SUTD LIBRARY

Weekly Discovery
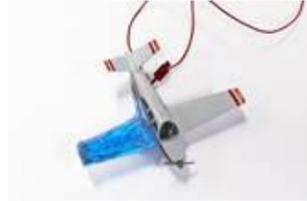## We SHARE to inspire and ignite ideas!

16 SEPTEMBER 2019 - 20 SEPTEMBER 2019

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3D PRINTING
Engineers Develop Multimaterial Fiber "Ink" for 3-D-Printed Devices

"A new method developed by MIT researchers uses standard 3-D printers to produce functioning devices with the electronics already embedded inside. The devices are made of fibers containing multiple interconnected materials, which can light up, sense their surroundings, store energy, or perform other actions."

Source: MIT News (11 September 2019)

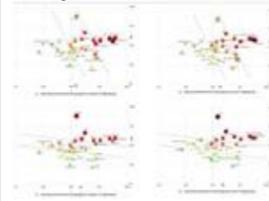### ARTIFICAL INTELLIGENCE
AI Agents Startle Researchers with Unexpected Hide-and-Seek Strategies

"The AI players learned everything via a machine learning technique known as reinforcement learning. In this learning method, AI agents start out by taking random actions."

Source: IEEE Spectrum (17 September 2019)

ARTIFICAL INTELLIGENCE
On Strategic Choices Faced by Large Pharmaceutical Laboratories and Their Effect on Innovation Risk Under Fuzzy Conditions

"The fuzzy model captures the financial and pipeline sides of innovation risk of firms operating in uncertain environments. The model is used to evaluate innovation risk in a sample of 31 large pharmaceutical laboratories in the period 2008–2013."

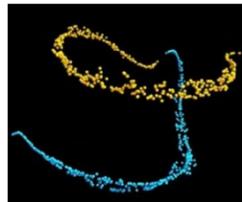Source: Artificial Intelligence in Medicine (September 2019)

CLIMATE
Climate Signature Detected in Earth's Rivers

"Climate dictates many of Earth's geologic and hydrological systems, but scientists have struggled to pinpoint the influence of climate on the formation of rivers. Now, researchers have uncovered evidence suggesting climate controls the elevational profile of rivers across the globe."

Source: United Press International (16 September 2019)

DEEP LEARNING
Deep Learning at Scale for the Construction of Galaxy Catalogs

"In a new study, researchers from NCSA and Argonne have developed a novel combination of deep learning methods to provide a highly accurate approach to classifying hundreds of millions of unlabeled galaxies."
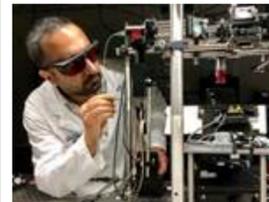
Source: Inside HPC (15 September 2019)

FAÇADE
Krueck + Sexton and Thornton Tomasetti Bring Undulating Glass to Chicago's Mercantile Exchange

"Each panel measures approximately 25-feet-by-four-feet and were installed using a custom-designed suction cup lifting device … The top of the glass fin is held by a clever suspension system that can slide up and down and sideways allowing the building to move without breaking the glass."

Source: The Architect's Newspaper (13 September 2019)

HEALTHCARE
New Imaging Technology Could 'Revolutionize' Cancer Surgery

"The new imaging technology uses the way light from lasers interacts with cancerous and healthy tissues to distinguish between them in real-time and with no physical contact, an advancement with the potential to eliminate the need for secondary surgeries to get missed malignant tissue."

Source: University of Waterloo (16 September 2019)

INNOVATION
See the 22 Innovation by Design Award Winners That Are Reshaping Our World

"Every year, Fast Company's Innovation By Design Awards honor the best design in business, from products to buildings to UX. This year, we received more than 4,300 entries—a record—and the 22 winners and 483 honorees, selected by a roster of experts from across the design world, represent the best work from an immensely competitive group."

Source: Fast Company (9 September 2019)

INTERNET OF THINGS
It's Time for IoT Security's Next Big Step

"The Internet of Things security crisis has persisted for decades, producing a seemingly endless stream of under-secured consumer gadgets, corporate phones, printers, networking equipment, … By now, every industry has an IoT albatross around its neck. And though new devices are increasingly equipped with basic security protections, those minimum standards are just the beginning."

Source: Wired (12 September 2019)

MACHINE LEARNING
New Algorithm Can Distinguish Cyberbullies from Normal Twitter Users with 90% Accuracy

"A team of researchers, including faculty at Binghamton University, have developed machine learning algorithms which can successfully identify bullies and aggressors on Twitter with 90 percent accuracy."

Source: Science Daily (16 September 2019)

MACHINE LEARNING
Using Machine Learning to Estimate Risk of Cardiovascular Death

"A team from MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL) came up with a new system for better predicting health outcomes: a machine learning model that can estimate, from the electrical activity of their heart, a patient's risk of cardiovascular death."

Source: MIT News (12 September 2019)

PHYSICS
Scientists Detect the Ringing of a Newborn Black Hole for the First Time

Source: SciTechDaily

"Physicists have 'heard' the ringing of an infant black hole for the first time, and found that the pattern of this ringing does, in fact, predict the black hole's mass and spin -- more evidence that Einstein was right all along."

Source: Science Daily (11 September 2019)

ROBOTICS
Researchers Build Microscopic Biohybrid Robots Propelled by Muscles, Nerves

"Researchers have developed soft robotic devices driven by neuromuscular tissue that triggers when stimulated by light – bringing mechanical engineering one step closer to developing autonomous biobots."

Source: University of Illinois (16 September 2019)

SMART DESIGN
Using Smart Sensor Technology in Building Design: Researchers Find Apprehension of Using Technology May Stifle Architectural Innovation

"In today's world, spaces with motion and temperature "smart sensors" are common and generally improve our overall well-being. Often times, data is being gathered from these sensors and is stored and analyzed in order to improve future architectural building design processes."

Source: San Diego State University (17 September 2019)

SUSTAINABLE DESIGN
The Toilet Gets a Makeover

"The Gates Foundation challenges researchers to design self-contained waste processing systems for low-resource communities … Some are fueled by solar power, while others are fueled by the waste itself. As these innovative systems shift from the lab to field testing and commercialization, researchers are striving to meet additional goals, including mitigating toilet odors and recovering valuable resources from human waste."

Source: c&en (16 September 2019)

THERMOELECTRIC GENERATOR
This New Device Generates Light from the Darkness of Space

"Solar panels are great for powering devices during the day. But they don't work after the sun goes down. Now, a new technology that takes advantage of the cold darkness of space may do the trick."

Source: Science (12 September 2019)

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