SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Weekly Discovery

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4 – 8 October 2021

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Artificial Intelligence & Data Science	Aviation	Cities
HealthCare	Robotics & Automation	Design & Innovation
Cybersecurity	Digital Design & Fabrication	Advanced Manufacturing

AI

An Inconvenient Truth About AI AI Won't Surpass Human Intelligence Anytime Soon

"Regardless of what you might think about AI, the reality is that just about every successful deployment has either one of two expedients: It has a person somewhere in the loop, or the cost of failure, should the system blunder, is very low."

Source: IEEE Spectrum (29 September 2021)

ARCHITECTURE

UK Pavilion at Expo 2020 Dubai is a Stage for AI-Generated Collective Poems

"UK's contribution to Expo 2020 Dubai is a wooden sculptural structure that celebrates cultural diversity and collaboration, highlighting Britain as a meeting place of cultures and ideas. Created by artist and designer Es Devlin, the Poem Pavilion uses advanced machine learning algorithms to transform the input of visitors into collective poems. The latter can be read in illuminating displays on the façade, transforming the pavilion into the exhibit itself."

Source: Archdaily (30 September 2021)

CHEMISTRY

Unprecedented View Of A Single Catalyst Nanoparticle At Work

"A DESY-led research team has been using high-intensity X-rays to observe a single catalyst nanoparticle at work. The experiment has revealed for the first time how the chemical composition of the surface of an individual nanoparticle changes under reaction conditions, making it more active. The team led by DESY's Andreas Stierle is presenting its findings in the journal Science Advances. This study marks an important step towards a better understanding of real, industrial catalytic materials."

Source: DESY (1 October 2021)

HEALTHCARE

Building An Alternative to GPS Analyzing The Position Of Exisiting Low-Orbit Satellites Could Create A Backup System For Navigation

"…Kassas and his colleagues have devised a novel substitute for GPS. Rather than relying on the small handful of GPS satellites circling in Earth's higher orbits, his team is eyeing the more abundant and closer-to-home satellites in Earth's low orbit, such as the Starlink fleet.."

Source: IEEE SPECTRUM (6 October 2021

HEALTHCARE

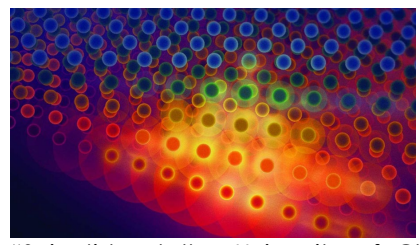
Virtual Care With Remote Monitoring Catches Drug Errors And Reduces Patient Pain

"Patients using take-home technology following non-elective surgery resulted in significantly greater detection and correction of drug errors, and reduction in patients' pain, says a national study led by McMaster University researchers…The study looked at patient outcomes from virtual care and remote automated monitoring (RAM) – video calls with nurses and doctors, and self-monitoring of vital signs using wearable devices…The research also raised the possibility of a reduction in acute-hospital care as the result of virtual care and RAM."

Source: McMaster University (30 September 2021)

MATERIAL

UChicago Scientists Create Material That Can Both Move And Block Heat

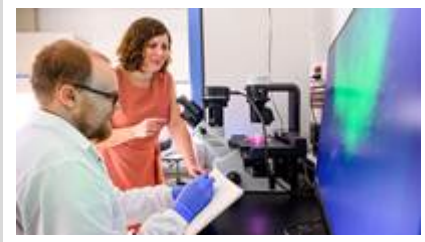


"Scientists at the University of Chicago have invented a new way to funnel heat around at the microscopic level: a thermal insulator made using an innovative technique."

Source: University of Chicago(29 September 2021)

MEDTECH

Low-cost, Portable Device Could Diagnose Heart Attacks In Minutes

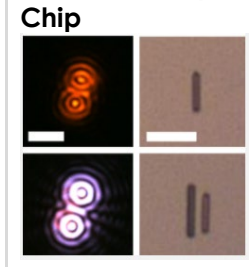


"By targeting three distinct types of microRNA or miRNA, the newly developed sensor can distinguish between an acute heart attack and a reperfusion — the restoration of blood flow, or reperfusion injury, and requires less blood than traditional diagnostic methods to do so. The ability to differentiate between someone with inadequate blood supply to an organ and someone with a reperfusion injury is an unmet, clinical need that this sensor addresses."

Source: UNIVERSITY OF NOTRE DAME (1 October 2021)

OPTICS

Researchers Integrate Optical Devices Made of Multiple Materials onto Single Chip

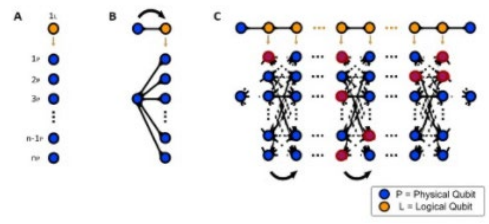


"Researchers have developed a highly accurate way to assemble multiple micron-scale optical devices extremely close together on a single chip."

Source: Optica(29 September 2021)

QUANTUM COMPUTERS

Photonic Chip Is Key To Nurturing Quantum Computers



"A team of researchers from Bristol's Quantum Engineering and Technology Labs (QETLabs) has shown how to protect qubits from errors using photons in a silicon chip."

Source: University of Bristol (29 September 2021)

ROBOTICS

Why Robots Can't Sew Your T-Shirt

"sewing has been notoriously difficult to automate, because textiles bunch and stretch as they're worked with. Human hands are adept at keeping fabric organized as it passes through a sewing machine. Robots typically are not deft enough to handle the task."

Source: Wired (28 September 2021)

SENSOR

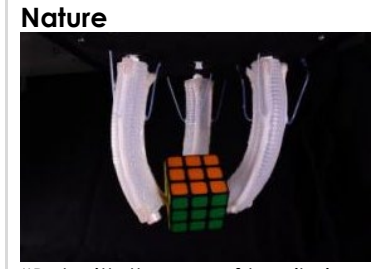
Simplified Sensor Measures Tilt Angle And Direction With Liquid

"The liquid-state dital tilt sensor. The sensor uses a conductive liquid to read the tilt angle and direction as digital binary signals"

Source: Eurekalert!(30 September 2021)

SOFT ROBOTS

Using Bundles of Fibers, Robots Mimic Nature



"But with the use of tensile jamming - that is, vacuum-induced interaction among a bundle of small fibers - a team of roboticists has developed soft robots that are dexterous enough to handle a Rubik's Cube and twist the cap off a jar."

Source: Yale University (1 October 2021)

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