SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Weekly Discovery

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19 - 23 July 2021

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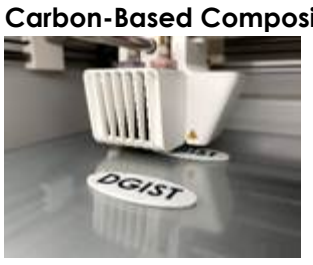
3D PRINTING

Scientists Develop A 3D-Printed Pressure Sensor Embedded With A Temperature Sensor From Conductive Carbon-Based Composites.



"In a new study, scientists from South Korea take things to the next level with a multi-directional pressure sensor fabricated using 3D-printed conductive polymer composites and paired with a temperature sensor for resistance calibration. The low cost of such 3D-printed sensors could enable large-scale production of robotic grippers and tactile sensors.."

Source: DGIST (8 July 2021)

AI

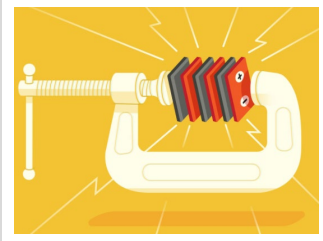
USC researchers enable AI to use its "imagination."

"A team of researchers at USC is helping AI imagine the unseen, a technique that could also lead to fairer AI, new medicines and increased autonomous vehicle safety."

Source: University of Southern California(8 July 2021)

BATTERY

The Battery Revolution Is Just Getting Started



"Today's chemical batteries can produce only low voltages, so you need to connect a lot of them in series to get a high voltage and also many in parallel so that they are both manufacturable and still able to deliver high power."

Source: IEEE Spectrum (12 July 2021)

BATTERIES

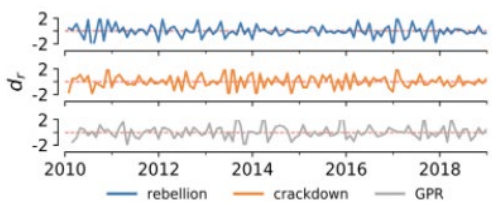
Hydrogen Battery "Sponges" Store Solar for the Grid

"Dozens of solar farms in the country's southeastern region are slated to use "hydrogen batteries" in coming years. The dual-purpose devices can fit inside of shipping containers and pack a bounty of technologies: lithium batteries, electrolyzers, fuel cells, and canisters of a hydrogen-metal compound."

Source: IEEE Spectrum (15 July 2021)

DATA ANALYSIS

Invention: The Storywrangler

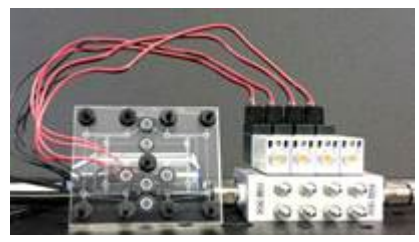


"Vermont scientists create tool to explore billions of social media messages, potentially predict political and financial turmoil."

Source: University of Vermont (16 July 2021)

ELECTRONICS

Air-powered Computer Memory Helps Soft Robot Control Movements



"Engineers at UC Riverside have unveiled an air-powered computer memory that can be used to control soft robots. The innovation overcomes one of the biggest obstacles to advancing soft robotics: the fundamental mismatch between pneumatics and electronics."

Source: UNIVERSITY OF CALIFORNIA - RIVERSIDE (16 July 2021)

MACHINE LEARNING

Team Finds Brain Mechanism That Automatically Links Objects In Our Minds

Source: JohanSwanepoel - Fotolia

"Scientists map the part of the brain that "links" similar objects, leading to new insights about how the brain processes information out of context…By using machine-learning and brain imaging, researchers measured the extent of the "co-occurrence" phenomenon and identified the brain region involved. The findings appear in Nature Communications."

Source: John Hopkins (9 July 2021)

MATERIAL SCIENCE

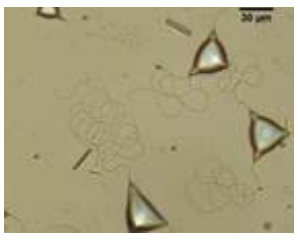
International Team Of Scientists Turns Methane Into Methanol At Room Temperature

"A team of researchers from Stanford University and the University of Leuven in Belgium has further elucidated an intriguing process that could be an important step toward a methanol fuel economy with abundant methane as the feedstock, an advance that could fundamentally change how the world uses natural gas."

Source: Stanford University (15 July 2021)

PHYSICS

Scientists Create Rechargeable Swimming Microrobots Using Oil And Water

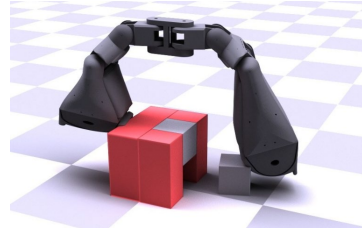


"By combining oil drops with water containing a detergent-like substance, the scientists found they could produce artificial swimmers that are able to swim independently and even harvest energy to recharge."

Source: Queen Mary (15 July 2021)

ROBOT

Contact-aware robot design



"Their system uses software to manipulate the design, simulate the robot doing a task, and then provide an optimization score to assess the design and control."

Source: MIT (19 July 2021)

ROBOTICS

University of Maryland Engineers 3D Printed A Soft Robotic Hand That Can Play Nintendo

"The feat demonstrates a promising innovation in the field of soft robotics, which centers on creating new types of flexible, inflatable robots that are powered using water or air rather than electricity"

Source: UNIVERSITY OF MARYLAND (16 July 2021)

WEARABLES

Wearable Sensors With Wide-Ranging Strain Sensitivity

"Some of these sensors can detect high-level (40-100%) strains, such as those associated with the movements of fingers and limb joints, others detect mid-level (10-40%) strains, as found in swallowing and facial movements and still others are sensitive to low-level (<1%-10%) strains observed in wrist pulses and vocal cord vibrations."

Source: TERASAKI INSTITUTE FOR BIOMEDICAL INNOVATION (15 July 2021)

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