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This AI algorithm can solve Rubik's cube in less than a second


Scientists at the University of California have developed an AI algorithm called DeepCubeA, which can solve a Rubik's cube in a fraction of a second.

Researchers in the University of California have developed an artificial intelligence (AI) algorithm which can solve a Rubik's cube in a fraction of a second. The AI algorithm which is called DeepCubeA can complete the 3D puzzle within a second, faster than most humans. The algorithm is a step towards making AI systems which can reason, strategise and decide.

According to a study, published in the journal Nature Machine Intelligence, the AI algorithm was provided with 10 billion combinations of the Rubik's cube along with a target of decoding them in 30 moves. It was then tested on 1,000 cubes, all of which could be solved by the AI. The algorithm found the shortest path to the goal 60.3 per cent of the time.

Solving the Rubik's cube often takes a lot of steps, and is not something that is easily achievable. “The solution to the Rubik's Cube involves more symbolic, mathematical and abstract thinking, so a deep learning machine that can crack such a puzzle is getting closer to becoming a system that can think, reason, plan and make decisions,” Pierre Baldi, UCI Distinguished Professor of computer science said in a [report](#).

The algorithm also works on other combinatorial games such as the sliding tile puzzle, Lights Out and Sokoban.



AI Algorithm can now solve
Rubik's Cube
in less than a second

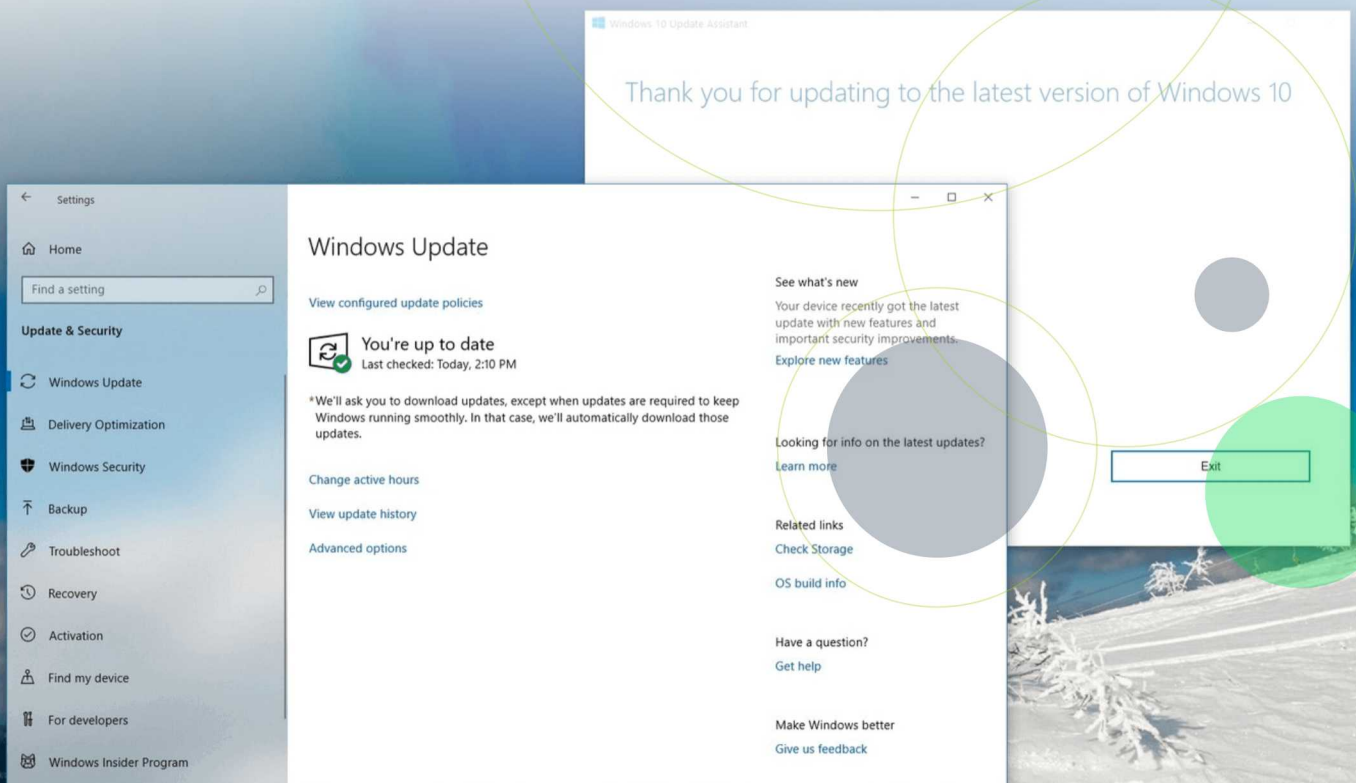
Microsoft has started offering the update to Windows

