SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Weekly Discovery

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2 DECEMBER 2019 - 6 DECEMBER 2019

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

3D PRINTING

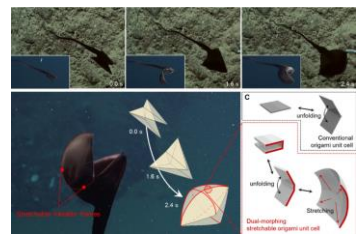
Glass From a 3D Printer

"ETH researchers used a 3D printing process to produce complex and highly porous glass objects. The basis for this is a special resin that can be cured with UV light."

Source: ETH Zurich (26 November 2019)

BIOMIMICRY

Bioinspired Dual-Morphing Stretchable Origami



"Here, we introduce pelican eel–inspired dual-morphing architectures that embody quasi-sequential behaviors of origami unfolding and skin stretching in response to fluid pressure. In the proposed system, fluid paths were enclosed and guided by a set of entirely stretchable origami units that imitate the morphing principle of the pelican eel's stretchable and foldable frames."

Source: Science Robotics (27 November 2019)

CITIES

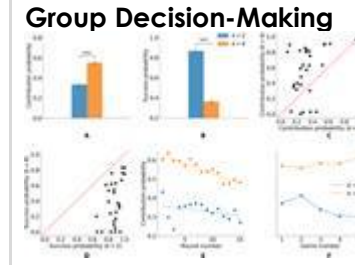
Floating Cities: The Next Big Real Estate Boom

"Not only may floating cities be a salve to help to mitigate the impacts of rising sea levels, but also a way for governments and developers to create vast swaths of much-coveted space for highly profitable coastal development by building out into the sea in a more environmentally sustainable way than land reclamation."

Source: Forbes (2 December 2019)

COGNITIVE NEUROSCIENCE

Modeling Other Minds: Bayesian Inference Explains Human Choices in Group Decision-Making



"Using a mathematical framework with roots in artificial intelligence and robotics, UW researchers were able to uncover the process for how a person makes choices in groups. And, they also found they were able to predict a person's choice more often than more traditional descriptive methods."

Source: Science Advances (27 November 2019)

E-TEXTILES

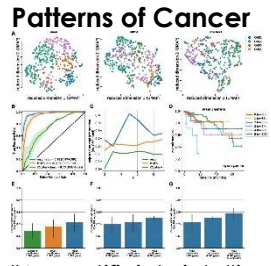
Pushing E-Textiles Towards the 'Plain of Productivity'

"Madison Maxey is the founder and technical lead of LOOMIA, a New York and California-based start-up that designs and manufactures e-textiles for use in wearable technologies, outdoor gear and automotive interiors. She spoke to Margaret Harris about the materials-science challenges of e-textiles and where the industry is heading."

Source: Physics World (2 December 2019)

HEALTHCARE

Deep Learning Identifies Molecular Patterns of Cancer

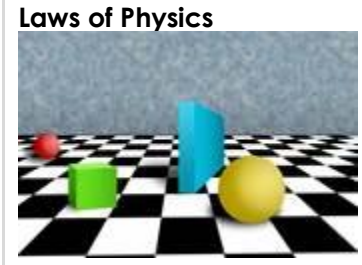


"An artificial intelligence platform can analyze genomic data extremely quickly, picking out key patterns to classify different types of colorectal tumors and improve the drug discovery process. The deeper analysis shows some colorectal subtypes need to be reclassified."
Also read at Life Science Alliance.

Source: Science Daily (2 December 2019)

MACHINE LEARNING

Helping Machines Perceive Some Laws of Physics

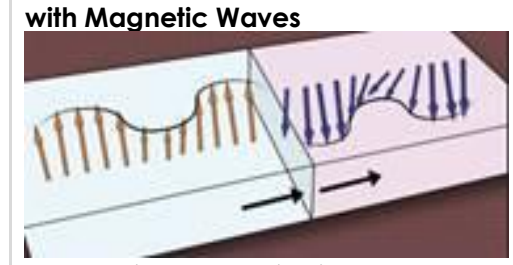


"Now MIT researchers have designed a model that demonstrates an understanding of some basic 'intuitive physics' about how objects should behave. The model could be used to help build smarter artificial intelligence and, in turn, provide information to help scientists understand infant cognition."

