SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Weekly Discovery

We SHARE to inspire and ignite ideas!

27 February – 3 March 2023

AI

Using The Power Of Artificial Intelligence, New Open-Source Tool Simplifies Animal Behavior Analysis

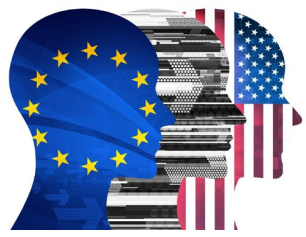
"A team from the University of Michigan has developed a new software tool to help researchers across the life sciences more efficiently analyze animal behaviors.

The open-source software, LabGym, capitalizes on artificial intelligence to identify, categorize and count defined behaviors across various animal model systems."

Source: UMICH (23 February 2023)

AI

U.S. And EU Announce Plans To Develop AI Standards



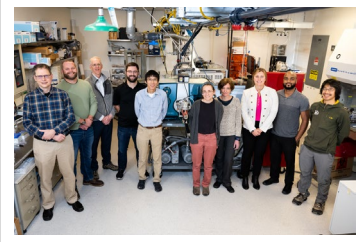
"In late January, civil servants in the United States and European Union promised that the two would join forces and support development of AI models in five socially critical areas, including health care and the climate.

However, their agreement has yet to translate into concrete action. "In my opinion, it's a statement of intent," says Nicolas Moës, a Brussels-based AI policy researcher at the Future Society think tank. "We do not have, yet, a lot of understanding of how that is going to be executed."

Source: IEEE (22 February 2023)

AIRPORTS

Improving The Speed And Safety Of Airport Security Screening

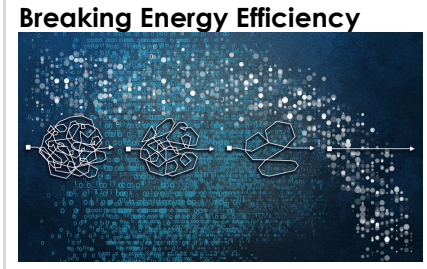


"Lincoln Laboratory seeks ways to build non-contact screening methods that can detect concealed explosives at airports… The team's research builds on the laboratory's ongoing work to create and use a mass spectrometer to help train bomb-sniffing dogs, a project that is supported by the Department of Homeland Security's (DHS) Science and Technology Directorate (S&T) Detection Canine Program. Wrobel and Ong are using the spectrometer to measure explosive vapors in order to understand the requirements for creating an operational explosive detection system. This system would work in tandem with the canine fleet to improve current airport security systems.."

Source: MIT (16 February 2023)

ELECTRONICS

A New Chip For Decoding Data Transmissions Demonstrates Record-Breaking Energy Efficiency

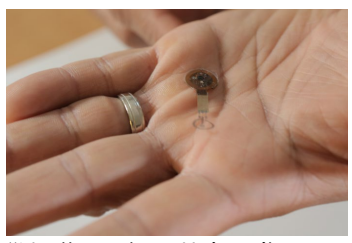


"This new decoder chip uses a universal decoding algorithm that MIT researchers previously developed, which can unravel any error correcting code. It has broken the record for energy-efficient decoding, performing between 10 and 100 times better than other hardware."

Source: MIT (22 February 2023)

HEALTHTECH

First Transient Electronic Bandage Speeds Healing By 30%



"Northwestern University researchers have developed a first-of-its-kind small, flexible, stretchable bandage that accelerates healing by delivering electrotherapy directly to the wound site."

Source: Eurekalert! (22 February 2023)

MATERIALS

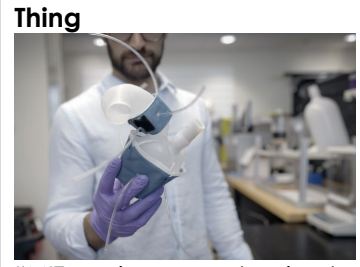
Shrinking From The Heat

"New textiles developed at Aalto University change shape when they heat up, giving designers a wide range of new options. In addition to offering adjustable aesthetics, responsive smart fabrics could also help monitor people's health, improve thermal insulation, and provide new tools for managing room acoustics and interior design."