As the company announced back in May when it started the rollout of version 1903, updating these devices is part of its efforts to keep users up-to-date, as the April 2018 Update will reach the end of support in the fall of this year.

According to Microsoft's schedule, Windows 10 April 2018 Update will no longer receive support for Home and Pro SKUs after the November 12 Patch Tuesday rollout.

“We are initiating the Windows 10 May 2019 Update for customers with devices that are at or nearing end of service and have not yet updated their device. Keeping these devices both supported and receiving monthly updates is critical to device security and ecosystem health,” Microsoft [says](#).

“Based on the large number of devices running the April 2018 Update, that will reach the end of 18 months of service on November 12, 2019, we are starting the update process now for Home and Pro editions to help ensure adequate time for a smooth update process.”



Linux a key player in the edge computing revolution

Edge computing is augmenting the role that Linux plays in our day-to-day lives. A conversation with Jaromir Coufal from Red Hat helps to define what the edge has become.

In the past few years, [edge computing](#) has been revolutionizing how some very familiar services are provided to individuals like you and me, as well as how services are managed within major industries. Try to get your arms around what edge computing is today, and you might just discover that your arms aren't nearly as long or as flexible as you'd imagined. And Linux is playing a major role in this ever-expanding edge.

One reason why edge computing defies easy definition is that it takes many different forms. As Jaromir Coufal, principal product manager at Red Hat, recently pointed out to me, there is no single edge. Instead, there are lots of edges – depending on what compute features are needed. He suggests that we can think of the edge as something of a continuum of capabilities with the problem being resolved determining where along that particular continuum any edge solution will rest.

Some forms of edge computing include consumer electronics that are used and installed in millions of homes, others that serve tens of thousands of small businesses with operating their facilities, and still others that tie large companies to their remote sites. Key to this elusive definition is the idea that edge computing always involves distributing the workload in such a way that the bulk of the computing work is done remotely from the central core of the business and close to the business problem being addressed.

Done properly, edge computing can provide services that are both faster and more reliable. Applications running on the edge can be more resilient and run considerably faster because their required data resources are local. In addition, data can be processed or analyzed locally, often requiring only periodic transfer of results to central sites.

While physical security might be lower at the edge, edge devices often implement security features that allow them to detect 1) manipulation of the device, 2) malicious software, and 3) a physical breach and wipe data.

Benefits of edge computing

Some of the benefits of edge computing include:

- A quick response to intrusion detection, including the ability for a remote device to detach or self-destruct
- The ability to instantly stop communication when needed
- Constrained functionality and fewer generic entry points
- Rugged and reliable problem resistance

Artificial Intelligence predicts long-term mortality from chest X-ray

Researchers have developed an Artificial Intelligence (AI)-powered tool that can harvest information in chest X-rays to predict long-term mortality. The findings of this study, published in the journal JAMA Network Open, could help to identify patients most likely to benefit from screening and preventive medicine for heart disease, lung cancer and other conditions.

