NEW IEEE CS TECHNICAL CONSORTIUM ON HIGH-PERFORMANCE COMPUTING

The IEEE Computer Society’s (IEEE CS’s) technical councils, committees, and task forces (TCs) have been a mainstay of communities of interest around which sponsored conferences, publications, standards, and other activities are developed and sustained. Volunteers from all over the world join and lead these communities, as they have done since the mid 1960s—the very earliest days of the Society’s history.

This year, the IEEE CS added a new technical consortium, bringing the total number of TCs to 31. The Technical Consortium on High-Performance Computing (TCHPC), chaired by Manish Parashar, is a consortium of other communities with an interest in the HPC field. TCHPC’s founding TCs include the Technical Committee on Computer Communications (TCCC) and the Technical Committee on Parallel Processing (TCPP). TCHPC will sponsor technical meetings and sessions and promote periodicals, educational activities, standards, and other activities relating to the advancement of HPC. These efforts will be achieved in concert with TCHPC’s support and management of the IEEE CS’s shared interest in the SC conference and related activities.

The leadership of TCHPC have set in motion three main initiatives:

› Education and Outreach Initiative—coordinating activities, information, and best practices around HPC education/outreach across its member technical committees and the broader community;

› Reproducibility Initiative—leading a broad and deep conversation to advance the standards of simulation- and data-based science, and working with the community to coordinate efforts in this important area as well as to document experiences and effective practices; and

› Software Engineering Practices Initiative—leading a conversation on impactful software engineering practices to address the innate complexity present in concurrent/parallel/distributed software development, and ensure robust HPC solutions.

In addition to TCHPC’s initiatives, this community has also established an awards program. The TCHPC Award for Excellence for Early Career Researchers in High-Performance Computing recognizes up to three individuals who have made outstanding, influential, and potentially long-lasting contributions in the HPC field within five years of receiving their PhD degree (as of 1 January for the year of the award). Awardees receive a plaque and are recognized through the TCPP and TCCC websites, newsletters, and archives. The awards are presented during the award ceremony at the SC conference.

For more information on TCHPC, visit http://tc.computer.org/tchpc; and for information on all IEEE CS TCs, visit www.computer.org/web/tandc/technical-committees.

IEEE CS ANNOUNCES 2017 GLOBAL STUDENT CHALLENGE WINNERS

The IEEE CS is pleased to announce the winners of the IEEE CS Global Student Challenge, an international competition to solve a real-world problem. The contest is open to all IEEE CS student members.

The winning submissions incorporate ideas from the IEEE CS 2022 Report, developed by IEEE CS past president Dejan Milojčić and a team of nine technologists who surveyed the landscape and identified the 22 game-changing technologies that they expect will have the biggest impact on our way of life by 2022. This competition is a unique opportunity for the IEEE CS’s student members to create a solution and get feedback from the panel of judges.

The winners of the 2017 Global Student Challenge are Muhammad Asad Raza, Syed Abraham Ali Shah, and Muhammad Haris (first place); Nelson Daniel Troncoso Aldas, Justin Hardin, Kevin Irick, Tom Kawchak, Chris Kim, David de Matheu, Ikenna Okafor, Christoper Pratt, John Reid, Henry Gus Smith, Peter Zientara, and Alexander Smit (second place); and Henok Gezaw, Andrew Leverkühn, Miguel Rosales, Jose Daniel Velazco, and Daniel Weaver (third place).

For the first-place winners, their submission, “Diagnosis, Monitoring and Rehabilitation of Parkinson’s Disease Using Machine Learning and Big Data,” presented a complete range of tools for diagnosis, rehabilitation, and monitoring of Parkinson’s disease. This included a Clinical Decision Support System (CDSS) that helps doctors diagnose Parkinson’s disease accurately by analyzing tremor patterns through machine learning and big data. Two other devices developed for the competition were a data-driven management tool for optimized drug administration and 24/7 monitoring and a physiotherapeutic technique for controlling Parkinson’s symptoms.

The second-place winners presented “Computer Vision for Good,” which helps bring sight to the visually impaired. Their design was based on replicating the power of the human visual cortex using computer vision algorithms accelerated on HPC cloud platforms, and delivered to people with visual impairment through natural user interfaces and Internet of Things devices.

The third-place winners presented “Growth Line,” to help address food supply and nutritional issues in...
In “The Yau Years: 1974–1975” (D.A. Grier, vol. 50, no. 6, 2017, pp. 10–11), Stephen S. Yau’s quote in the second paragraph on page 10 should read: “But [Computer] started publishing more and more technical articles, so it needed an editor with a strong technical background in computer science and technology and their applications.”

The year mentioned in the second paragraph in the middle column on page 11 should be 1984, not 1983.

