DAVID ZHU, The Harker School, San Jose, Calif.
EVANI RADIYA-DIXIT, The Harker School, San Jose, Calif.
PROJECT: Automated Classification of Benign and Malignant Proliferative Breast Cancer Lesions
FIELD: Computer Science
MENTOR: Dr. Andrew Beck, Professor of Pathology, Beth Israel Deaconess Medical Center, Dana Farber Cancer Center; Mr. Chris Spenner, Physics teacher, The Harker School

David and Evani developed a machine learning algorithm that can robustly diagnose a breast cancer tumor as either benign or malignant from a biopsy image. Their model can help improve breast cancer diagnosis accuracy, thereby reducing under-and over-treatment. The most challenging part of the project for them was designing the algorithm so it would obtain a high accuracy rate of cancer diagnosis and making sure they remained unbiased, so that their results could be replicated.

DAVID ZHU
YEAR: Junior
HOMETOWN: Saratoga, Calif.

"STEM influences the daily lives of the common person quite significantly."

David is an aspiring computer engineer, and he wants to use his skills to be able to help the world. David has seen breast cancer's impact up close and personal as he lost a close family friend to the battle. The survival rate for breast cancer patients has a lot to do with early detection, motivating David to develop a system that can detect breast cancer at an earlier stage.

David appreciates STEM education because he sees how it can influence the daily lives of individuals. He coaches the Middle School Science Bowl Team, and encourages his school to have more science experiment demonstrations opposed to traditional classroom exercises.

Outside of school David participates in tennis, basketball and dance. He also plays piano and percussion instruments. David looks to Steve Jobs as his role model and if he could speak to one person in history it would be Alan Turing. David would want to let Alan know that we are very close to passing the Turing Test.

EVANI RADIYA-DIXIT
YEAR: Junior
HOMETOWN: San Jose, Calif.

"I encourage students to work on hands-on projects and to learn by experimentation."

Evani has been deeply interested in technology and computer science, as she believes they can bring monumental improvements in human lives. She believes that STEM education can create unimaginable innovations and can accomplish what people thought was unsolvable only a few decades ago.

Evani is inspired by breakthroughs such as Google's low-orbiting satellites intended to beam Internet to the world's remote areas. She is excited to pursue multidisciplinary studies in engineering, medicine, and the humanities.

Outside of school, Evani participates in Future Problem Solving and volunteers at Sacred Heart, a community service organization. She enjoys running and playing tennis as well as writing and singing. Evani once had the opportunity to meet Sally Ride and hear her speak about the challenges and wonder she experienced during space travel. If Evani could meet one person in history, it would be Ardi, the 4.4 million year old human ancestor, to gain insight into the incredible human evolution.