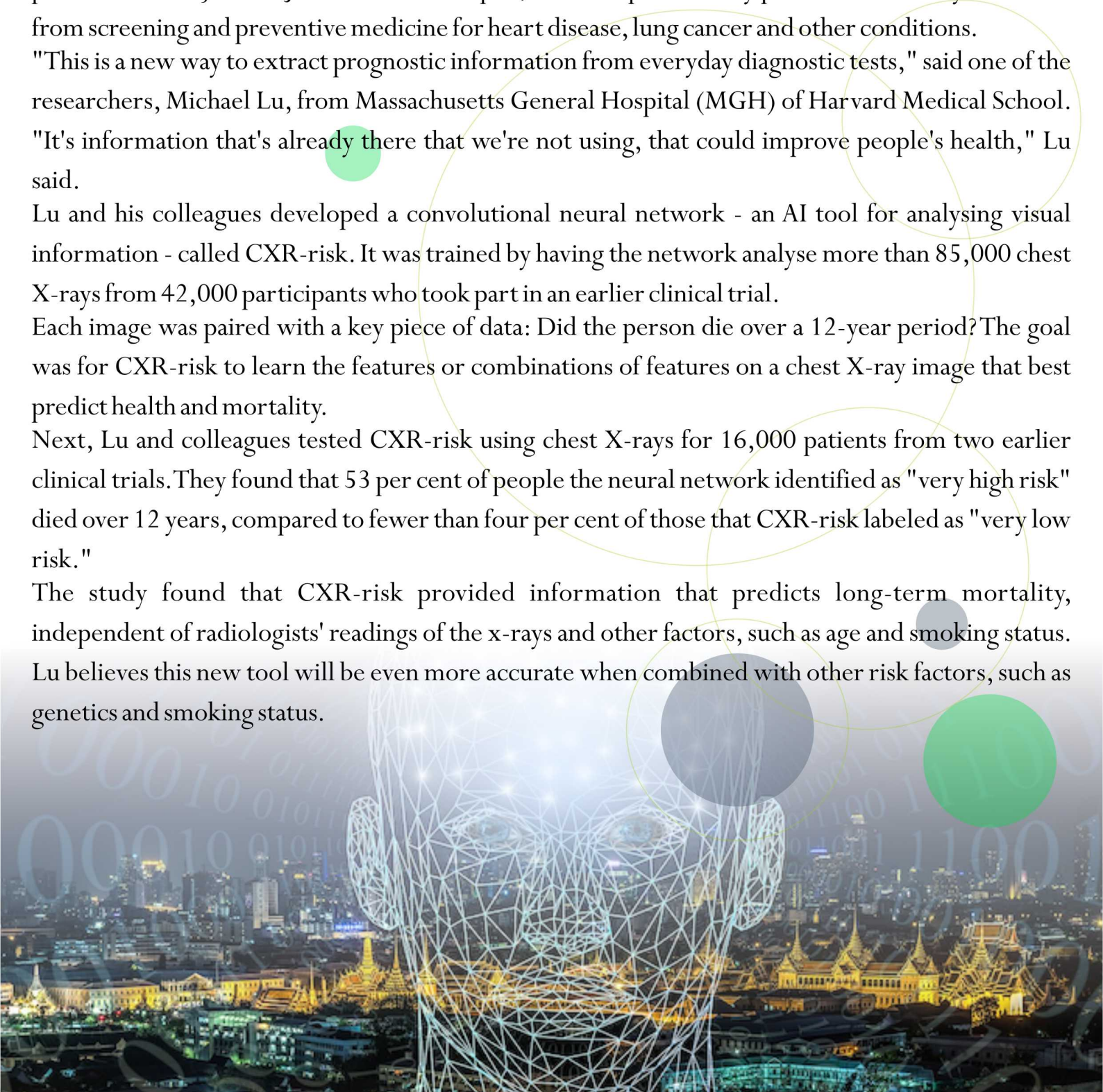
"This is a new way to extract prognostic information from everyday diagnostic tests," said one of the researchers, Michael Lu, from Massachusetts General Hospital (MGH) of Harvard Medical School. "It's information that's already there that we're not using, that could improve people's health," Lu said.