Source: Aalto (21 February 2023)

MEDTECH

Custom, 3D-Printed Heart Replicas Look And Pump Just Like The Real Thing



"MIT engineers are hoping to help doctors tailor treatments to patients' specific heart form and function, with a custom robotic heart. The team has developed a procedure to 3D print a soft and flexible replica of a patient's heart. They can then control the replica's action to mimic that patient's blood-pumping ability."

Source: MIT (22 February 2023)

MEDTECH

How Smart Semiconductor Technology Will Improve Personal Health

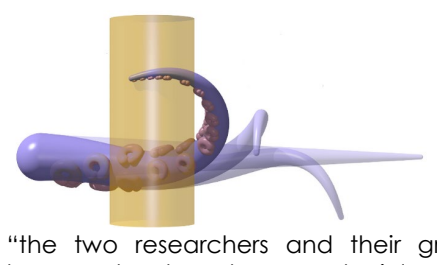
"Technology, and with it the Internet of Things (IoT) has the potential to support the healthcare sector across all levels, for example with predictive prevention and monitoring, in diagnosis and treatment as well as in follow-up care and support in daily life.

There are numerous health and fitness devices able to track key health markers, such as a user's heart rate or breathing patterns, that may afford users greater awareness of their health and allow them to make pro-active decisions regarding their health and well-being."

Source: IEEE (23 February 2023)

ROBOTICS

Reaching Like An Octopus: A Biology-Inspired Model Opens The Door To Soft Robot Control

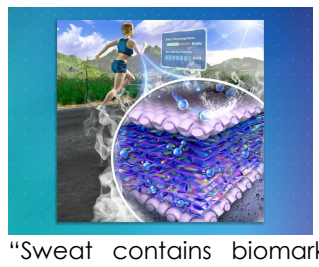


"the two researchers and their groups have developed a physiologically accurate model of octopus arm muscles. "Our model, the first of its kind, not only provides insight into the biological problem, but a framework for design and control of soft robots going forward," Mehta said."

Source: University of Illinois Urbana-Champaign (24 February 2023)

SENSOR

Superhydrophobic Biosensor Could Measure Sweat Vapors On The Body

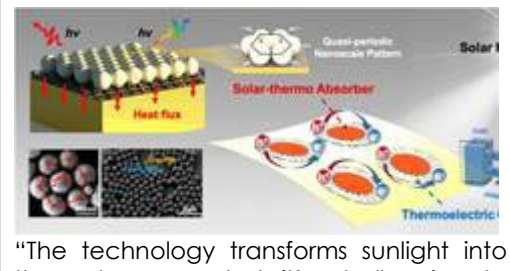


"Sweat contains biomarkers that help doctors make health diagnoses. Wearable sensors can be used to monitor a person's perspiration rate and provide information about the skin, nervous system activity and underlying health conditions. But not all sweat is created equal, and some cannot be measured with current sensors. A newly developed superhydrophobic biosensor could be used as a diagnostic tool to detect such types of sweat."

Source: PENN STATE (23 February 2023)

SOLAR

Nanoparticles Self-Assemble To Harvest Solar Energy



"The technology transforms sunlight into thermal energy, but it's challenging to suppress energy dissipation while maintaining high absorption. Existing solar energy harvesters that rely on micro- or nanoengineering don't have sufficient scalability and flexibility, and will require a novel strategy for high-performance solar light capture while simultaneously simplifying fabrication and reducing costs."

Source: Eurekalert! (21 February 2023)

SUSTAINABILITY

Plastic Upcycling To Close The Carbon Cycle

"Petroleum-based plastic waste is an untapped resource that can serve as the starting material for useful durable materials and for fuels. More than half of the 360 million tons of plastics produced globally each year are the plastics targeted in this study. But looking at a mountain of plastic and seeing its value requires an innovator's mindset, a chemist's ingenuity, and a realist's understanding of the economics involved. These scientists are trying to change the dynamic by applying their expertise in efficiently breaking chemical bonds."

Source: EUREKALERT (23 February 2023)