In addition, in the second-to-last paragraph of the article, the second sentence should read, “When the organization identified the best magazine issue from its centennial year, it chose Computer’s special issue on the state of computing.” The reference citation for this sentence should be to Stephen S. Yau’s Computer article, "Editor-in-Chief’s Introduction: The State of Computing: Environment Systems Applications" (vol. 17, no. 10, 1984, pp. 9–10).

Computer regrets these errors.

developing parts of the world. The design would help a small group of locals to successfully cultivate fruits and vegetables, so that a small village has an adequate and steady supply of food.

The first-place winners will receive $1,500; the second-place winners will receive $500, and the third-place winners receive $300.

For complete submission details, visit www.computer.org/web/student challenge.


ACM and the IEEE CS have jointly announced that the late Charles P. “Chuck” Thacker is the recipient of the 2017 Eckert–Mauchly Award. Thacker was selected for the award in May, but passed away on 12 June before the public announcement was made. The award committee cited Thacker’s fundamental contributions to networking and distributed computing, including technologies establishing the Ethernet, the Xerox Alto, and development of the first tablet computers. Often hailed as an “engineer’s engineer,” Thacker made contributions across the full breadth of computer development, from analog circuit and power supply design to logic design, processor and network architecture, system software, languages, and applications.

In 1970, Xerox opened its Palo Alto Research Center (PARC) and hired several leading computer scientists and engineers, including Thacker. Early on, the staff at Xerox PARC was using a time-sharing approach in which various terminals were connected to a single computer. Because time sharing was a slow and cumbersome process, leaders at Xerox PARC conceived the idea of developing personal computers as part of a network that would be used for communication as well as computation.

Mainframe computers in the early 1970s were so large that they took up whole rooms, and their expense made them relatively scarce. Under the paradigm at the time, computer architecture needed to be either scaled up (more hardware) for better performance, or scaled down (less hardware) for lower cost. Thacker realized that a personal computer would need to be designed differently from a standard computer to address space constraints, maintain strong performance, and keep costs reasonable if it was to become widely adopted.

At the same time, the idea of a personal computer that would be geared more toward human-paced activities called for the engineers to prioritize I/O functions rather than application functions, as had traditionally been the case.

The new design feature Thacker employed as the lead engineer in what would become the Xerox Alto Computer was a CPU microprocessor that used microcode for most of the computer’s I/O functions, rather than hardware. The microcode controlled various tasks, including executing the normal instruction set, memory refresh, and network and display functions. The Xerox Alto was therefore not simply a miniature version of existing computers, but had a novel architecture that allowed it to deploy new kinds of software.

Today the Xerox Alto is recognized as being the first modern personal computer. The initial architecture of the Alto gave rise to other important inventions developed by engineers at Xerox PARC including WYSIWIG editing, laser printing, drawing and painting, email, mouse-driven GUIs, and many other features that are commonplace in personal computers today.

Another critical innovation of Thacker’s that was an outgrowth of his work on the Alto was the development of hardware for Bob Metcalfe’s invention of the Ethernet LAN, which facilitated communication among computers.

Twenty years after the development of the Xerox Alto, Thacker made another foundational contribution to personal computing with the development of the Lectrice, a laboratory
prototype for today’s portable personal computers. He went on to develop a prototype upon which Microsoft Tablet PC software was developed, as well as a system for reading electronic books that laid the groundwork for many of today’s e-readers. One of Thacker’s most recent contributions is the design of AN3, a low-cost, efficient circuit-switched datacenter network.

Most recently, Thacker was a Technical Fellow at Microsoft Research in Palo Alto. He held 29 patents in areas including computer architecture, displays, networks, switches, synchronization, and encryption. During his career he received the ACM A.M. Turing Award, the IEEE John von Neumann Medal, the ACM Software System Award (together with Butler Lampson and Robert Taylor), and the Charles Stark Draper Prize (together with Alan Kay, Butler Lampson, and Robert Taylor), among many other honors. Thacker received a BS in physics from the University of California, Berkeley.

The Eckert–Mauchly Award is known as the computer architecture community’s most prestigious award. The designation of Thacker as the posthumous recipient will be formally announced at the ACM/IEEE International Symposium on Computer Architecture (ISCA) to be held 24–28 June in Toronto.

ACM and the IEEE CS cosponsor the Eckert–Mauchly Award, which was initiated in 1979. It recognizes contributions to computer and digital systems architecture and comes with a $5,000 prize. The award was named for John Presper Eckert and John William Mauchly, who collaborated on the design and construction of the Electronic Numerical Integrator and Computer (ENIAC), the pioneering large-scale electronic computing machine, which was completed in 1947.

For more information about the Eckert–Mauchly Award, including a list of past recipients, please visit www.computer.org/web/awards/eckert-mauchly.