Lu and his colleagues developed a convolutional neural network - an AI tool for analysing visual information - called CXR-risk. It was trained by having the network analyse more than 85,000 chest X-rays from 42,000 participants who took part in an earlier clinical trial.

Each image was paired with a key piece of data: Did the person die over a 12-year period? The goal was for CXR-risk to learn the features or combinations of features on a chest X-ray image that best predict health and mortality.

Next, Lu and colleagues tested CXR-risk using chest X-rays for 16,000 patients from two earlier clinical trials. They found that 53 per cent of people the neural network identified as "very high risk" died over 12 years, compared to fewer than four per cent of those that CXR-risk labeled as "very low risk."

The study found that CXR-risk provided information that predicts long-term mortality, independent of radiologists' readings of the x-rays and other factors, such as age and smoking status. Lu believes this new tool will be even more accurate when combined with other risk factors, such as genetics and smoking status.



Microsoft invests \$1 billion in OpenAI to pursue holy grail of artificial intelligence

Microsoft is [investing](#) \$1 billion in OpenAI, a San Francisco-based research lab founded by Silicon Valley luminaries, including Elon Musk and Sam Altman, that's dedicated to creating artificial general intelligence (AGI).

The investment will make Microsoft the “exclusive” provider of cloud computing services to OpenAI, and the two companies will work together to develop new technologies. OpenAI will also license some of its tech to Microsoft to commercialize, though when this may happen and what tech will be involved has yet to be announced.

CREATING AGI WOULD BE “MOST IMPORTANT TECHNOLOGICAL DEVELOPMENT IN HUMAN HISTORY”

OpenAI began as a nonprofit research lab in 2015 and was intended to match the high-tech R&D of companies like Google and Amazon while focusing on developing AI in a safe and democratic fashion. But earlier this year, OpenAI said it needed more money to continue this work, and it set up a [new for-profit firm](#) to seek outside investment.

To attract backers, OpenAI has made outrageous promises about the potential of its technology. Altman, who became CEO of the new for-profit OpenAI, has [said](#) that if the lab does manage to create artificial general intelligence, it could “maybe capture the light cone of all future value in the universe.”

In order to restrain the greed of investors, OpenAI operates as a capped-profit entity, meaning anyone who puts in money can only expect returns 100 times their investment. That's not offering “all future value” in the universe, but it's not pocket change either. Exactly what terms Microsoft and OpenAI have agreed on with this \$1 billion investment isn't clear.

How electronic skin could help people with disabilities

You might not know what they're called, but you probably use them quite a lot. Virtual buttons, also called soft keys, are on smartphones, ATMs and computer monitors, doing the work of buttons though they are just an image.

