

Weekly Discovery

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22 JULY 2019 - 26 JULY 2019

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

ARCHITECTURE
Cooler, Smarter HDB Flats Possible in Future Under New Research Tie-Ups



"As temperatures rise, residents in Housing Board flats could have cooler homes with integrated smart systems - without having to turn on the air-conditioner or switches."

Source: [The Straits Times](#) (23 July 2019)

ART & TECHNOLOGY
Superspace Designs Energy-Harvesting Balloons for Abu Dhabi



"The system consists of a group of solar balloons woven with solar fabric, creating a shaded park during the day while tracking and harvesting solar energy. At night, the system settles down to become a kinetic light art show."

Source: [Arch Daily](#) (18 July 2019)

AVIATION
KLM Royal Dutch Airline's Flying-V Concept Is an Important Step Towards Sustainable Aviation



"Presented as a solution to the increasing need for more sustainable aviation options, KLM Royal Dutch Airline has revealed a design for its 'Flying V' sustainable aircraft that will use 20% less fuel than the popular Airbus A350."

Source: [Inhabitat](#) (23 July 2019)

BIOLOGY
New Method to Study Insect Muscles Developed



"Researchers ... have found a way to visualize the muscles using Micro-level computed tomography (microCT) scanning. Using the new method, the researchers studied one type of indirect flight muscles called dorsal longitudinal muscles and found that their volume increased with age but differently in male and female."

Source: [Techexplorist](#) (20 July 2019)

CONTROL SYSTEMS
Smart Irrigation Model Predicts Rainfall to Conserve Water



"A predictive model combining information about plant physiology, real-time soil conditions and weather forecasts can help make more informed decisions about when and how much to irrigate."

Source: [Cornell Chronicle](#) (16 July 2019)

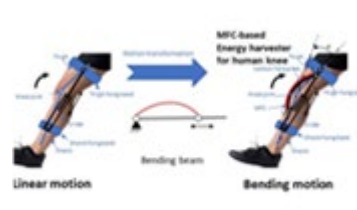
DATA ANALYTICS
Scientists Use Phone Movement to Predict Personality Types



"Researchers have used data from mobile phone accelerometers - the tiny sensors tracking phone movement for step-counting and other apps - to predict people's personalities."

Source: [Science Daily](#) (24 July 2019)

ENERGY HARVESTER
Harvesting Energy from the Human Knee



"An energy harvester is attached to the wearer's knee and can generate 1.6 microwatts of power while the wearer walks without any increase in effort. The energy is enough to power small electronics like health monitoring equipment and GPS devices."

Source: [Applied Physics Letters](#) (17 July 2019)

GLOBAL TRENDS
Fortune Global 500



"The world's 500 largest companies generated \$32.7 trillion in revenues and \$2.15 trillion in profits in 2018. Together, this year's Fortune Global 500 companies employ 69.3 million people worldwide and are represented by 34 countries."

Source: [Fortune](#) (22 July 2019)

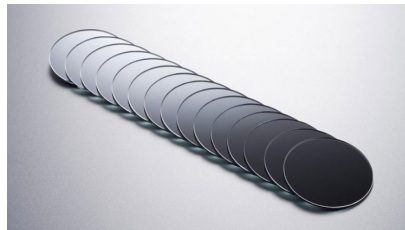
HEALTHCARE
Filling Hospitals with Art Reduces Patient Stress, Anxiety and Pain



"Research from Chelsea and Westminster Hospital has found that placing art in the NHS trust has helped to improve patient wellbeing, decrease hospital stays and reduce anxiety, depression and pain."

Source: [Design Week](#) (23 July 2019)

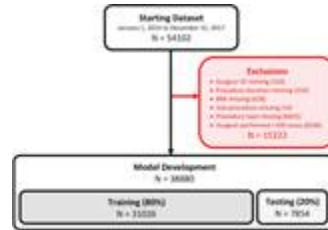
INNOVATION
How New Versions of Products Spread Differently Than Entirely New Products



"But our research on phones, cars, and apps shows that when a product is not new but instead updates or replaces an existing product (which we call replacement innovations), the growth curve is very different, and managers making estimates around exponential growth are setting unrealistic expectations."

Source: [Harvard Business Review](#) (17 July 2019)

MACHINE LEARNING
Improving Operating Room Efficiency: A Machine Learning Approach to Predict Case-Time Duration



"Accurate estimation of operative case-time duration is critical for optimizing operating room utilization. Current estimates are inaccurate and prior models include data not available at the time of scheduling."

Source: [Journal of the American College of Surgeons](#) (13 July 2019)

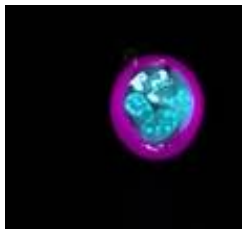
MARS
Scientists Develop "Greenhouse Shields" to Grow Food on Mars



"Researchers at Harvard University have devised a way to terraform Mars by placing sheets of silica aerogel on the planet's surface, which would warm it up to make it suitable for growing plants."

Source: [Dezeen](#) (16 July 2019)

MATERIALS SCIENCE
Thin Microgels Encapsulate and Protect Therapeutic Cells



"Researchers at Harvard's Wyss Institute have developed a way of packaging individual cells within thin-walled hydrogels, which can then be intravenously injected to take on therapeutic tasks ... the resulting encapsulated cells can be frozen and thawed later when they actually have to be used in a procedure, greatly simplifying the clinical workflow."

Source: [Medgadget](#) (19 July 2019)

SMART FABRICS
Rosie Broadhead Weaves Bacteria into Clothing Fibres to Create a Second Skin



"By encapsulating live bacteria into the fibres of a leotard-like garment, the designer hopes to create a new interaction between fabric and skin through the use of probiotic technology."

Source: [Dezeen](#) (23 July 2019)

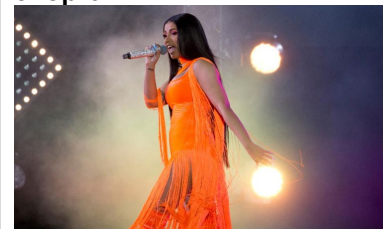
USER INTERFACE
Flexible User Interface Distribution for Ubiquitous Multi-Device Interaction



"KAIST researchers have developed mobile software platform technology that allows a mobile application (app) to be executed simultaneously and more dynamically on multiple smart devices."

Source: [KAIST](#) (20 July 2019)

VIRTUAL REALITY
VR App Puts Thousands of Festival Fans in Front Row with Cardi B and Skepta



"It aims to give people an audience-like experience without actually having to stand in the audience - something that's likely to prove popular with armchair viewers who don't enjoy the sweaty, smelly and crowded festival experience."

Source: [Forbes](#) (22 July 2019)