Source: MIT News (2 December 2019)

MAGNETIC-BASED COMPUTING

Toward More Efficient Computing, with Magnetic Waves

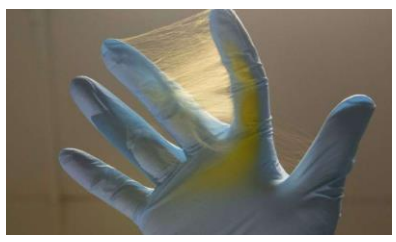


"An MIT-invented circuit uses only a nanometer-wide 'magnetic domain wall' to modulate the phase and magnitude of a spin wave, which could enable practical magnetic-based computing - using little to no electricity."

Source: MIT News (28 November 2019)

MATERIALS SCIENCE

New Treatment for Brain Tumors Uses Electrospun Fiber

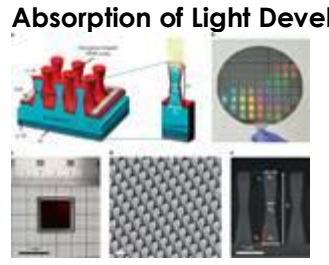


"University of Cincinnati professor Andrew Steckl, working with researchers from Johns Hopkins University, developed a new treatment for glioblastoma multiforme, or GBM, an aggressive form of brain cancer. Steckl's Nanoelectronics Laboratory applied an industrial fabrication process called coaxial electrospinning to form drug-containing membranes."

Source: Phys.org (2 December 2019)

NANOTECHNOLOGY

Hourglass-Shaped Silicon Nanowire Photodiodes with Increased Absorption of Light Developed

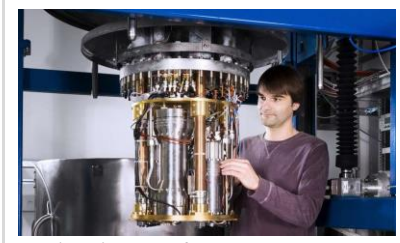


"Scientists have proposed creating vertical silicone nanowires with high sensitivity by using silicone and semiconductor process."

Source: Science Daily (26 November 2019)

PHYSICS

Scientists Develop New Primary Method for Measurement of Pressure



"Scientists from the Physikalisch-Technische Bundesanstalt (PTB) have implemented a novel pressure measurement method, partly as a byproduct of the work on the "new" kelvin. In addition to being new, this procedure is a primary method, i.e. it only depends on natural constants. As an independent method, it can be used to check the most accurate pressure gauges, for which PTB is known as the world leader."
Read more at Nature Physics.

Source: Phys.org (2 December 2019)

ROBOTICS

10 French Robotics Startups That Want to Achieve a Technological Breakthrough in the Industry

"Having said that robotics could dominate the future of businesses across industries, here we list some of the promising French robotics startups as sourced from Dealroom."

Source: Silicon Canals (2 December 2019)

ROBOTICS

How Boston Dynamics Is Redefining Robot Agility

"The launch of Spot is a significant step for Boston Dynamics as it seeks to "productize" its creations. Still, Raibert says his long-term goals have remained the same: He wants to build machines that interact with the world dynamically, just as animals and humans do."

Source: IEEE Spectrum (27 November 2019)

TECHNOLOGY

Mechanical Engineering Magazine Emerging Technology Awards 2019

"Mechanical Engineering's 2019 Emerging Technologies Awards honor top innovators in clean energy, manufacturing, bioengineering, pressure technology, and robotics."

Source: ASME (1 December 2019)

URBANISATION

Carlo Ratti and Winy Maas Discuss Facial Recognition and the Shenzhen Biennale

"Reflecting on the future of the Biennale, and indeed the future of the design team, both Ratti and Maas set out their views on how technology is reaching every corner of the architectural world, altering how we design, what we design, and who we design with."

Source: ArchDaily (26 November 2019)

WATER HARVESTING

Rain-Harvesting Panels Would Let People in Drought-Stricken Cities Catch Their Own Water

"Designer Shaakira Jassat has created a rain-catcher that is slim enough to fit on the outside of buildings in dense urban environments. The Aquatecture panel is designed to collect rainwater as it trickles over the openings in the structure before pumping it into a building's grey-water system."

Source: dezeen (2 December 2019)

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