SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

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3D PRINTING

"Breakthrough" 3D-Printed Rocket Engine Tests Completed in Fife, Scotland

"The first ever eco liquid-fuel rocket engine ground tests to take place in Scotland have been deemed a huge success - and a major step forward in the UK's ambitions to become a space nation."

Source: Space Daily (4 February 2020)

AUTONOMUS VECHICLES

7 IEEE Courses: Autonomous Vehicles

"Explore how real-time decision making is performed by autonomous vehicles, especially when they cooperate with each other, in complex environments such as intersections and lane-changing operations … Learn how to model and evaluate performance of intelligent vehicle control algorithms using state-of-the-art techniques and concepts, especially in real-world conditions."
And many more latest updated courses!

Source: IEEE Courses (February 2020)

BIOMED

Researchers Can Now Interrogate Body-on-Chip

"Scientists have just announced the completion of an eight-year-long project to integrate 10 human organs-on-chips in an automated system to study how drugs work in the body. The technology provides an alternative to testing drugs on humans or other animals."

Source: IEEE Spectrum (30 January 2020)

DATA MINING

Mining Coronavirus Genomes for Clues to the Outbreak's Origins

"Bedford's analyses of RaTG13 and 2019-nCoV suggest that the two viruses shared a common ancestor 25 to 65 years ago, an estimate he arrived at by combining the difference in nucleotides between the viruses with the presumed rates of mutation in other coronaviruses. So it likely took decades for RaTG13-like viruses to mutate into 2019-nCoV."

Source: Science (31 January 2020)

ELECTROMAGNETISM

The One Ring — to Track Your Finger's Location

"Researchers at the University of Washington have created AuraRing, a ring and wristband combination that can detect the precise location of someone's index finger and continuously track hand movements."
Read more at ACM.

Source: University of Washington (3 February 2020)

ELECTRONICS

Three Trends Driving Electronics Manufacturing in 2020

"In order to understand the key trends driving electronics manufacturing in 2020, it's important to first understand what has happened over the last eighteen months."

Source: Forbes (3 February 2020)

ENERGY

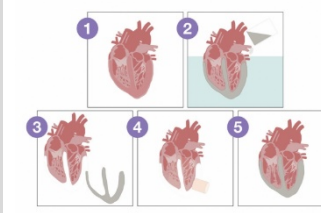
Can Wood Construction Transform Cities from Carbon Source to Carbon Vault?

"A new Yale study predicts that a transition to timber-based wood products in the construction of new housing, buildings, and infrastructure would not only offset enormous amounts of carbon emissions related to concrete and steel production — it could turn the world's cities into a vast carbon sink."

Source: Yale (29 January 2020)

HEALTHCARE

Engineers Design Bionic "Heart" for Testing Prosthetic Valves, Other Cardiac Devices



"Now engineers at MIT and elsewhere have developed a bionic 'heart' that offers a more realistic model for testing out artificial valves and other cardiac devices. The device is a real biological heart whose tough muscle tissue has been replaced with a soft robotic matrix of artificial heart muscles, resembling bubble wrap."

Source: MIT News (29 January 2020)

HEALTHCARE

Wearable Health Tech Gets Efficiency Upgrade

"North Carolina State University engineers have demonstrated a flexible device that harvests the heat energy from the human body to monitor health. The device surpasses all other flexible harvesters that use body heat as the sole energy source."

Source: North Carolina State University (30 January 2020)

HVAC

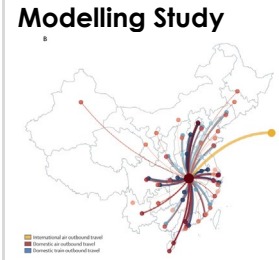
Self-Learning Heating Control System Smart Heat

"In their experiments, researchers fed a new self-learning heating control system with temperature data from the previous year and the current weather forecast. The 'smart' control system was then able to assess the building's behavior and act with good anticipation. The result: greater comfort, lower energy costs."

Source: EMPA (30 January 2020)

MATHEMATICAL MODELLING

Nowcasting and Forecasting the Potential Domestic and International Spread of the 2019-nCoV Outbreak Originating in Wuhan, China: A Modelling Study

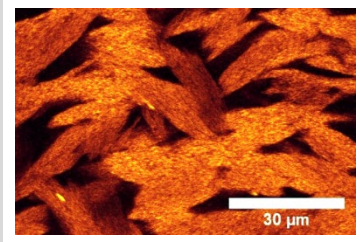


"A susceptible-exposed-infectious-recovered metapopulation model was used to simulate the epidemics across all major cities in China. The basic reproductive number was estimated using Markov Chain Monte Carlo methods and presented using the resulting posterior mean and 95% credible intervals (CrIs)."

Source: The Lancet (31January 2020)

NEW MATERIALS

Scientists Discover New Non-Sticky Gels



"Scientists from the University of Bristol and Université Paris-Saclay have discovered a new class of material – non-sticky gels."

Source: University of Bristol (3 February 2020)

PHOTOVOLTAICS

Anti-Solar Cells: A Photovoltaic Cell That Works at Night

"A thermoradiative cell (right) generates electrical current as it radiates infrared light (heat) toward the extreme cold of deep space. UC Davis engineers propose that such cells could generate a significant amount of energy and help balance the power grid over the day-night cycle."

Source: University of California, Davis (29 January 2020)

ROBOTICS

Cyborg Jellyfish Could One Day Explore the Ocean

"The scientists tested the device on six moon jellyfish in a tank and found it could make the animals swim at nearly three times their natural pace. They maintained their typical speed when wearing an inactive swim controller."

Source: Scientific American (29 January 2020)

SOFT ROBOTICS

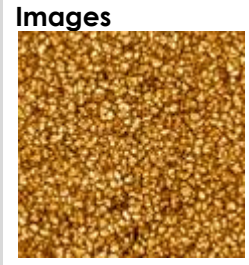
Researchers Create 3D-Printed, Sweating Robot Muscle

"Just when it seemed like robots couldn't get any cooler, Cornell researchers have created a soft robot muscle that can regulate its temperature through sweating … The best part of this synthetic strategy is that the thermal regulatory performance is based in the material itself … We did not need to have sensors or other components to control the sweating rate."

Source: Cornell Chronicle (29 January 2020)

SOLAR

Newest Solar Telescope Produces First Images



"The first images from NSF's Inouye Solar Telescope show a close-up view of the sun's surface, which can provide important detail for scientists. The images show a pattern of turbulent 'boiling' plasma that covers the entire sun. The cell-like structures -- each about the size of Texas -- are the signature of violent motions that transport heat from the inside of the sun to its surface."

Source: Science Daily (29 January 2020)