

SPOTLIGHT

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Teens' apps tops in tech

Tesoro High's Shalin Shah and Beckman High's Sara Du are named Young Innovators to Watch at consumer electronics show in Las Vegas

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Two Orange County teenagers - Shalin Shah of Rancho Santa Margarita and Sara Du of Irvine - were named Young Innovators to Watch at the CES tech show, the largest technology trade show in the world, in Las Vegas on Jan. 7.



Shah

The winners were chosen from among 75 applicants from across the country based on the potential, creativity and sophistication of the inventions. Judges included teachers, venture capitalists and software and hardware developers.

Shah, a 17-year-old Tesoro High senior, developed Lumos - an affordable mobile application that will screen a person's eyes for glaucoma. Du, a 16-year-old junior at Beckman High, developed Bluejay - a smartphone app that helps emergency responders find people stranded amid natural disasters.

Each won a \$2,000 scholarship, a Lenovo tablet computer and a programmable robot from the company WowWee.

While volunteering to help those who are blind, Shah noticed a recurring theme: People said they "waited too long to get myself checked."

Shah responded by creating Lumos, an affordable mobile application that will screen a person's eyes for glaucoma. He developed the \$30 lens that goes with it.

It's the second time Shah has been honored by Living in Digital Times, the organ-



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Among Young Innovators are Sara Du, center, of Beckman High, and Shalin Shah, third from right, of Tesoro High.

ization that runs the Mobile Apps Showdown.

"When you watch enough of these, you can spot out the real deal," said Robin Raskin, founder and president of Living in Digital Times. "He is just an incredibly articulate, talented kid."

All of this year's young innovator winners are children of immigrants, Raskin said. Shah's parents, his mother an accountant and his father a chemist, moved from India to the United States in 1999.

Shah spent months working on his mobile application, guided by Dr. Anand Bhatt of UCI Medical Center. Normally, a glaucoma screening requires a doctor's visit and the use of an ophthalmoscope to view the fundus, the internal lining of the eye, and to measure the health of a patient's retina.

Shah created a lens that attaches to a smartphone and takes a digital image of the eye. Results show on the screen in real time.

"The lens attachment mimics the ophthalmoscope," Shah said. "Those can cost hundreds of thousands of dollars. Mine costs \$30, so it's more affordable." That really impressed Ras-

kin.

"The fact that he worked so hard on the mobile part and got the price down is extraordinary," she said.

Lumos allows for early detection for glaucoma, Shah said. The other part of the application relies on an algorithm Shah created through notes and studies from UCI.

"After (doctors) look at the eye with the scope, they analyze the anatomy of the eye for patterns of glaucoma," Shah said. "Lumos does the same thing. After the person takes the picture, Lumos breaks apart the anatomy, looks for glaucoma and tells the person" his or her measurement for glaucoma.

Shah began working on the project in June. For the algorithm, he used images found online before enlisting the help of Bhatt, who explained some of the patterns they used when looking for glaucoma.

After teaching himself the patterns, Shah entered them into the computer system, finishing a prototype in September. Then he began working on the lens.

"I contacted companies, asking them how they made scopes, or fundus-based lenses," Shah said. "I asked

for samples to test and two or three companies sent me lens samples."

Shah attended clinics with Bhatt before finishing his product in November.

The Young Innovators to Watch award originated in New York City, where Raskin created a contest to honor 10 people under 20 years old at the annual CES Week.

Over the last three years, her company has hosted the competition in Las Vegas as part of a mobile app showdown.

"We wanted to award kids when they're at that age that they're vulnerable," Raskin said. "They're interested in science, but when they hit eighth grade, kids fall off the map. We thought a good way to pay it back would be to award kids for their contributions in technology."

Shah submitted photos and video of his project and sent a link to a website along with teacher recommendations. He also had to describe what he created and discuss his passion in creating it.

"He's tremendously articulate. He defined the problem - here's how many people go undiagnosed, how much it costs, the scope of the problem, where it's biggest and needed most, what I've done, did it in a beautiful video," Raskin said. "He's totally poised."

Shah, who won another of Raskin's competitions, Ap-preneurs, in 2015, said he doesn't have plans for a new project yet. Instead, he wants to continue working to perfect Lumos, adding that he wants to do clinical trials at UCI, which could begin in June.

"This validated my project in that someone out there thought it was worth something," Shah said.