



Advancing Computing as a Science & Profession

Contacts

Jim Ormond
PR & Media Relations Specialist
Association for Computing Machinery
212.626.0505
ormond@hq.acm.org

Stacy Jeziorowski
Marketing and Communications Manager
Computer Science Teachers Association
872.221.2771
stacy.jeziorowski@csteachers.org

For Immediate Release

ACM and CSTA Announce 2019–20 Cutler-Bell Student Winners

Four Students Recognized for Engagement in Computer Science

New York, NY, March 11, 2020 — The Association for Computing Machinery (ACM) and the Computer Science Teachers Association (CSTA) announced four high school students were selected from among a pool of graduating high school seniors throughout the U.S. for the [Cutler-Bell Prize](#). Eligible students applied for the award by submitting a project/artifact that engages modern technology and computer science. A panel of judges selected the recipients based on the ingenuity, complexity, relevancy, and originality of their projects.

The Cutler-Bell Prize promotes the field of computer science and empowers students to pursue computing challenges beyond the traditional classroom environment. In 2015, David Cutler and Gordon Bell established the award. Cutler is a software engineer, designer, and developer of several operating systems at Digital Equipment Corporation. Bell, an electrical engineer, is researcher emeritus at Microsoft Research.

Each Cutler-Bell Prize winner receives a \$10,000 cash prize. The prize amount is sent to the financial aid office of the institution the student will be attending next year and is then put toward each student's tuition or disbursed.

The winning projects illustrate the diverse applications being developed by the next generation of computer scientists.

Kevin Meng, Plano West Senior High School, Plano, Texas

Two years ago, Kevin Meng's grandmother suffered from a slip-and-fall injury that resulted in skull fracture. This accident, which was suffered out of the view of cameras, got Meng thinking: what if we could see through walls? In his project, Meng uses VisionRF, a deep neural network model that accepts raw radio frequency signals and outputs continuous video of 15-point human skeletons behind obstruction. Because radio camera data on its own is harder to analyze, analysis through Raspberry Pi-based programming supports mobile, real-time inference. This results in accurate and complete predictions of the human skeletons. The implications of this project are broad and can be used to support military operations, monitor the health of patients non-invasively and aid first responders in search and rescue missions.

Lillian Kay Petersen, Los Alamos High School, Los Alamos, New Mexico

Lillian Kay Petersen's younger, adopted siblings faced food insecurity in their previous homes. Inspired by their experiences and the news of crop failures in Ethiopia, she became determined to help aid organizations in increasing food security in developing countries. To accomplish this, Petersen developed a tool to inform cost-effective nutrition interventions in sub-Saharan Africa, inclusive of predicting grain harvests, predicting acute malnutrition prevalence and optimizing the supply logistics of specialized nutritious foods. The tools can be adjusted to include-real time data, enabling aid organizations to adjust distributions accordingly. As the result of her work, Petersen was invited to speak at eleven aid and research organizations, including USAID, the USDA and the International Food Policy Research Institute. She was also an invited speaker at multiple conferences, including the 2018 and 2019 CGIAR Big Data in Agriculture Conventions in Kenya and India.

Axel S. Toro Vega, Dr. Carlos González High School, Aguada, Puerto Rico

While identifying topics for his research project, Axel Toro Vega read that more than 36 million people in the world are visually impaired and more than 217 million have some type of severe visual impairment. As a result, he decided to focus his research on developing a device to assist the visually impaired in having a healthier, safer, and more enjoyable lifestyle. Toro Vega created an initial prototype consisting of an ultrasonic sensor mounted onto a pair of glasses. He continued to test different sensor arrangements and tweaked the software for a simple and efficient user experience. After gathering additional feedback after a presentation at the Intel International Science and Engineering Fair, Toro Vega took his prototype further by integrating artificial intelligence. This project made Toro Vega realize the great accomplishments that can be reached through computer science and the core meaning of CS for Good.

Zeyu Zhao, Montgomery Blair High School, Silver Spring, Maryland

Inspired by his grandfather who is facing chronic kidney disease, Zeyu Zhao began researching the kidney exchange system in the U.S. and was shocked to learn that 3,000 kidneys are wasted each year and 13 people die daily, in part, due to failed matches. Zhao wanted to use computer science — specifically machine learning — to improve the current kidney exchange system. He created a data-driven approach to solving the kidney matching problem through the designation of a Graph Neural Network to guide a Monte Carlo Tree Search. Zhao identified baselines for his project and tested his algorithms against this baseline, thus improving the current kidney exchange by developing a data-driven approach to finding matches. The research from Zhao's project could be extended to other applications, such as operations research.

CSTA and ACM would also like to recognize Raghav Ganeth, who received an honorable mention for his project "Precision Medicine for Lupus Nephritis: Predicting and Profiling Patient Response to the Euro-Lupus Treatment Regimen through RNA-seq derived Transcriptomics and Machine Learning."

"We are proud to support an effort which encourages high school computer science students to develop projects that will advance society," said Cutler and Bell. "We hope that, whatever careers these students ultimately pursue, they will consider the ways in which technology can have a positive impact on the wider world. Beyond challenging the students to stretch their skills and imaginations, developing their own projects gives students confidence."

"ACM has been a leader in integrating computer science into the K-12 curriculum for several decades and our participation in the annual Cutler-Bell Prize is an extension of our commitment in this area," said ACM President Cherri M. Pancake. "It is always intriguing to learn about the Cutler-Bell Prize-winning projects, which reflect the students' creativity and ingenuity as well as what they have learned in the classroom. These projects embody what we call "computational thinking"—a unique way of approaching problem-solving inspired by the computing revolution. We are grateful for Gordon Bell and David Cutler's financial support of the prize, and we congratulate the students and their teachers for developing these inspiring projects."

"This year's winning projects are outstanding examples of the power of a high quality, K-12 computer science education," said Jake Baskin, Executive Director of CSTA. "These students' creativity and commitment to using their knowledge and skills to improve the world are inspiring and I cannot wait to see what they do next. CSTA is proud to honor their work and thanks Gordon Bell and David Cutler for their continued support of the award."

About the Association for Computing Machinery (ACM)

ACM (acm.org) is the world's largest educational and scientific computing society, uniting computing educators, researchers and professionals to inspire dialogue, share resources and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for lifelong learning, career development, and professional networking.

About the Computer Science Teachers Association (CSTA)

CSTA's (csteachers.org) mission is to empower, engage and advocate for K-12 computer science teachers worldwide. CSTA is a membership organization which supports and promotes the teaching of computer science and other computing disciplines. The Association for Computing Machinery founded CSTA as part of its commitment to K-12 computer science education.

###