Academic and industrial research is continuously pushing the state of the art forward to reach new heights of performance and accuracy in speech and language processing by machines, and to grow our knowledge of human spoken language.

As part of the IEEE Signal Processing Society, the Speech and Language Technical Committee (SLTC) promotes and influences all the technical areas of speech and language processing. Besides the typical activities in which all IEEE Technical Committees are involved, the main focus of the SLTC is the organization of the technical sessions in the related areas at the annual International Conference on Acoustics, Speech, and Signal Processing (ICASSP). As an example of the level of interest of the signal processing community in speech and language processing, 24% of the nearly 3000 papers presented at ICASSP 2007 were in technical areas of competence of the SLTC. Other committee activities include the selection of proposals and the organization of technical workshops such as ASRU (Automatic Speech Recognition and Understanding), SLT (Spoken Language technologies), and Odyssey, the Speaker and Language Recognition Workshop. Moreover, SLTC is actively involved in establishing liaisons with other non-IEEE organizations in related areas, such as ISCA and ACL.
BEST PAPER AWARD AT 22ND INTERNATIONAL SYMPOSIUM IN VISION

Sayan Mandal and William Varcho along with their advisor Tamal Dey won the Best Paper award at the 22nd International Symposium on Vision, Modeling, and Visualization (VMV 2017) for their paper “Improving Image Classification Using Topological Persistence.” Mandal, a Ph.D. student in the Department of Computer Science and Engineering, presented the paper at the conference. Along with Varcho, an undergraduate at OSU, Mandal worked under Prof. Dey on topological data analysis to improve on the state of the art techniques for image classification using machine learning.

NEW UNDERGRADUATE COMPUTER LAB

The Computer Science and Engineering Department has gained a new space in the Baker Systems Building. With the help of donations we will be able to renovate Baker 480 from the blank slate it currently is to a state of the art lab which will promote an innovative learning environment servicing the CSE/CIS undergraduate student body.

As many of you know the CSE department serves over 8k undergraduate students and this new lab will hold 120 students. The courses that are taught within the department are in high demand and this space will be an excellent environment for students to learn. As always the Computer Science and Engineering Department appreciates all the support and welcome any donations to help with these upcoming renovations.

See the enclosed donation card or contact Tiffany McGough (mcgough.22@osu.edu) for more information.
HackOHI/O, the largest of the OHI/O events, took place the weekend of October 21-22, 2017 and challenged students to ‘build something amazing’ during this 24-hour event, students worked together to code and create software designed to address ongoing issues in society.

Over 660 participants worked in groups and individually throughout the weekend, overflowing capacity of the Ohio Union ballroom. Over half of the participants classified themselves as “first time hackers”. There were 132 women participants, demonstrating an increase over last year’s event, nearly hitting the 20% mark.

There were 50 mentors on hand to assist students if they ran into technical problems, by using the HELPq app to help break the ice and encourage students to seek help instead of giving up. The 70 judges decided the top eight “Best Of” teams. These teams were judged on creativity, technical difficulty, functionality, impact and team work. Prizes were awarded by various sponsors of the event, such as JP Morgan Chase, Wexner Medical Center, Teradata, Root Insurance, Eaton and others.

This year’s event was organized by new Program Director, Julia Armstrong, along with heavy student involvement from university groups including Buckeye Hackers, Open Source Club, Electronics Club, ACM-W, Mobile App Club, College of Engineering, Department of Computer Science & Engineering, Department of Electrical & Computer Engineering, University Libraries, Engineering Career Services, OCIO and the Office of Distance Education and eLearning, and Translational Data Analytics Institute. Other campus partners included the Innovation Studio, Department of Engineering Education, College of Education and Human Ecology, the STEP Maker Program, and the Toy Adaptation Program.

The two faculty advisors for this annual event are CSE professor Arnab Nandi and Library professor Meris Mandernach. CSE Chair Xiaodong Zhang gave the opening speech and started the 24-hour hack by lighting the countdown clock.
Spyridon Blanas, Assistant Professor; Srinivasan Parthasarathy, Professor; Yang Wang, Assistant Professor

Spyridon Blanas, Assistant Professor; Irina Dubrow; J. Craig Jenkins, Professor Emeritus, Sociology; Han-Wei Shen, Professor; Kazimierz M. Slomczynski
NSF Ofc Multidisciplinary Activities SBE - RIDIR: Survey data recycling: New analytic framework, integrated database, and tools for cross-national social, behavioral and economic research

Tamal Dey, Professor; Matthew Keith Kurtek; Sebastian Andrew Kurtek; Facundo Memoli, Associate Professor; Joel Sivakoff; Yusu Wang, Professor
NSF Div Computing & Communication Fdn - TRIPODS: Topology, geometry, and data analysis (TGDA @ OSU): Discovering structure, shape and dynamics in data

Theodore Allen, Associate Professor, Engineering; Raghu Machiraju, Professor; Srinivasan Parthasarathy, Professor; Rajiv Ramnath, Professor-Clinical
Haier Group - Improving service quality with translational analytics

Christopher Browning, Professor, Sociology; Courtney Denning Lynch, Associate Professor, Epidemiology; Raghu Machiraju, Professor; John Volakis, Adjunct Professor, Electrical Engineering
NSF Div of Computer & Network Systems - SCC-Planning: Using innovations in big data and technology to address the high rate of infant mortality in greater Columbus, Ohio

Facundo Memoli, Associate Professor
NSF Mathematical & Physical Sciences - Collaborative research: The topology of functional data on random metric spaces, graphs and graphons

