SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Weekly Discovery

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24 Aug – 28 Aug 2020

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3D PRINTING

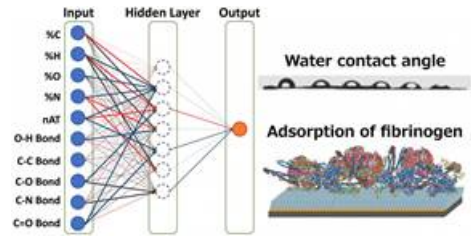
3d Printing 'Greener' Buildings Using Local Soil

"Today, researchers report progress toward a sustainable building material made from local soil, using a 3D printer to create a load-bearing structure."

Source: ACS(20 August 2020)

AI

A Leap Forward For Biomaterials Design Using AI



"Researchers at Tokyo Institute of Technology (Tokyo Tech) have used artificial intelligence (AI) to predict the degree of water repulsion and protein adsorption by ultra-thin organic materials. By enabling accurate predictions of water repulsion and protein adsorption even by hypothetical materials, the team's approach opens up new possibilities for the screening and design of organic materials with desired functions."

Source: : Eurekalert! (24 August 2020)

AI

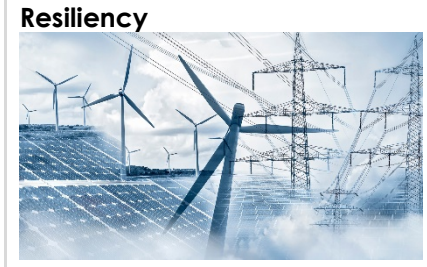
Algorithm Developed to Detect Possible Heart Disease by Selfies

"A research conducted in China saw the development of an algorithm that could detect how likely someone is to experience heart disease just by looking at their face through their selfies."

Source: Interesting Engineering (24 August 2020)

AI

Argonne Scientists Use Artificial Intelligence To Strengthen Power Grid Resiliency



"U.S. Department of Energy's (DOE) Argonne National Laboratory a research team has developed a novel approach to help system operators understand how to better control power systems with the help of artificial intelligence. Their new approach could help operators control power systems in a more effective way, which could enhance the resilience of America's power grid."

Source: EurekAlert! (20 August 2020)

AI

New Technique To Prevent Imaging Cyberthreats Proposed By Ben-Gurion University Researchers

"Complex medical devices such as CT (computed tomography), MRI (magnetic resonance imaging) and ultrasound machines are controlled by instructions sent from a host PC. Abnormal or anomalous instructions introduce many potentially harmful threats to patients, such as radiation overexposure, manipulation of device components or functional manipulation of medical images."

Source: EurekAlert! (25 August 2020)

ARCHITECTURE

Salon Alper Derinbogaz Designs "Pandemic Resistant" Offices For University In Istanbul

"Set to be located on the university's Yıldız Teknopark campus, the Turkish architecture studio took the coronavirus pandemic into account when designing the educational facility."

Source: Dezeen(24 August 2020)

BIOMIMICRY

Moth-Inspired Robot Swarms Could Soon Sniff Out Harmful Substances

"The algorithm's robustness makes it a realistic candidate for further study, where it could advance the use of robotics for the detection of harmful, volatile chemicals and pollutants."

Source: Physics World (24 August 2020)

DRUG DELIVERY

Syringe Technology Could Enable Injection Of Concentrated Biologic Drugs

"MIT researchers have developed a simple, low-cost technology to administer powerful drug formulations that are too viscous to be injected using conventional medical syringes."

Source: MIT News (24 August 2020)

GREEN TECH

Breakthrough Technology Purifies Water Using The Power Of Sunlight

"A global research team has been able to transform brackish water and seawater into safe, clean drinking water in less than 30 minutes using metal-organic frameworks (MOFs) and sunlight."

Source: TechXplore (10 August 2020)

MATERIALS

Aerogel – The Micro Structural Material Of The Future

"Empa researchers have now succeeded in making aerogels accessible to microelectronics and precision engineering: An article in the latest issue of the scientific journal "Nature" shows how 3D-printed parts made of silica aerogels and silica composite materials can be manufactured with high precision."

Source: EMPA (20 August 2020)

MATHEMATICS

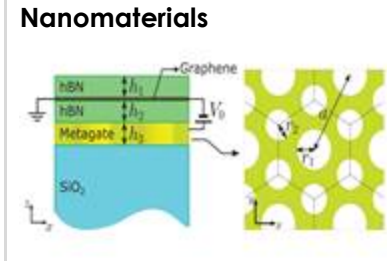
The Mathematical Magic Of Bending Grids

"You choose any curved surface and from its shape you can calculate a flat grid of straight bars that can be folded out to the desired curved structure with a single movement. The result is a stable form that can even carry loads due to its mechanical tension. "

Source: Eurekalert! (24 August 2020)

NANOMATERIALS

Trapping And Controlling Light At The Interface Of Atomically Thin Nanomaterials

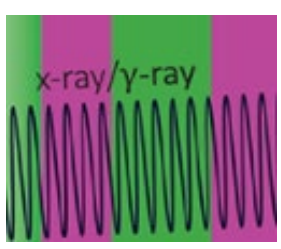


"Light can partake in peculiar phenomena at the nanoscale. Exploring these phenomena can unlock sophisticated applications and provide useful insights into the interactions between light waves and other materials."

Source: Science Daily (20 August 2020)

NANOSTRUCTURES

Nanostructures Enhance The Efficiency Of A Scintillator

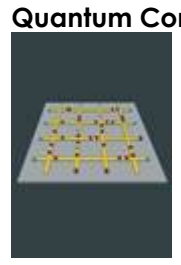


"In their calculations, the researchers used refractive index and emission wavelength values from standard scintillation materials. Then they optimized the thicknesses of the layers such that emission was enhanced in detectable directions and suppressed in undetectable ones."

Source : Physics Today (24 August 2020)

QUANTUM COMPUTING

Sussex Study Enables Predicting Computational Power Of Early Quantum Computers



"Quantum physicists at the University of Sussex have created an algorithm that speeds up the rate of calculations in the early quantum computers which are currently being developed. They have created a new way to route the ions – or charged atoms – around the quantum computer to boost the efficiency of the calculations."

Source: University of Sussex (24 August 2020)

ROBOTICS

Robotic Tank Is Designed to Crawl Through Your Intestine

"The robot gets around with four sets of treads, angled to provide better traction against the curved walls of your gut. It carries a camera, LED lights, tubes for injecting air and water, and a tool port that can accommodate endoscopy instruments like forceps and snares to retrieve tissue samples."

Source: IEEE Spectrum (24 August 2020)

TECHNOLOGY

Social Distancing Technologies Jump to Peak of Gartner Hype Cycle

CAMPUS TECHNOLOGY

"Research and advisory company Gartner recently released its latest "Hype Cycle" analyzing emerging technologies that "show promise in delivering a high degree of competitive advantage over the next five to 10 years." Notably, social distancing technologies have fast-tracked to the top of the cycle — the "peak of inflated expectations."

Source: Campus Technology (24 August 2020)

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