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2020 FORECAST

Predictions 2020: On the Precipice of Far-Reaching Change

"Adapt. Drive growth. Read our predictions on what will take place in 2020 and learn how to capitalize on this potential energy to gain a competitive edge."

Source: Forrester (2019)

5G

5G in Asia-Pacific, Forecast to 2025

"Frost & Sullivan has published a study documenting the activities undertaken by operators in the region in terms of 5G … The study also contains research on the progress of 5G implementation of major participants in the region. Our research has found that countries such as South Korea, Japan, and China are leading APAC in terms of 5G research and development, and most operators are looking for additional revenue streams that 5G can introduce."

Source: Frost & Sullivan (22 November 2019)

ALGORITHMS

Stanford, UMass Amherst Develop Algorithms That Train AI to Avoid Specific Misbehaviors

"Robots, self-driving cars and other intelligent machines could become better-behaved thanks to a new way to help machine learning designers build AI applications with safeguards against specific, undesirable outcomes such as racial and gender bias."

Source: Stanford News (21 November 2019)

ARCHITECTURE

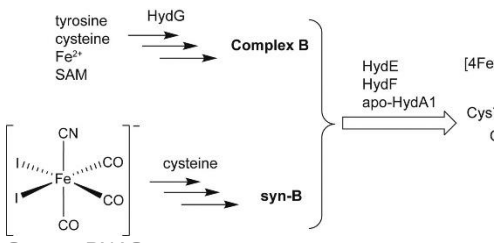
The Digital in Architecture — Then, Now and in the Future

"From augmented reality for construction to 3D printing architectural models to using artificial intelligence within the design process, it is increasingly rare that an architectural project does not use some kind of digital tool either for design or fabrication. This is also the case throughout how we experience the built environment."

Source: Space10 (19 November 2019)

BIOCHEMISTRY

New Study Looks to Biological Enzymes as Source of Hydrogen Fuel



Source: PNAS

"This new development may help clear the path for the hydrogen fuel industry to move into a larger role in the global push toward more environmentally friendly energy sources."
Read more at PNAS.

Source: Science Daily (25 November 2019)

BUILDINGS

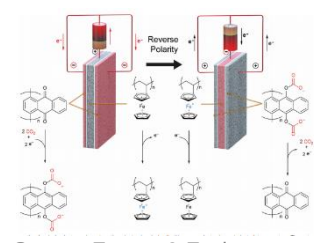
Poorly Designed Acoustics in Schools Affect Learning Efficiency and Well-Being

"In order to reduce external noise input, it is ideal to acoustically insulate the building elements, which means increasing the mass of walls and slabs and investing in more watertight frames. Mass in a construction is traditionally perceived as the best provider of acoustic insulation."

Source: ArchDaily (25 November 2019)

CO^2 CAPTURE

Scientific Breakthrough: MIT Solves Two Huge Energy Problems



Source: Energy & Environmental Science

"Scientists from the Massachusetts Institute of Technology have published a paper that details the mechanism of a battery device that can suck out the carbon dioxide from the air, store it, and then release it for sequestration or storage and subsequent sale: the oil and gas industry uses CO^2 to improve well output."

Source: Nasdaq (26 November 2019)

FINTECH

Fintech in APAC: Digital Payment Platforms

"Fintech is rapidly transforming financial products and services around the world. The Asia Pacific region provides the best example of this revolution. Discover the fundamental changes to the payments industry by digital payment platforms; learn potential implications of digital and virtual banking; and explore the impact on traditional financial institutions."

Source: Euromonitor (12 November 2019)

GENERATIVE DESIGN

Airbus Is Making Planes Lighter with Technology We Barely Understand

"Airbus has partnered with the design and engineering software company Autodesk to design planes of the future in a new way. The two companies are using a tool called generative design—basically, programming software with all sorts of physical parameters and commanding it to develop a design around those rules."

Source: Fast Company (20 November 2019)

HEALTHCARE

Using Artificial Intelligence to Analyze Placentas

"Now, a team of researchers has developed a novel solution that could produce accurate, automated and near-immediate placental diagnostic reports through computerized photographic image analysis."

Source: MedicalXpress (25 November 2019)

MEMORY DEVICE

Scientists Develop Small, Fast, and Highly Energy-Efficient Memory

"The proposed device, which has an extremely low energy consumption, may help in the development of more energy-efficient and faster random-access memories (RAMs), which are ubiquitous in modern computers."

Source: New Electronics (25 November 2019)

PAVILION

The 'Climate-Correcting Machine' Creates a Constant Spring-Like Environment

"Described as a 'climate-correcting machine', this pavilion designed by Obra Architects offers spring-like conditions throughout the year … The structure has been outfitted with 150 'eyes,' each a 90 centimeter-diameter polycarbonate plastic semi-sphere, ambiguously separating interior and exterior, while letting in sunlight to help keep the space warm."

Source: designboom (26 November 2019)

ROBOTICS

How to Design and Control Robots with Stretchy, Flexible Bodies

"MIT researchers have invented a way to efficiently optimize the control and design of soft robots for target tasks, which has traditionally been a monumental undertaking in computation."

Source: MIT News (22 November 2019)

SELF-ASSEMBLIES

Self-Assembling System Uses Magnets to Mimic Specific Binding in DNA

"To make small systems that essentially build themselves, the researchers took inspiration from DNA origami, in which atomic-scale DNA strands can be folded into two- and three-dimensional structures through a process called complementary base pairing, where specific nucleotides bind to one another: A to T and G to C. "

Source: Cornell (22 November 2019)

SEMICONDUCTOR

A Record-Setting Transistor

"Many of the technologies we rely on, from smartphones to wearable devices and more, utilize fast wireless communications. What might we accomplish if those devices transmitted information even faster?"
Read more at Applied Physics Express.

Source: TechXplore (26 November 2019)

SENSORS

Wearable Sweat Sensor Detects Gout-Causing Compounds

"Researchers describe a mass-producible wearable sensor that can monitor levels of metabolites and nutrients in a person's blood by analyzing their sweat. Previously developed sweat sensors mostly target compounds that appear in high concentrations, such as electrolytes, glucose, and lactate."

Source: Caltech (25 November 2019)

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