

S.T.E.A.M. 2017

SCIENCE • TECHNOLOGY • ENGINEERING • ART • MATH

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From STEM to STEAM

Why Art is
Important

Space Out!

Astronomy Fun
in the Bay Area



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- 16** **STEM to STEAM**
It's been often thought that art and STEM subjects don't mix. But there's a growing movement to have more programs that integrate art with science, technology, engineering and math – hence STEAM instead of STEM.

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If your child's head is in the stars, the Bay Area offers many places where she or he can explore planets, the Milky Way, asteroids and other objects in our vast universe.

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techie f.y.i.

Cupertino Teen Receives Innovator Award

Utkarsh Tando, 17, of Cupertino recently won a prestigious innovator award for a wearable ring he developed that can diagnose and assess Parkinson's disease.

The junior at Cupertino High School received a Young Innovators to Watch Award in January at the Last Gadget Standing and Mobile Apps Showdown in Las Vegas at CES, a gathering place for those involved with consumer technologies. He was among four students who received the award, and they each received a \$2,000 scholarship, a Lenovo Yoga Tablet and a programmable robot from WowWee.

OneRing provides high precision monitoring at every hour of the day to the fingertips of patients to track disease progression and analyze the impact of treatments.

The idea for the invention started when Tando was 10. He was watching boxer Muhammad Ali on YouTube and noticed his hands shaking. It inspired Tando to volunteer at the Parkinson's Institute in Sunnyvale. There, he learned a lot about the disease, including medications and challenges.

"The biggest challenge for people with Parkinson's disease is they lack independence. They always need a caretaker or someone to help them, since physicians are unable to get accurate representations of their symptoms," Tando says. "The physicians only see them at appointments, maybe once a month. When the patient

goes home, the severity of the condition may change."

This ring allows doctors to see changing conditions, so they can adjust medication levels if needed, Tando says.

The device and machine-learning software use spectral analysis and signal processing to identify unique Parkinson's motor symptoms, classifying the conditions of Bradykinesia, Dyskinesia and tremor. The device produces an automated report at a patient's home.

Tando plans to put OneRing on the market and currently has a group of patients using it to see what adjustments need to be made.

Tando thought of the name because he's a fan of *Lord of the Rings*; in the movie, the ring is referred to as the "One Ring."

The young inventor is not sure of his plans post high school, but he is considering going into the field of medical diagnostics or computer science.



Utkarsh Tando invented a ring that can monitor Parkinson's disease.

COURTESY PHOTOS



— Teresa Mills-Faraldo

Get Math Inspiration

Want your child to become more inspired by math?

Check out the free "Week of Inspirational Maths 2" released this fall by Stanford University's youcubed and Prof. of Mathematics Education Jo Boaler, author of *Mathematical Mindsets* (Jossey-Bass, 2015).

The website includes five days of short videos and accompanying grade-level math activities that aim to make teaching math open, creative and visual. Topics include "The Many Ways We See Mathematics" and "Mistakes Are Beautiful Things."

Among Boaler's goals is debunking the notion that

some people are "math people" or "born good at math," while others are not. The lessons stress a growth mindset that everyone can learn to be good at – and enjoy – math, as people's brains change by practicing a skill.

Last year's debut effort was downloaded more than 300,000 times. The lessons are targeted to teachers but are available to parents and students for at-home use. They are free, but registration is required. Visit www.youcubed.org/week-of-inspirational-math-2/.

For an interview with Jo Boaler, turn to page 28.

— Janine DeFao

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