

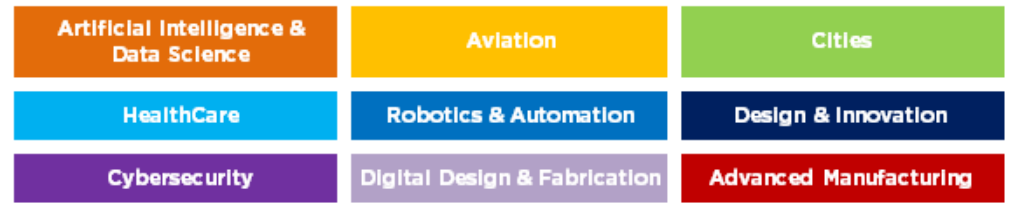
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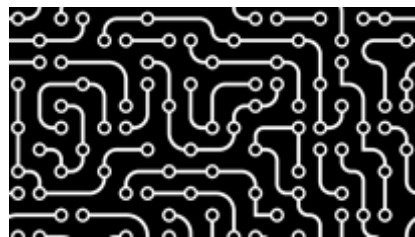
13 - 17 December 2021

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AI
AI Models Microprocessor Performance In Real-Time



Computer engineers at Duke University have developed a new AI method for accurately predicting the power consumption of any type of computer processor more than a trillion times per second while barely using any computational power itself. Dubbed APOLLO, the technique has been validated on real-world, high-performance microprocessors and could help improve the efficiency and inform the development of new microprocessors.

Source: [DUKE UNIVERSITY](#) (10 December 2021)

AI
Development Of A Versatile, Accurate AI Prediction Technique Even With A Small Number Of Experiments



Development of an AI technique capable of improving the prediction accuracy. "NIMS, Asahi Kasei, Mitsubishi Chemical, Mitsui Chemicals and Sumitomo Chemical have used the chemical materials open platform framework to develop an AI technique capable of increasing the accuracy of machine learning-based predictions of material properties (e.g., strength, brittleness) through efficient use of material structural data obtained from only a small number of experiments. This technique may expedite the development of various materials, including polymers."

Source: [NATIONAL INSTITUTE FOR MATERIALS SCIENCE, JAPAN](#) (10 December 2021)

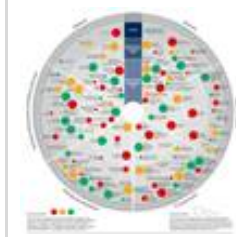
ARCHITECTURE
Coastal Design: The New Waterfront Parks Making Waves



"Between rising water levels and global migration to cities, architects and designers need to critically reimagine the relationship between coastal landscapes and public space. Cities are facing entirely new risks and environmental conditions. Resiliency, infrastructure, and ecology are increasingly common terms, reflecting the growing demand to address the spatial and formal challenges faced by cities worldwide. Rethinking boundaries and edges, designers have unique opportunities to help shape public understanding of these conditions through waterfront parks."

Source: [Archdaily](#) (7 December 2021)

DATA ANALYTICS
Over 100 Data and Analytics Predictions Through 2025



"The digital business future provides organizations with nearly unlimited possibilities to create business value. Increasingly, data and analytics have become a primary driver of business strategy, and the potential for data-driven business strategies."

Source: [Gartner](#) (2021)

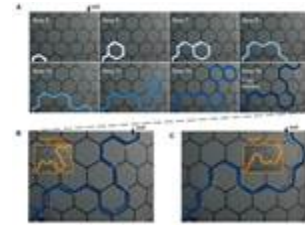
HEALTHCARE
Computer-, Smartphone-Based Treatments Effective At Reducing Symptoms Of Depression



"Computer- and smartphone-based treatments appear to be effective in reducing symptoms of depression, and while it remains unclear whether they are as effective as face-to-face psychotherapy, they offer a promising alternative to address the growing mental health needs spawned by the COVID-19 pandemic, according to research published by the American Psychological Association."

Source: [APA](#) (13 December 2021)

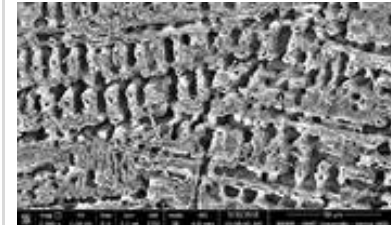
MACHINE LEARNING
Human-Like Brain Helps Robot Out Of A Maze



"A maze is a popular device among psychologists to assess the learning capacity of mice or rats. But how about robots? Can they learn to successfully navigate the twists and turns of a labyrinth? Now, researchers at the Eindhoven University of Technology (TU/e) in the Netherlands and the Max Planck Institute for Polymer Research in Mainz, Germany, have proven they can. Their robot bases its decisions on the very system humans use to think and act: the brain."

Source: [EINDHOVEN UNIVERSITY OF TECHNOLOGY](#) (10 December 2021)

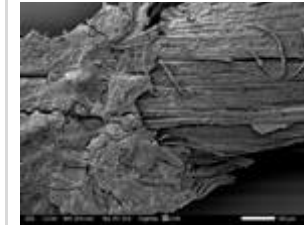
MATERIALS
New Copper Surface Eliminates Bacteria In Just Two Minutes



"A new surface that kills bacteria more than 100 times faster and more effectively than standard copper could help combat the growing threat of antibiotic-resistant superbugs."

Source: [RMIT](#) (13 December 2021)

MATERIALS
Studying The Fabrics Of The Past To Understand The Ageing Of The Eco-Materials Of The Future



"This work provides valuable information on the behaviour and performance evolution of natural fibres. It is both useful for the design of robust eco-materials that will last over time, but also provides valuable information on the state of conservation of historical objects. While this work focuses on flax, the method is also applicable to other fibres used throughout history, including hemp, used for rope and ship sails."

Source: [NATIONAL RESEARCH INSTITUTE FOR AGRICULTURE, FOOD AND ENVIRONMENT](#) (10 December 2021)

MEDICAL DEVICES
Nerve Stimulation May Be A 'Whole New Way' of Treating Stroke Implantable Device Boosts Blood Flow To Aid In Stroke Recovery, But Questions Linger Over Trial Data



"In the immediate aftermath of a stroke, time is of the essence. Doctors need to restore blood supply to the affected brain area as quickly as possible...A new neurostimulation device could help. By electrically tickling a cluster of nerve cells located just behind the nose, the Ischemic Stroke System (ISS500 for short) is designed to promote the release of neurotransmitters and other signaling molecules that enhance blood circulation to the brain."

Source: [IEEE Spectrum](#) (14 December 2021)

ROBOTICS
Grip Or Slip; Robots Need A Human Sense Of Touch



Researchers from Delft University of Technology have, together with French and Australian colleagues, demonstrated that a (radial) strain of the skin of the fingertip is involved in the perception of slipperiness during initial contact. Robotics could use this information, for instance to improve prosthetics and grippers.

Source: [DELFT UNIVERSITY OF TECHNOLOGY](#) (10 December 2021)

SUPPLY CHAIN
Traceability: The Next Supply Chain Revolution



"It goes beyond sustainability. Traceability can help companies improve efficiency, resilience, and competitiveness."

Source: [BAIN & Company](#) (September 2021)

TIME CRYSTAL
What's a Time Crystal? And How Do Google Researchers Use Quantum Computers To Make Them?



"FIRST CONCEIVED OF A DECADE OR SO AGO, a time crystal is a new kind of matter that bears an uncanny resemblance to a perpetual motion machine. Its parts can theoretically move in a repeating cycle without consuming energy for eternity, like a watch that runs forever without any batteries."

Source: [IEEE Spectrum](#) (9 December 2021)