# Weekly Discovery

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30 SEPTEMBER 2019 - 4 OCTOBER 2019

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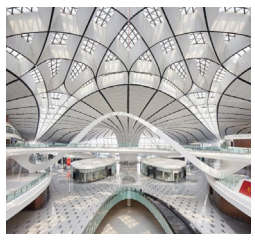
AIRPORT

### Zaha Hadid Architects' Giant Starfish-Shaped Airport Opens in Beijing



"Echoing principles within traditional Chinese architecture that organise interconnected spaces around a central courtyard, the terminal's design guides all passengers seamlessly through the relevant departure, arrival or transfer zones towards the grand courtyard at its centre ..."

Source: Dezeen (26 September 2019)

ARCHITECTURE

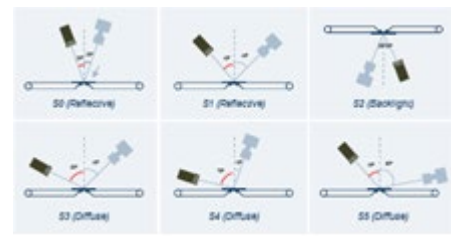
### The Creative Process of the Four Pioneers of Modern Architecture

"Le Corbusier, Mies van der Rohe, Frank Lloyd Wright, and Louis Kahn are four of the most notable architects to date. Read on to find out more on the creative process of these four leaders of the modern era, and why their projects and practices are still influential to our modern times."

Source: ArchDaily (27 September 2019)

ARTIFICIAL INTELLIGENCE

### Leveraging Artificial Intelligence for Materials Design and Production

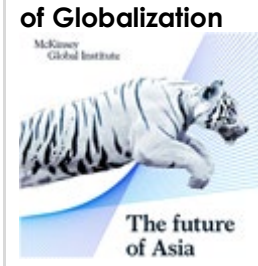


"Artificial intelligence (AI)- and machine learning (ML)-based technologies are being leveraged for materials research and are replacing experimental and simulation-based research approaches."

Source: Frost & Sullivan (27 September 2019)

ASIA

### The Future of Asia: Asian Flows and Networks Are Defining the Next Phase of Globalization




"The Asian Century has begun. Asia is the world's largest regional economy and, as its economics integrate further, it has the potential to fuel and shape the next phase of globalization."

Source: McKinsey & Company (September 2019)

AUTHENTICATION

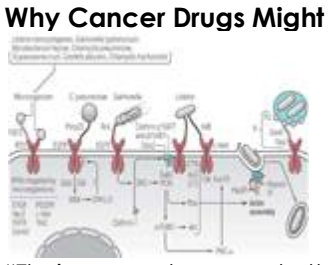
### Product Authentication at Your Fingertips

"... if water vapor in your breath or surrounding your fingertips revealed invisible patterns on commercial products—smartphones, laptops, expensive liquor—that verified the products' authenticity and aided anticounterfeiting efforts ..."

Source: Phys.org (1 October 2019)

BIOLOGY

### How Microbes Hack into Cells and Why Cancer Drugs Might Block Them



"Their research suggests that in the not-too-distant future it may be possible to cure infectious diseases with repurposed cancer drugs, medications that can function across a broad range of pathogens, eliminating the need for antibiotics, antivirals and antifungals."

Source: MedicalXpress (1 October 2019)

CITIES

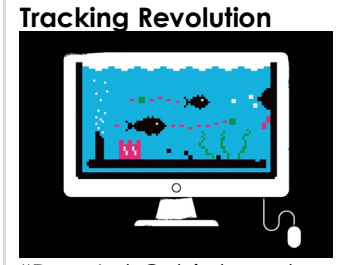
### Global Cities' AI Readiness Index

"Nowhere is the impact of this disruption more evident than in the world's cities, which not only provide an increasingly large population for technology deployment, but also represent increasingly important vigorous global competitive players: fighting for company headquarters, for talent, for investment, and for knowledge and financial resources."

Source: Oliver Wyman Forum (27 September 2019)

DEEP LEARNING

### Deep Learning Powers a Motion-Tracking Revolution



"DeepLabCut is based on software used to analyse human poses. Mathis' team adapted its underlying neural network to work for other animals with relatively few training data."

