SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

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6 APRIL 2020 – 10 APRIL 2020

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APPs

Responding to COVID-19 with Tech

"The Government has progressively built up the digital infrastructure and engineering capabilities as the foundation of our Smart Nation. These enable us to respond decisively and swiftly to the COVID-19 outbreak with a suite of digital tools to help disseminate timely and accurate information to Singaporeans, and to enable our fellow agencies to better manage the crisis."

Source: GOVTECH (31 Mar 2020)

ARTIFICIAL INTELLIGENCE

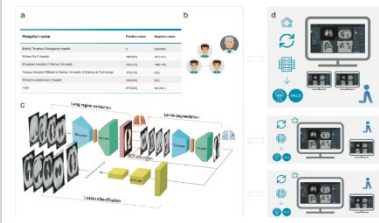
Training AI To Transform Brain Activity Into Text

"Neuroscientists have come up with an AI-based system that can decode brain waves into written text faster than existing technologies. While the new tech is limited to recognizing verbal speech at the moment, it has the potential to help those with speech disabilities in the future. Read more in Nature."

Source: Popular Mechanics (2 April 2020)

BIG DATA

AI runs smack up against a big data problem in COVID-19 diagnosis



The system that Xu and team built combines two deep learning neural networks, a "ResNet-50," the standard for many years for image recognition, and something called "UNet++" that was developed at Arizona State University in 2018 for the specific purpose of processing chest CT scans.

Source: ZD Net (4 April 2020)

COVID-19

How will coronavirus change the world?

"Could the huge shifts in our way of life being introduced as part of the fight against Covid-19 pave the way for a more humane economy?."

Source: BBC (31 March 2020)

ELECTRONICS

Tesla previews its ventilator powered by Model 3 tech

"Tesla's engineers show off two versions of the ventilator, a prototype model with its components laid out across a desk, as well as a packaged model that shows how it might look when used by a hospital."

Source: The Verge (6 April 2020)

HEALTHCARE

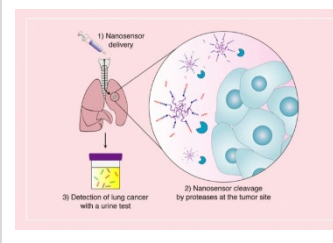
'Smart toilet' monitors for signs of disease, Stanford study reports

"…this toilet is fitted with technology that can detect a range of disease markers in stool and urine, including those of some cancers, such as colorectal or urologic cancers. The device could be particularly appealing to individuals who are genetically predisposed to certain conditions, such as irritable bowel syndrome, prostate cancer or kidney failure, and want to keep on top of their health."

Source: Eurekalert (6 April 2020)

HEALTH TECH

New sensors could offer early detection of lung tumors

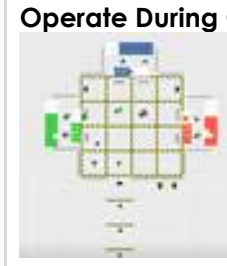


"With this approach, the researchers found that they could accurately detect tumors in one of the mouse models as early as 7.5 weeks, when the tumors were only 2.8 cubic millimeters, on average."

Source: MIT News(1 April 2020)

HYPER-LOCAL MARKET

Shift Architecture Urbanism Creates Hyperlocal Micro Markets that Operate During COVID-19 Shutdowns



" The research elaborated on a scheme allowing traders to provide fresh food in a safe way to the self-quarantined inhabitants of the city."

Source: Arch Daily (3 April 2020)

MEDICAL DEVICES

Materialise Breathing System to Help Reduce Need for Ventilators

"The technology, designed with the help of pulmonologists, consists of a PEEP valve, a mask, and a filter. The patient wears a tightly fitted mask and the system needs only a source of oxygen to produce sufficient pressure to help a patient breathe."

Source: Medgadget (6 Apr 2020))

OPTICS

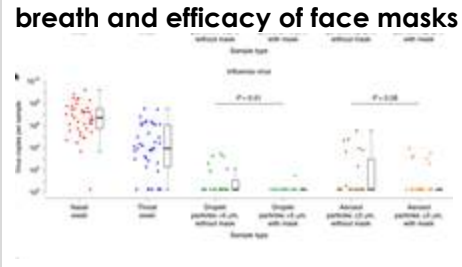
A combined optical transmitter and receiver

"Researchers at Linköping University, together with colleagues in China, have developed a tiny unit that is both an optical transmitter and a receiver. 'This is highly significant for the miniaturisation of optoelectronic systems", says LiU professor Feng Gao."

Source: Linköping University (3 April 2020)

PUBLIC HEALTH

Respiratory virus shedding in exhaled breath and efficacy of face masks

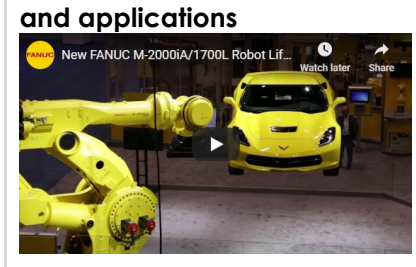


"Here we aimed to explore the importance of respiratory droplet and aerosol routes of transmission with a particular focus on coronaviruses, influenza viruses and rhinoviruses and determining the potential efficacy of surgical face masks to prevent respiratory virus transmission."

Source: Nature Medicine (3 April 2020)

ROBOTICS

8 noteworthy lifting and mast robots and applications



In the next five years, the demand for heavy payload robots expected to increase by 4% annually, and the market for collaborative robots is estimated to grow at 44.5%. Lifting and mast robots are examples of how industrial automation is specializing.

Source: Robotics Business Review(3 April 2020)

ROBOTICS

Google taught this robotic dog to learn new tricks by imitating a real one

"Using a data set of motion capture data recorded from various sensors attached to a dog, the researchers taught a quadruped robot named Laikago several different movements that are hard to achieve through traditional hand-coded robotic controls."

Source: MIT Technology Review (3 April 2020)

SENSORS

New Gyroscope Design Will Help Autonomous Cars and Robots Map the World

"It's 10,000 times more accurate than the gyros in your cell phone, but costs just US $50...The new resonator and electrodes shown on a finger for scale. The resonator is almost perfectly symmetrical and made of nearly-pure glass. This enables it to vibrate for long periods, similar to the ringing of a wine glass."

Source: IEEE Spectrum (2 April 2020)

SENSORS

Robot Vehicles Make Contactless Deliveries Amid Coronavirus Quarantine

"Sensors include a main lidar, three auxiliary lidars, a stereo camera, four fisheye cameras, 16 sonars, redundant satellite navigation systems, an inertial measurement unit (IMU), and two wheel encoders."

Source: IEEE Spectrum (2 April 2020)

TECHNOLOGY

Nanoscale Device Generates High-Power THz Waves That Can See Through Walls

"These waves, which are notoriously difficult to produce, are useful in a rich variety of applications ranging from imaging and sensing to high-speed wireless communications. The high-power picosecond operation of these device also holds immense promise to some advanced medical treatment techniques such as cancer therapy."

Source: SciTechDaily (7 Apr 2020)