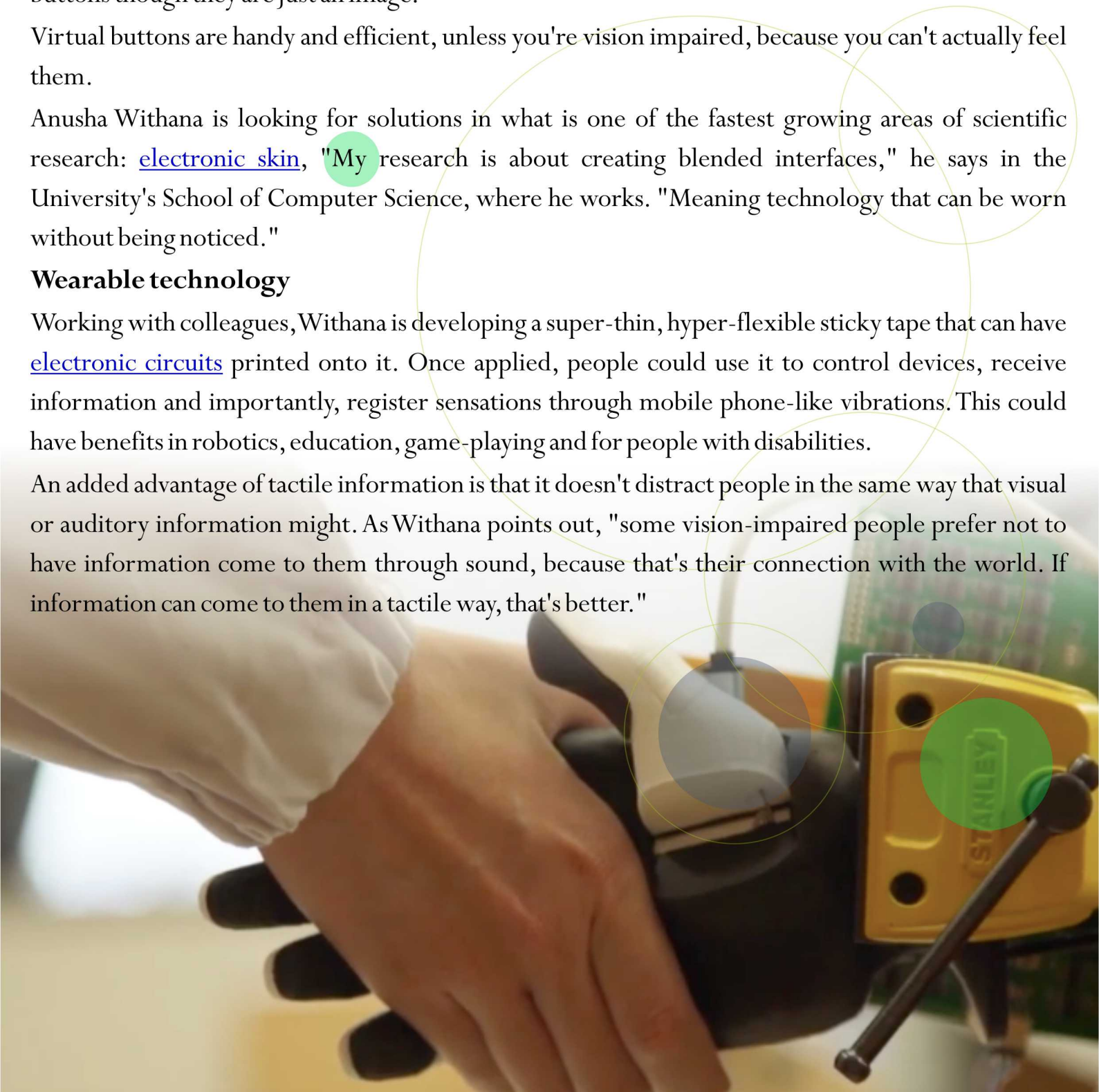
Virtual buttons are handy and efficient, unless you're vision impaired, because you can't actually feel them.

Anusha Withana is looking for solutions in what is one of the fastest growing areas of scientific research: [electronic skin](#), "My research is about creating blended interfaces," he says in the University's School of Computer Science, where he works. "Meaning technology that can be worn without being noticed."

Wearable technology

Working with colleagues, Withana is developing a super-thin, hyper-flexible sticky tape that can have [electronic circuits](#) printed onto it. Once applied, people could use it to control devices, receive information and importantly, register sensations through mobile phone-like vibrations. This could have benefits in robotics, education, game-playing and for people with disabilities.

An added advantage of tactile information is that it doesn't distract people in the same way that visual or auditory information might. As Withana points out, "some vision-impaired people prefer not to have information come to them through sound, because that's their connection with the world. If information can come to them in a tactile way, that's better."



