SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Weekly Discovery

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12 Oct – 16 Oct 2020

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HealthCare	Robotics & Automation	Design & Innovation
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BATTERY

AI Is Throwing Battery Development Into Overdrive

"In their research, Chueh and his colleagues managed to optimize a fast-charging protocol for a lithium-ion battery in less than a month; to achieve those same results without the aid of AI would usually take around two years. "

Source: Wired (12 October 2020)

CAR DESIGN

Car Design Is About To Change Forever. This Video Encapsulates How

"As this new video from Israeli startup Ree demonstrates, the EV of tomorrow is basically just a giant skateboard. With tiny motors placed inside the wheels, the car can assume any form imaginable; any sort of seating or storage arrangement can be built right on top of this flat base."

Source: Fast Company (9 October 2020)

COMPUTER SCIENCE

Computer Scientists Break Traveling Salesperson Record

"After 44 years, there's finally a better way to find approximate solutions to the notoriously difficult traveling salesperson problem."

Source: Quantum Magazine (8 October 2020)

DRONES

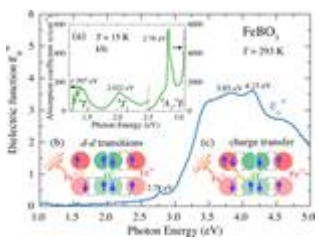
AI-Powered Drone Learns Extreme Acrobatics

Now researchers from the Robotics and Perception Group at the University of Zurich and ETH Zurich, in collaboration with Intel, have developed a neural network training method that "enables an autonomous quadrotor to fly extreme acrobatic maneuvers with only onboard sensing and computation."

Source: IEEE Spectrum(7 October 2020)

FLUIDS

UCF Researchers Are Working on Tech So Machines Can Thermally 'Breathe'



"In the era of electric cars, machine learning and ultra-efficient vehicles for space travel, computers and hardware are operating faster and more efficiently. But this increase in power comes with a trade-off: They get superhot…To counter this, University of Central Florida researchers are developing a way for large machines to "breathe" in and out cooling blasts of water to keep their systems from overheating."

Source: University of Central Florida (13 October 2020)

IoT

Here Comes the Internet of Plastic Things, No Batteries or Electronic`s Required

"Researchers at the University of Washington have devised a way of using 3D printed plastic to create objects that communicate with smartphone or other Wi-Fi devices without the need for batteries or electronics."

Source: IEEE Spectrum (8 October 2020)

LOGISTICS

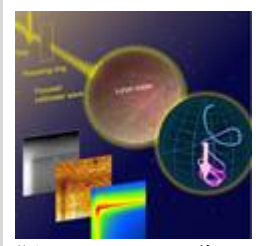
These Sleek Electric Cargo Bikes Are The Future Of Urban Delivery

"Ono could work as a stand-alone delivery solution in a dense sector and within a radius," says Seelbach. "But it is exponentially more interesting for operators when combined with so-called city hubs, and in this case, Ono vehicles replace traditional delivery trucks."

Source: Fast Company (12 October 2020)

MATERIAL SCIENCE

High-Capacity Tape For The Era Of Big Data

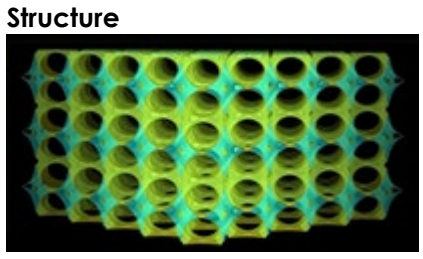


"A new magnetic material and recording process can vastly increase data capacity. Read more in Advance Materials."

Source: University of Tokyo (8 October 2020)

MATERIAL

Making Disorder for an Ideal Battery: Disordered Yet Highly Symmetrical Structure



"Manufacturing safer, more powerful batteries that use geopolitically stable resources requires solid electrolytes and replacing lithium with sodium. A chemical solution is now being offered to battery developers."

Source: EurekAlert (12 October 2020)

MATHEMATICS

Mathematical Tools Predict If Wave-Energy Devices Stay Afloat In The Ocean

"Texas A&M University researchers have developed analytical tools that can help characterize the movements of floating but anchored wave-energy devices. Unlike complicated simulations that are expensive and time-consuming, they said their technique is fast, yet accurate enough to estimate if wave-energy devices will turn over in an ever-changing ocean environment."

Source: Texas A&M Engineering (09 October 2020)

OPTICAL FIBER

Revealing the Reason Behind Jet Formation at the Tip of Laser Optical Fiber

"When an optical fiber is immersed in liquid, a high temperature, high speed jet is discharged. Researchers expect this to be applied to medical treatment in the future. Now, a research team from Russia and Japan has explored this phenomenon further and revealed the reasons behind the jet formation."

Source: Tohoku University (9 October 2020)

ROBOTICS

Video Friday: Poimo Is a Portable Inflatable E-Bike

"Your weekly selection of awesome robot videos"

Source: IEEE Spectrum (9 October 2020)

ROBOTICS

Using Robotic Assistance To Make Colonoscopy Kinder And Easier

"Scientists have made a breakthrough in their work to develop semi-autonomous colonoscopy, using a robot to guide a medical device into the body."

Source: Eurekalert! (12 October 2020)

SENSORS

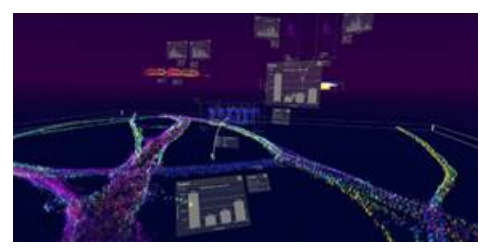
Airdropping Sensors From Moths: Researchers Use Flying Insects To Drop Sensors From Air, Land Them Safely On The Ground

"University of Washington researchers have created one potential solution: A 98 milligram sensor system that can ride aboard a small drone or an insect, such as a moth, until it gets to its destination." Read more from ACM DL.

Source: University of Washington (8 October 2020)

VIRTUAL REALITY

New Virtual Reality Software Allows Scientists To 'Walk' Inside Cells



"The software, called vLUME, was created by scientists at the University of Cambridge and 3D image analysis software company Lume VR Ltd. It allows super-resolution microscopy data to be visualised and analysed in virtual reality, and can be used to study everything from individual proteins to entire cells."

Source: University of Cambridge (12 October 2020)

WEARABLE

Engineers Print Wearable Sensors Directly On Skin Without Heat

"An international team of researchers developed a novel technique to produce precise, high-performing biometric sensors."

Source: Science Daily (12 October 2020)

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