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15 JULY 2019 - 19 JULY 2019

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

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3D PRINTING
Robots 3D-Print Nine Different Concrete Columns Without Any Formwork

"A 3D printing process developed at ETH Zurich has been used to produce nine individually designed concrete columns. the fabrication process allows the production of concrete elements without the need for any formwork."

Source: designboom (15 July 2019)

APPS
Automated API-Usage Update for Android Apps

"... OS and API can change frequently, developers must quickly update their apps to ensure that the apps behave as intended with new API and OS versions ... Overall, our technique was able to update 85% of the API changes considered and automatically validate 68% of the updates performed."

Source: ACM Digital Library (15 July 2019)

ARCHITECTURE
10 Innovative Ramp Solutions in Plans and Sections

"Ramps have become synonymous with accessibility because they are often designed to enable access for people with impaired mobility, however, in many cases, they also end up becoming the guiding concept for various projects, by introducing a different rhythm to the building."

Source: Arch Daily (15 July 2019)

ARTIFICIAL MUSCLES
A New Twist on Artificial Muscles
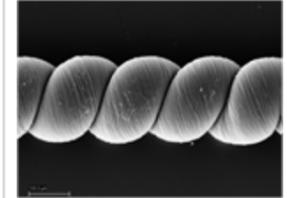
"This week in *Science*, several teams of researchers present studies describing advances in making small artificial muscles - all of which use tiny twisted fibers to store and release energy. The fibers could be employed in everything from miniature robots to valves in medical devices."

Source: Scientific American (11 July 2019)

AUTOMATION
Automated System Generates Robotic Parts for Novel Tasks

"An automated system developed by MIT researchers designs and 3-D prints complex robotic parts called actuators that are optimized according to an enormous number of specifications. In short, the system does automatically what is virtually impossible for humans to do by hand."

Source: MIT News (12 July 2019)

DATA PROCESSING
UCI Electrical Engineering Team Develops 'Beyond 5G' Wireless Transceiver
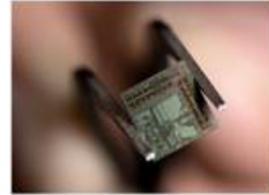
"... Irvine boosts radio frequencies into 100-gigahertz territory, quadruple the speed of the upcoming 5G, or fifth-generation, wireless communications standard."

Source: EurekAlert! (16 July 2019)

DATA STORAGE
Storing Data in Music
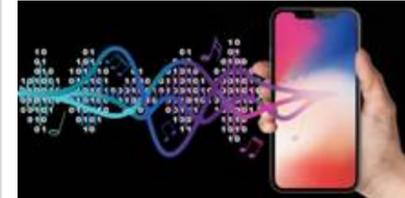
"Researchers at ETH Zurich have developed a technique for embedding data in music and transmitting it to a smartphone. Since the data is imperceptible to the human ear, it doesn't affect listening pleasure. This could have interesting applications in hotels, museums and department stores."

Source: ETH (9 July 2019)

INNOVATION
35 Innovators Under 35 2019

"In these profiles you'll find people employing innovative methods to treat disease, to fight online harassment, and to create the next big battery breakthrough. You'll find people using AI to better understand neurological disorders and to make cities more livable."

Source: MIT Technology Review (July 2019)

INTERNET-OF-THINGS
Decentralized Access Controls for IoT Device Networks

"While access management technologies do exist in the IoT, they are based on centralized models that bring technical limitations on the global scale. To address this issue, a team at Ericsson Research proposed a new architecture for arbitrating roles and permissions in the IoT."

Source: IEEE (11 June 2019)

MATERIALS SCIENCE
Bricks Made from Loofah and Charcoal Could Promote Biodiversity in Cities

"The bricks, named 'Green Charcoal', contain more air pockets than a standard concrete block, making them up to 20 times more porous."

Source: Dezeen (14 July 2019)

OPTICS
Flexible Fiber Optics for Wearable Temperature Sensing
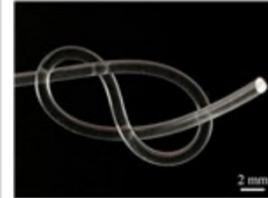
"Researchers at China's Tsinghua University have demonstrated a flexible, stretchable optical fiber that uses light signals from embedded upconversion nanoparticles to act as a biocompatible temperature sensor."

Source: Optics & Photonics News (14 July 2019)

RAPID PROTOTYPING
The New Age of Rapid Prototyping

"Rapid prototyping through additive manufacturing is becoming ever more rapid, accurate, affordable, and functional in a world that demands faster design response."

Source: Machine Design (25 June 2019)

ROBOTICS
Designing Minimal and Scalable Insect-Inspired Multi-Locomotion Millirobots

"Here we demonstrate an autonomous multi-locomotion insect-scale robot (millirobot) inspired by trap-jaw ants that addresses the design and scalability challenges of small-scale terrestrial robots."

Source: Nature (10 July 2019)

ROBOTICS
Top 10 Robotics Stories During 1st Half of 2019

"Here are *The Robot Report*'s picks for the top 10 robotics stories during the first half of 2019. Please share your thoughts below via the survey or the comments section."

Source: The Robot Report (9 July 2019)

TRANSPORTATION
Infrastructure Barriers to the Elevated Future of Mobility

"Are cities ready with the infrastructure needed for urban air transportation? ... Viable electric vertical takeoff and landing (eVTOL) aircraft alone won't elevate the new mobility ecosystem. Cities and suburbs will need infrastructure on the ground and over the airwaves: landing sites, aircraft traffic management systems, and more."

Source: Deloitte (30 May 2019)

URBAN PLANNING
Why Urban Planners Should Pay Attention to Restaurant-Review Sites

"Indeed, using online restaurant data, the researchers say, they can effectively predict a neighborhood's daytime population, night time population, the number of businesses located in it, and the amount of overall spending in the neighborhood."

Source: MIT News (15 July 2019)

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