Lack of civil engg expertise in BWSSB led to collapse

That the top brass of the Bangalore Water Supply and Sewerage Board (BWSSB) lacks civil engineering expertise could be one of the reasons for the collapse of the roof of a biodigester of an STP on Monday. The collapse killed three and injured six workers. A highly placed source said that instead of experienced civil engineers, those with a background in electrical or mechanical engineering are occupying the top posts of BWSSB. "Though the STP work is being carried out by a contractor, BWSSB has to supervise the overall work. However, the present crop of engineers is not technically qualified to perform the role," the source said.

Top officials, however, deny the charge and claim that they have the requisite skill. Engineer-in-chief Kemparamaiah, who has four chief engineers reporting to him, has an electrical engineering background, while Waste Water Management chief engineer Nithyananda, too, is from a similar background. Chairman Tushar Girinath holds a B.Tech degree in mechanical engineering.

"There are many civil engineers in the department. However, factors other than qualification and accomplishments play a role in reaching the top in the Water Supply Board," the source alleged. "This is just the tip of the iceberg. Many such ongoing projects are going to be impacted," he added.

Constructing the digester of an STP is a complex, skilled job. "How can someone without experience in building such structures, improve upon the designs presented or detect flaws in it?" the source questioned. TNIE had, in a report on May 30, 2018, written about the huge vacuum that was likely to set in at the BWSSB, following the retirement of three experienced and highly qualified chief engineers who were instrumental in the success of various stages of

the Cauvery water supply projects for the city.

Asked for its response, the BWSSB top brass ruled it out. Kemparamaiah told TNIE, "The execution by Enviro Control Associates of Surat was supervised by NJS Engineers India Pvt Ltd, an internationally reputed concern. The contract was awarded on a turnkey basis, which means the contractor completes the project and also takes care of operation and maintenance for a period of 10 years. The contractor, consultant and BWSSB are together responsible for its overall safety. It is foolish to blame the lack of expertise in BWSSB."

Nithyananda pointed out that the executive engineer and a few engineers overseeing work at the field level had civil engineering expertise. "Those at the helm of BWSSB have 30-32 years experience in the water department," he pointed out.

Tushar Girinath, who was reinstated full-time chairman from May 31 this year, claimed the top officers were technically sound. "An internal inquiry is being carried out by a committee comprising the engineer-in-chief and two superintending engineers to look into procedural and safety lapses that led to the incident. Let us wait for its report as well as third party inquiry that will be carried out."

Third party for inquiry not finalised
BWSSB Chairman Tushar Girinath ruled out that an external agency had been finalised to carry out an inquiry into the STP mishap. "We want a third party inquiry. We have approached IISc Bangalore, and SERC, Chennai. If they don't want to conduct it, then we will approach IIT Madras. Any talk that we have finalised an agency is not true," he said.

First 'absolutely' earthquake proof bridges to be installed in Mexico

The first viaducts to be built using “absolutely” earthquake-proof expansion joints which will give “complete” seismic protection are to be installed in Mexico.

The two largest viaducts, which will be 3.9km and 1.4km long, are part of the new 57.7km long Toluca–Mexico City railway which is due to become operational in early 2021.

The railway is the first to cross the region which can experience “extremely high” seismic accelerations of up to 0.77g.

The new guided cross-ties joints will be situated at the ends of the individual bridge sections. A complex system of bearings, dampers and elastomeric spring isolators then ensure structural stability, function and safety for load cases ranging from the normal braking and acceleration forces of passing trains to the maximum considered earthquake (MCE).

The new joints for the structures have been designed by German joint specialist Maurer.

Piers for the viaducts are up to 65m high with spans of ranging from 55m to 64m and are situated in the highly seismic zone in the mountains.

Maurer said the new joint was based on the principle of the swivel joint expansion joint used in road construction, although it said it is “much more stable” to withstand the high axle loads of crossing trains travelling at up to 350km/h, fatigue-free.

Due to the high requirements placed on the dampers and isolators, they have been tested on both the “shake table” of the University of California in San Diego and on the earthquake simulator of the University of Messina.

Production of the bearings started in September 2016 and will be delivered and installed gradually. Installation of the last joints is scheduled for the autumn of 2020.

