

Weekly Discovery

We SHARE to inspire and ignite ideas!

20 – 24 December 2021

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Artificial Intelligence & Data Science	Aviation	Cities
HealthCare	Robotics & Automation	Design & Innovation
Cybersecurity	Digital Design & Fabrication	Advanced Manufacturing

ARCHITECTURE
Dezeen's Top 10 Chinese Architecture Projects Of 2021



"At the end of yet another big year for Chinese architecture, Dezeen's China editor Christina Yao continues our review of 2021 by picking out 10 of the most impressive projects completed in the past 12 months."

Source: [Dezeen](#) (17 December 2021)

ARTIFICIAL INTELLIGENCE
Artificial Intelligence Accurately Predicts Who Will Develop Dementia In Two Years



"Using data from more than 15,300 patients in the US, researchers found that a form of artificial intelligence called machine learning can accurately tell who will go on to develop dementia."

Source: [University of Exeter](#) (16 December 2021)

BATTERY
MIT Engineers Produce the World's Longest Flexible Fiber Battery



"The rechargeable battery can be woven and washed, and could provide power for fiber-based electronic devices and sensors."

Source: [EurekaAlert](#) (20 December 2021)

DATA STORAGE
Magnetic 'Hedgehogs' Could Store Big Data in A Small Space



"Atomic-scale magnetic patterns resembling a hedgehog's spikes could result in hard disks with massively larger capacities than today's devices, a new study suggests. The finding could help data centers keep up with the exponentially increasing demand for video and cloud data storage."

Source: [Ohio State University](#) (17 December 2021)

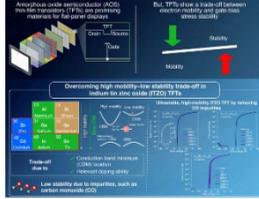
DIGITAL ASSETS
Bitcoin, NFT's, and the Metaverse: Reflecting on the Year of Digital Real Estate and Design



"Imagine if a few years ago you woke up to the news that someone paid more than one million dollars for three plots of digital land next to famed rapper Snoop Dogg's digital mansion. You'd probably ask yourself, "What is digital real estate, and why would someone pay for that?" Over the past year, there's been a rush to buy properties, art, and land- but all of it exists in a virtual world called the metaverse."

Source: [ARCHDAILY](#) (20 December 2021)

DISPLAY TECHNOLOGY
Fabricating Stable, High-mobility Transistors for Next-generation Display Technologies



"The trade-off between carrier mobility and stability in amorphous oxide semiconductor-based thin film transistors (TFTs) has been finally overcome by researchers from Tokyo Institute of Technology (Tokyo Tech) in an ingeniously fabricated indium tin zinc oxide TFT."

Source: [Tokyo Institute of Technology](#) (16 December 2021)

ERGONOMICS
Using Ergonomics To Help Reduce Pain From Technology Use



"The use of smartphones, tablets and laptops has become commonplace throughout the world and has been especially prevalent among college students...With the increased use of these devices, especially smartphones, students tend to use a less-traditional workplace such as a couch or chair with no desk, leading to an increase in musculoskeletal disorders in that age group."

Source: [VitalRecord](#) (15 December 2021)

MATERIAL
New Smart-Roof Coating Enables Year-Round Energy Savings



"Scientists have developed an all-season smart-roof coating that keeps homes warm during the winter and cool during the summer without consuming natural gas or electricity. Research findings reported in the journal Science point to a groundbreaking technology that outperforms commercial cool-roof systems in energy savings."

Source: [Berkeley National Laboratory](#) (16 December 2021)

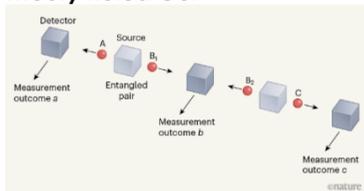
MICROROBOTS
Giving Bug-Like Bots A Boost



"Now, these researchers have pioneered a fabrication technique that enables them to build soft actuators that operate with 75 percent lower voltage than current versions while carrying 80 percent more payload. These soft actuators are like artificial muscles that rapidly flap the robot's wings."

Source: [MIT](#) (16 December 2021)

QUANTUM THEORY
Alternatives To Standard Quantum Theory Ruled Out



"Standard quantum theory contains square roots of negative numbers. But how essential are these 'imaginary' numbers? A way of disproving analogous theories that omit them has been proposed — and confirmed experimentally."

Source: [Nature](#) (15 December 2021)

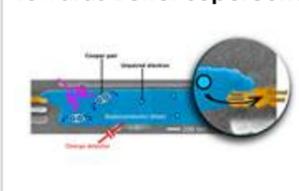
SOLAR
Perovskite Solar Cell with Ultra-Long Stability



"In the current issue of the renowned journal Nature Energy, researchers from the Helmholtz Institute Erlangen-Nuremberg of the Forschungszentrum Jülich have presented a variant that stands out for its special stability. In tests at elevated temperature and illumination over 1450 hours of operation, the perovskite-based cell retained 99 percent of its initial efficiency."

Source: [Jülich](#) (17 December 2021)

SUPERCONDUCTORS
Moments Of Silence Point the Way Towards Better Superconductors



"...Cooper pairs sometimes break, dissipating into two quasiparticles – unpaired electrons – that hamper the performance of superconductors. Scientists still don't know why Cooper pairs break, but the presence of quasiparticles introduces noise into technologies based on superconductors."

Source: [Aalto](#) (12 December 2021)

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