Source: Nature (30 September 2019)

ENERGY

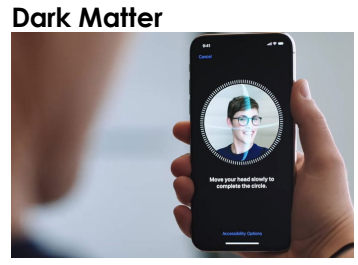
### Scientists Finally Found Superconductivity in Place They've Been Looking for Decades

"Modeling high-temperature superconductivity (HTS) remains exceptionally challenging. Scientists believe that the simplest model that captures HTS is the Hubbard model. However, proving definitively that the model supports superconductivity is challenging ... Now, scientists have finally discovered that the Hubbard model can be utilized to simulate and understand high-temperature superconductivity."

Source: Tech Explorist (30 September 2019)

FACIAL RECOGNITION

### How Facial Recognition Is Helping Astronomers Reveal the Secrets of Dark Matter



"Observing the areas around massive clusters of galaxies lets astronomers identify background galaxies which appear warped. By reverse-engineering these distortions they can then isolate where they believe the densest concentrations of matter, both visible and invisible, can be found."

Source: Digital Trends (29 September 2019)

MATERIALS SCIENCE

### An Artificial Skin That Can Help Rehabilitation and Enhance Virtual Reality

"EPFL scientists have developed a soft artificial skin that provides haptic feedback and has the potential to instantaneously adapt to a wearer's movements. Artificial skin could help rehabilitation and enhance virtual reality."

Source: EPFL (27 September 2019)

MATHEMATICS

### Using Math to Blend Musical Notes Seamlessly

"Now an MIT student has invented a novel algorithm that produces a portamento effect between any two audio signals in real-time that seamlessly merged various audio clips, such as a piano note gliding into a human voice, and one song blending into another."

Source: MIT News (27 September 2019)

NEW MATERIAL

### Gel-Like Fluid Designed to Prevent Wildfires

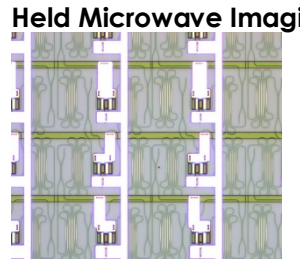
Source: Stanford Woods Institute for the Environment

"Scientists and engineers worked with state and local agencies to develop and test a long-lasting, environmentally benign fire-retarding material."
Watch the video here.

Source: Science Daily (30 September 2019)

OPTICAL PROCESSING

### New Chip Poised to Enable Hand-Held Microwave Imaging

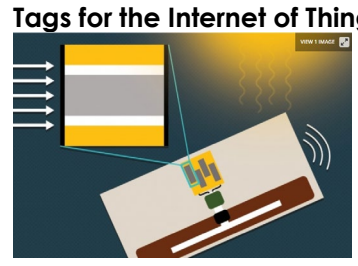


"Researchers shrink bulky imaging systems down to millimeter sized chip that could be used to see through walls or detect tumors."
Read more at Optica.

Source: OSA (26 September 2019)

RFID TECH

### MIT Developing Light-Powered RFID Tags for the Internet of Things

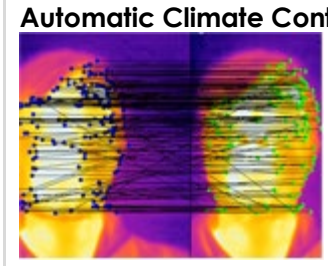


"When the technology is matured, the team sees the new tags as a way to monitor the environment for months or even years before they deteriorate too much to function. They could be used not only for temperature monitoring, but also cargo tracking, soil monitoring, and energy use monitoring as they expand to include the ability to measure humidity, pressure, vibration, and pollution."

Source: New Atlas (29 September 2019)

SENSORS

### Not Too Hot, Not Too Cold: An Automatic Climate Control System



"Using remote heat-sensing, researchers are creating a system that autonomously controls the temperature within cars and homes."

Source: IEEE Spectrum (27 September 2019)