

# Weekly Discovery

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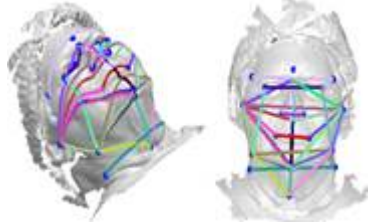
27 APRIL 2020 – 1 MAY 2020

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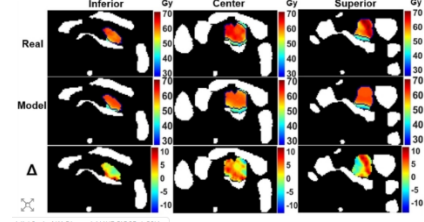
## 3D SCANNING Study Suggests 3D Face Photos Could Be A Sleep Apnea Screening Tool



"Using 3D photography, the study found that geodesic measurements — the shortest distance between two points on a curved surface — predicted with 89 percent accuracy which patients had sleep apnea. Using traditional 2D linear measurements alone, the algorithm's accuracy was 86 percent."

Source: [AASM](#) (23 April 2020)

## ARTIFICIAL INTELLIGENCE AI can enhance MRI-guided radiation therapy plans



"Artificial intelligence (AI) algorithms can rapidly predict 3D dose distributions for online adaptive MRI-guided radiation therapy plans, enabling swift optimization and quality assessment of these treatments"

Source: [Physics World](#) (27 April 2020)

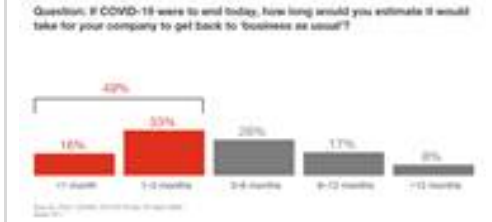
## BLOCKCHAIN How the Pandemic Is Pushing Blockchain Forward



"The platform, created by the enterprise blockchain firm HACERA, aims to quickly and precisely detect Covid-19 carriers and infection hotspots around the world. MiPasa will securely share information among individuals, hospitals, and authorities that will aid in public health analysis."

Source: [Harvard Business Review](#) (27 April 2020)

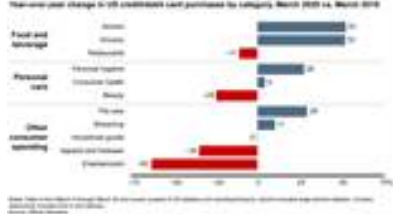
## BUSINESS PwC's COVID-19 CFO Pulse



"PwC is tracking sentiment and priorities about the COVID-19 outbreak among finance leaders. We surveyed 871 CFOs from 24 countries or territories during the week of 20 April. This survey is our third look across the globe; we continue to add territories and companies to offer a robust view of how the crisis is affecting people and businesses worldwide."

Source: [PWC](#) (28 April 2020)

## BUSINESS What to Do Now That Your Demand Forecast Is Wrong



"Covid-19 is what's known as a black swan event—something both unexpected and extreme relative to historical norms. Due to the crisis, most demand forecast models in place today are no longer accurate. These forecasts underpin many of the essential processes and functions that create value in an enterprise. As a result, most critical operational plans suddenly don't fit the situation on the ground."

Source: [Bain & Company](#) (7 April 2020)

## CYBERSECURITY Cyberattack Can Steal Data Via Cooling Fan Vibrations



"Israeli researchers uncovered a novel way that hackers could steal sensitive data from a highly secured computer: by tapping into the vibrations from a cooling system fan. Read more [here](#)."

Source: [TechXplore](#) (24 April 2020)

## ENGINEERING Pumping Charged Particles onto Airplane Surfaces Could Reduce Lightning Strikes



"The data confirmed that ion flows (or "leaders") along the plane initiated lightning bolts—and that negatively charging the plane helped to prevent such discharges. The team is investigating how devices that pump ions onto the plane's surface could reduce polarization."

