Association for Computing Machinery

Advancing Computing as a Science & Profession

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For Immediate Release

ACM and CSTA Announce 2020–21 Cutler-Bell Student Winners
Four Students Recognized for Engagement in Computer Science

New York, NY, March 17, 2021—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 US for the ACM/CSTA Cutler-Bell Prize in High School Computing. 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. This year's Cutler-Bell Prize recipients will be formally recognized at the [Computer Science Teachers Association's 2021 Virtual Conference](#), July 14–16.

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

Sahithi Ankireddy, James B. Conant High School, Hoffman Estates, Illinois

"BEEP... BEEP...BEEP! The jarring noise was accompanied by the neon green waves bouncing up and down every few seconds. Fixated on the heart monitor, I followed the pattern, hoping the 'beep' would continue in order to indicate the survival of the patient—my father."

Sahithi Ankireddy used the experience of her father's heart attack to identify ways to detect heart disease faster and easier in those who aren't deemed "at risk." Recalling an article she read about the use of artificial intelligence in speeding up the process of diagnosis. In her project, Assistive Heart Disease Diagnostic Tool using Machine Learning and Deep Neural Networks, Ankireddy tested both machine learning models and deep neural networks using a publicly available heart disease database. Through her testing, Ankireddy recognized the Random Forest ML model was the best method for her project. Ankireddy sees her research and assistive heart disease diagnostic tool as helpful in resource-constrained environments. By using this tool, doctors can evaluate more people in less time and provide treatment to patients more quickly. Ankireddy is currently in the process of working with cardiologists to receive feedback on this tool.

Maurice Korish, Rae Kushner Yeshiva High School, Livingston, New Jersey

The United States Census Bureau cites that 9.4 million noninstitutionalized adults have difficulty with at least one daily activity—including eating. While technology exists to support these individuals, it often requires the person using the technology to remain in the same position during the feeding process. Maurice Korish has developed FeedBot to provide independence and a cost-effective solution for disabled people who are unable to properly use their upper limbs. FeedBot implements facial recognition technology to identify the location of an individual's mouth. This information is then transmitted to a robotic feeding arm, which is also able to be controlled manually with a joystick. Korish has taken advantage of and is building upon open source libraries, and uses Raspberry Pi, to keep this solution low cost. The use of Raspberry Pi also allows for more mobility than a standard computer, providing more comfort and flexibility for the person using FeedBot.

Brian Minnick, Loudoun Valley High School, Purcellville, Virginia

In his project, Controlling a Fully 3D Printed 3D Printer Without Microprocessors, Brian Minnick looks to allow the printer to function without conventional parts. Minnick has created the first fully 3D printed 3D printer to demonstrate self-manufacture, and along with universality, or the ability to make many useful parts, not just duplicates of itself, marks the half-way point in the development of the technologies behind the self-replicating spacecraft. It also contains the first motor controller for a 3D

printer that can be built without a microprocessor. Minnick has created this printer as a stepping-stone toward a self-replicating spacecraft.

Emily Yuan, Thomas S. Wootton High School, Rockville, Maryland
In the United States, more than half of violent crimes are not reported. And while most victims of violent crimes seek out medical treatment, the current system they use to report details provides general, unmappable data. Others choose not to share data because of fear. To address these issues, Emily Yuan created Spatial Drilldown, a visual interactive mapping system where users click down on parcels on a map to report incident locations. The goal of this application was to ensure the preservation of privacy. Yuan worked with the CDC research team and nurses from Atlanta Grady Memorial Hospital to test this prototype. Spatial Drilldown provides a novel, interactive technique for collecting crime data, specifically that which can be mapped, and thus, improving the quality of current violence data. Yuan hopes to integrate the application into electronic medical records systems for real use and expand the crime data to help reduce local violence.

"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 how 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."

"In today's world, computer science is rapidly becoming an essential aptitude for students at all levels and in every area of study," explains ACM President Gabriele Kotsis. "In the coming years, students who have exposure to computer science education in K-12 settings will be at a decided advantage when they enter university or begin their careers. ACM is proud to be a partner with the CSTA in bestowing the Cutler-Bell Prize. Cutler-Bell Prize-winning students are exemplars for their peers. These students demonstrate that they have the vision to use computing as a tool to address pressing problems in society, as well as the technical aptitude to develop a practical plan outlining how they would make their vision a reality. We also congratulate the computer science teachers who guided these students and Cutler and Bell for funding this award."

"Each year, these winning projects showcase the continuing advancements of computer science and the power of high-quality computer science education," said Jake Baskin, Executive Director of CSTA. "These students and their projects embody CSforGood and it's inspiring to see how they are leveraging their computer science skills to solve pressing problems. 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 that 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.

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