

# Weekly Discovery

We SHARE to inspire and ignite ideas!

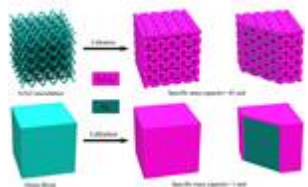
30 July 2018 - 3 August 2018

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

## 3D PRINTING 3D Printing the Next Generation of Batteries



"Researchers have developed a new method of 3D printing battery electrodes that creates a 3D microlattice structure with controlled porosity. 3D printing this microlattice structure vastly improves the capacity and charge-discharge rates for lithium-ion batteries."

Source: [Carnegie Mellon University](#) (30 July 2018)

## ADDITIVE MANUFACTURING 'Smart' Machine Components Alert Users to Damage and Wear



"Scientists at the United Technologies Research Center and UConn used advanced additive manufacturing technology to create 'smart' machine components that alert users when they are damaged or worn."

Source: [University of Connecticut](#) (30 July 2018)

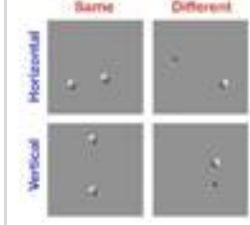
## AGEING Old Age - 10 Cutting-Edge Technologies for the Elderly



"Smart walking sticks...built-in gyroscopes can help notify family members should the user experience a fall ... Heart-rate sensors can be programmed to automatically call emergency services should abnormal cardiac activity be detected ..."

Source: Asian Scientist - The Aging Issue (Jul-Dec 2018) Available @ SUTD Library (Call Number Q80 ASI)

## ALGORITHMS Key Weakness in Modern Computer Vision Systems Identified



"Computers are great at categorizing images by the objects found with them, but they're surprisingly bad at figuring out when two objects in a single image are the same or different from each other. New research helps to show why that task is so difficult for modern computer vision algorithms."

Source: [Science Daily](#) (30 July 2018)

## ARCHITECTURE 10 Tiny Apartments Under 38 Square Meters and Their Axonometric Drawings



"Finding an efficient configuration for a small apartment is not an easy task. Basic housing programs should be distributed in minimal spaces without losing comfort. Below, we have made a selection of 10 apartments under 38 square meters to inspire you."

Source: [arch daily](#) (29 July 2018)

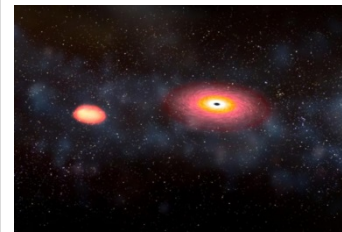
## BLOCKCHAIN New Blockchain Technology Applications Could Trace Animal Welfare, Stop Counterfeiting



"Imagine a world where everything you eat could be tracked from paddock to plate ... It begins with a unique microchip embedded into a product's label or packaging ... It tracks changes in temperature, location and even radiation levels."

Source: [ABC News](#) (30 July 2018)

## COSMOLOGY New X-Ray Technology Reveals Never-Before-Seen Matter Around Black Hole



"Japan and Sweden recently joined forces in an international project that demonstrates how gravity around the black hole affects the shape of the matter around it in binary system CYGNUS X-1. It is imperative to understand the relationship between gravity, black holes, and galaxies to uncover the mysteries of black holes."

Source: [Interesting Engineering](#) (29 July 2018)

## MATERIALS SCIENCE Niobium Tungsten Oxides for High-rate Lithium-ion Energy Storage



"A new group of materials called niobium tungsten oxides is said to possibly help battery performance with a faster charge and high-power output."

Source: [Nature](#) (25 July 2018)

## NEUROSCIENCE The Seventh Sense



"The immune system may qualify as a kind of surveillance organ that detects microorganisms in ... the body and informs the brain about them, much as our eyes relay visual information and our ears transmit auditory signals."

Source: Scientific American (August 2018) Available @ SUTD Library (Call Number Q1 SCI)

## OPTICAL COMPUTING All-Optical Computing Gets Another Arrow in Its Quiver



"Finland-based scientists managed to get their logic gate to perform AND, OR, NAND, and NOR binary logic functions—basic building blocks from which all other logic and mathematical functions can be built."

Source: [IEEE Spectrum](#) (27 July 2018)

## PRODUCT DESIGN The World's Most Beautiful Router Is Also a Task Lamp



"A new project by designer Alexandre Picciotto in conjunction with technology company Oledcomm will make you look at the design of data differently. Called the c-224, it's a lamp built specifically for shared tables at libraries."

Source: [Fast Company](#) (26 July 2018)

## SENSORS A New Kind of Spray Is Loaded with Microscopic Electronic Sensors



"Using tiny 2-D materials, researchers have built microscopic chemical sensors that can be sprayed in an aerosol mist."

Source: [Science News](#) (23 July 2018)

## SMART CITIES Smarter Cities with Smarter Data



"Singapore has the ambition to go further and integrate all transport data to deliver a comprehensive system that also covers buses and private vehicles, making journeys swifter and the streets safer. However, ERP systems are not capable of handling such large quantities of data, neither are they scalable or flexible enough to provide real time insights on the data collected."

Source: Entrepreneur's Digest (Jul / Aug 2018) Available @ SUTD Library (Call Number HB615 EN1)

## SOLAR ENERGY Book-Sized Solar Panels Could Power a Whole Home in New Breakthrough



Source: University of Exeter

"The new technique relies on 'funneling' the sun's energy more efficiently directly into power cells, such as solar panels or batteries."

Source: [Good News Network](#) (27 July 2018)

## TECHNOLOGY Museum and Cultural Heritage in the World of Digital Technology



"New technologies within the museum's space form a new relationship between the public and the cultural heritage objects, and offers new approach perspectives by reinforcing revisionist trends as far as the role and importance of the museum."

Source: [eCAADe](#) (19 September 2018)

## WATER MANAGEMENT Trends in Desalination & Water Reuse



"Over 300 Millions people in the World can drink water supplied by Desalination plants ... Sea water is growing faster than other sources ... Singapore is going to reach 100% WWR (World Water Use), but only a limited number of countries are concerned."

Source: [International Desalination Association](#) (2018)