Dhabaleswar K. (DK) Panda, Professor and University Distinguished Scholar; Hari Subramoni, Research Scientist
Lawrence Livermore National Laboratory - An infrastructure for performance engineering using the MPI tools interface

Dhabaleswar K. (DK) Panda, Professor and University Distinguished Scholar; Hari Subramoni, Research Scientist; Srinivasan Parthasarathy, Professor; Nathan Ames, Adj. Research Associate, Materials Science Engineering
NSF Div Advanced Cyberinfrastructure Honda North America Inc. - Student travel support for MVAPICH user group (MUG) meeting Ladder logic fault analysis acceleration
P. (Saday) Sadayappan, Professor
Pacific Northwest National Laboratory - Efficient tensor transposition and contraction on GPUs

Chris Stewart, Associate Professor
NSF Div Info and Intelligent Systems - EAGER: Benchmarking autonomous unmanned aerial vehicles in agriculture applications

Huann Sun, Assistant Professor

Yusu Wang, Professor
NSF Div Computing & Communication Fdn - AitF: Collaborative Research: Topological algorithms for 3D/4D cardiac images: Understanding complex and dynamic structures

Xiaodong Zhang, R.M. Critchfield Professor in Engineering; Rubao Li, Senior Research Scientist, CSE
Huawei Technologies Co. - High-Performance database system over GPU devices and fast RDMA networks technology research

Yinqian Zhang, Assistant Professor
Tom DeFanti, (PhD.’73) received Distinguished Engineering Alumni Award

Tom DeFanti who received his MS in 1970 and Ph.D. in 1973 both in Computer Science and Engineering at The Ohio State University was one of our Ph.D. students in the earliest time of the department. He is a pioneer in the field of computer graphics, visualization and computer animation, and has been best known for several of his great accomplishments.

Tom joined Computer Science faculty at the University of Illinois, Chicago in 1973, where he established the Electronic Visualization Lab (EVL) in the same year. After more than 40 years, this lab has made several significant and seminal contributions in the field, and graduated many students who have distinguished themselves in both academia and industries in graphics, visualization and animation.

In 1977, Tom created computer graphics for “Star Wars”. In the 1980s, Tom built one of the earliest CAVE, computer virtual reality systems in the world. His research was also inspired the National Science Foundation to start a research initiative on Visualization on High Performance Computing in 1987. Since then visualization research has become a standard program in NSF.

In the last 20 years, Tom made efforts to build networked CAVEs with large LCD panels. This technology has been widely used in virtual reality in many applications.

He was the Chair of ACM SIGGRAPH, and was elected as ACM Fellow in the inaugural class in 1994. He received the IEEE Virtual Reality Technical Award in 2007. He had been a Distinguished Professor in UIC for many years. He has moved to University of California, San Diego since 2005, where he leads the graphics and visualization research efforts in multiple universities in the State of California.

We are proud of Tom’s many accomplishments and leadership in the field of computer graphics, visualization, and virtual reality. Tom DeFanti received Distinguished Engineering Alumni Award at Ohio State in November 2017.

Left: Tom DeFanti, a Ph.D. student of CSE at Ohio State in 1971. Right: Tom DeFanti, a well-known graphics scholar in from of a modern CAVE that he had made pioneering efforts in 2009.

ALUMNI WE WANT TO HEAR FROM YOU!

Do you have an update to include in the next alumni newsletter? Do you have any suggestions for topics you would like to see covered? Do you have any photos from your college days or today that we can include? We want to hear from you!

Email us your updates, photographs and suggestions to Tiffany McGough at mcgough.22@osu.edu.
Hans Meuer Outstanding Research Paper Award at ISC ‘17

The award winning paper from DK Panda’s group, Designing Dynamic and Adaptive MPI Point-to-point Communication Protocols for Efficient Overlap of Computation and Communication, had the lead author of Dr. Hari Subramoni, a research scientist in the group and co-author Sourav Chakraborty, a Ph.D. student.

The Hans Meuer Award honors the most outstanding research paper submitted to the conference’s Research Papers Committee. This award has been introduced in the memory of the late Dr. Hans Meuer, general chair of the ISC conference from 1986 through 2014, and co-founder of the TOP500 project.

The paper was one of two finalists and the team presented their work in the Research Paper Session at the ISC ‘17 conference in Frankfurt, Germany on Monday June 19th. The winning paper received a cash prize of 5,000 Euros, an award certificate, and a free conference pass for ISC High Performance in 2018.

NSF TRIPODS (Transdisciplinary Research in Principles of Data Science) Award

The Topological and Geometric Data Analysis group (TGDA) headed by Professors Tamal Dey, Facundo Memoli, and Yusu Wang from the CSE department in collaboration with Professor Matthew Kahle (Mathematics), Sebastian Kurtek (Statistics) and David Sivakoff (Statistics) have won the NSF TRIPODS (Transdisciplinary Research in Principles of Data Science) award for a Phase I institute totaling 1.5 million dollars over three years. The activity of this institute includes innovative research in topological and geometric data analysis spanning theoretical computer science, mathematics, and statistics, developing curricula, training future work force in data science, and several outreach activities such as workshops, summer schools, and seminars by experts in the field. NSF plans to fund a couple of large scale Phase II institutes selected from the Phase I institutes.

Pictured above: Prof. Tamal Dey, Prof. Facundo Memoli and Prof. Yusu Wang
Many Thanks to Our Alumni and Friends!

We appreciate the following alumni, faculty, staff and friends who directed their Ohio State gifts to the Computer Science and Engineering Department. Listed below are our benefactors over the past six months. These donations are making a difference. Private support can help us to attract outstanding students and promising young faculty.

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