Source: [Scientific American](#) (May 2020)

## HEALTHCARE What Comes Next? A Surgeon's 3 Predictions For The Future Of Healthcare Design



"Healthcare will undergo a fundamental redesign centered around flexibility. In tangible terms, this could take place on multiple levels: inpatient nursing units could be designed with universal rooms that readily convert to support acute patients, entire segments of floors could be planned with segmented ventilation to allow for isolation units, and single-patient rooms could be designed to accommodate a second patient in the event of a crisis."

Source: [Fast Company](#) (22 April 2020)

## MACHINE LEARNING This Is How Algorithms Will Evolve Themselves



"Google believes a team of its computer scientists has come up with a new AutoML method that could automatically generate the best algorithm for a given task. The new research is outlined in a paper posted to the preprint server ArXiv. It's also been submitted to a scientific journal for review and could be published as early as June."

Source: [Popular Mechanics](#) (23 April 2020)

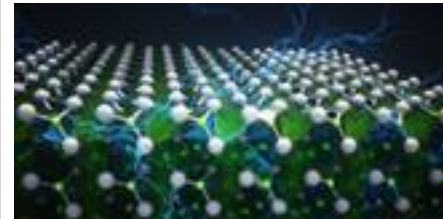
## MATERIALS SCIENCE Researchers develop double-layered paint that reflects heat



"A team of researchers from Columbia and Howard Universities in the U.S. and Peking University in China has developed a kind of colored double-layered paint that reflects heat. Read more in [Science Advances](#)."

Source: [Phys.Org](#) (27 April 2020)

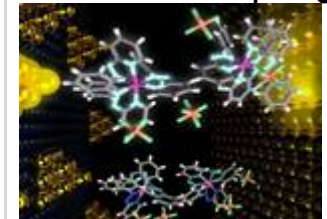
## NANOPHYSICS Researchers Discover Ferroelectricity At The Atomic Scale



"A team of researchers has managed to grow onto silicon an ultrathin material that demonstrates a unique electrical property called ferroelectricity. Read more in [Nature](#)."

Source: [Phys.Org](#) (23 April 2020)

## PHYSICS Brain-Inspired Organic Memory Devices for Flexible, Wearable, Personalized Computing



"Brain-inspired electronics with organic memristors offer an energy and cost-efficient platform for various AI and IoT applications."

Source: [SciTechDaily](#) (28 April 2020)

## PRODUCT DESIGN Build a Sophisticated Microscope Using Lego, 3D Printing, Arduinos, and a Raspberry Pi



"The imaging microscope design uses a potpourri of technologies and materials, including Lego pieces for its main structural components and 3D-printed cogs and racks to drive its moving parts. Stepper motors, which allow for precise movements, are powered by a motor driver board and controlled by an Arduino board. A Raspberry Pi Zero and Pi camera module are used to capture images."

Source: [IEEE Spectrum](#) (24 April 2020)

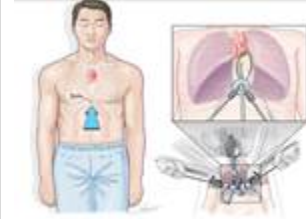
## ROBOTS Mass-produced microscopic sensors see the light



"Cornell researchers who build nanoscale electronics have developed microsensors so tiny, they can fit 30,000 on one side of a penny."

Source: [Cornell](#) (19 April 2020)

## ROBOTICS Korean Doctors Report 1st Single-Port Robotic Chest Surgery



"Two Korean physicians have successfully operated 13 single-port and robot-assisted thymectomy cases through the upper abdominal area and reported the results for the first time in the world."

Source: [Korea Biomedical Review](#) (28 April 2020)

## VIRTUAL REALITY New Device Simulates Feel of Walls, Solid Objects in Virtual Reality



"A new device developed at Carnegie Mellon University, however, uses multiple strings attached to the hand and fingers to simulate the feel of obstacles and heavy objects."

Source: [EurekAlert!](#) (28 April 2020)