Idea Storm

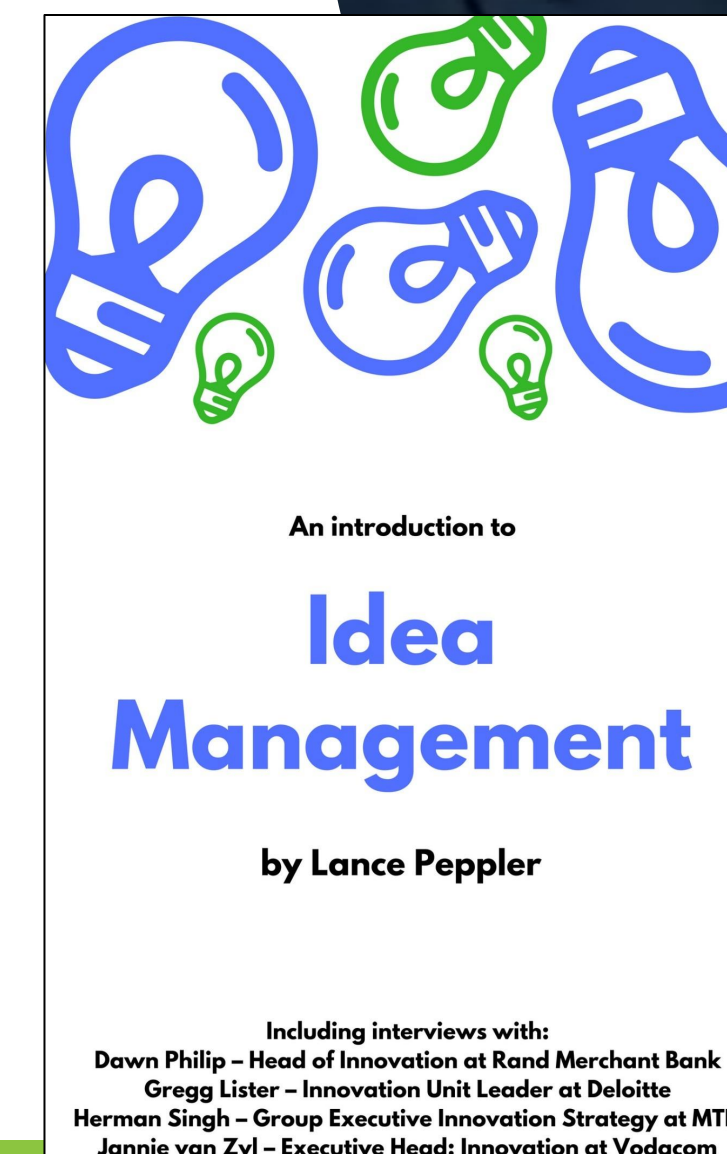# Exponential Technology Call
June 2020

Lance Peppler
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Idea Storm

Lance Peppler

- Worked at Oracle for 14 years
- Studied Design Thinking through Darden Business School and the IDEO method.
- Owner of Idea Storm – an exponential growth consultancy
- Member of OpenExO - +4500 consultants worldwide
- Certified ExO Coach and Consultant
- Creator of the "Exponential Organisation" podcast
- Written hundreds of blogs

An introduction to

Idea Management

by Lance Peppler

Including interviews with:
Dawn Philip – Head of Innovation at Rand Merchant Bank
Gregg Lister – Innovation Unit Leader at Deloitte
Herman Singh – Group Executive Innovation Strategy at MTN
Jannie van Zyl – Executive Head: Innovation at Vodacom

THE EXPONENTIAL ORGANISATION HANDBOOK

COMPILED BY
LANCE PEPPLER

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The Exponential Technologies

- 3D printing and digital fabrication
- Artificial intelligence (AI)
- Augmented and virtual reality (AR, VR)
- Autonomous vehicles
- Blockchain
- Data Science
- Digital biology and biotechnology
- Digital medicine
- Drone technology
- Internet of things
- Nanotechnology
- Networks and computing systems
- Quantum computing
- Robotics
- Solar

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3D Printing

Transformational Challenge Nuclear Reactor: Microreactor Built Using 3D Printing
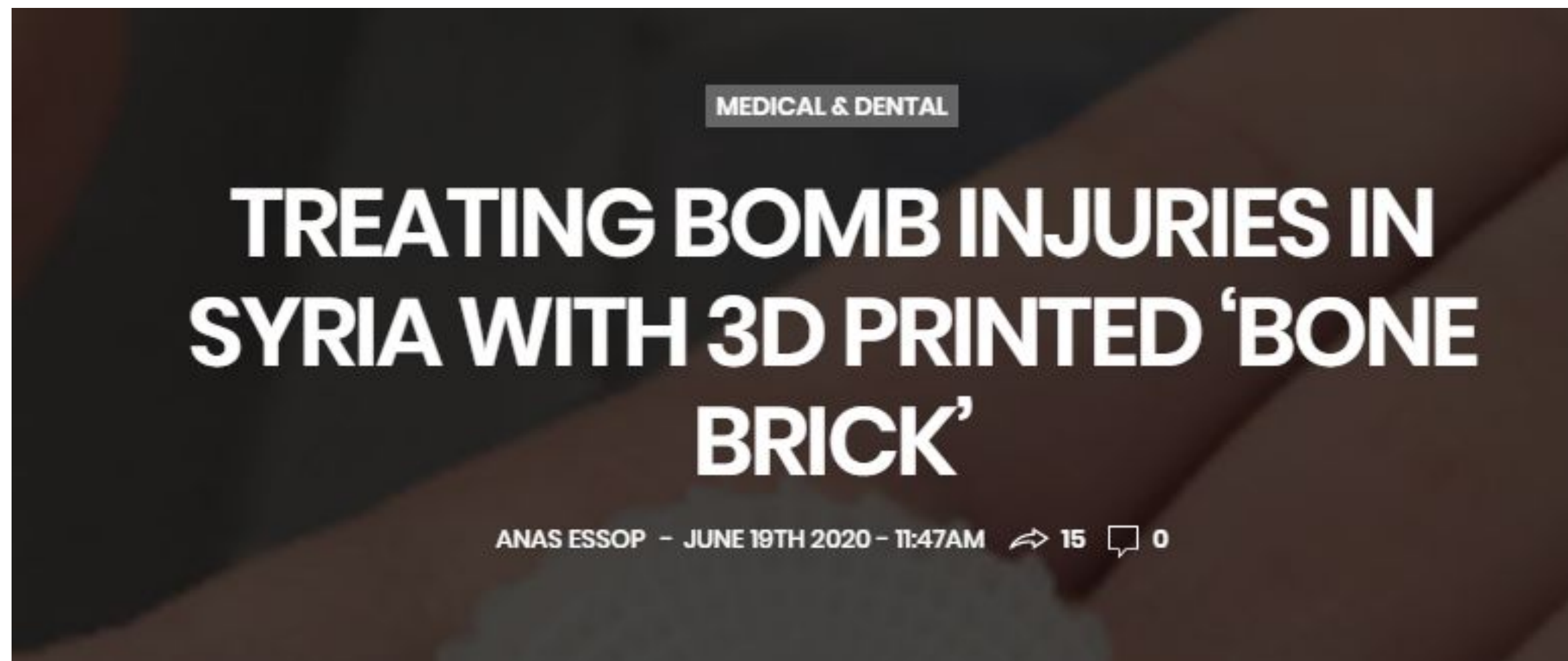
TOPICS: 3D Printing   Energy   Nuclear   Oak Ridge National Laboratory

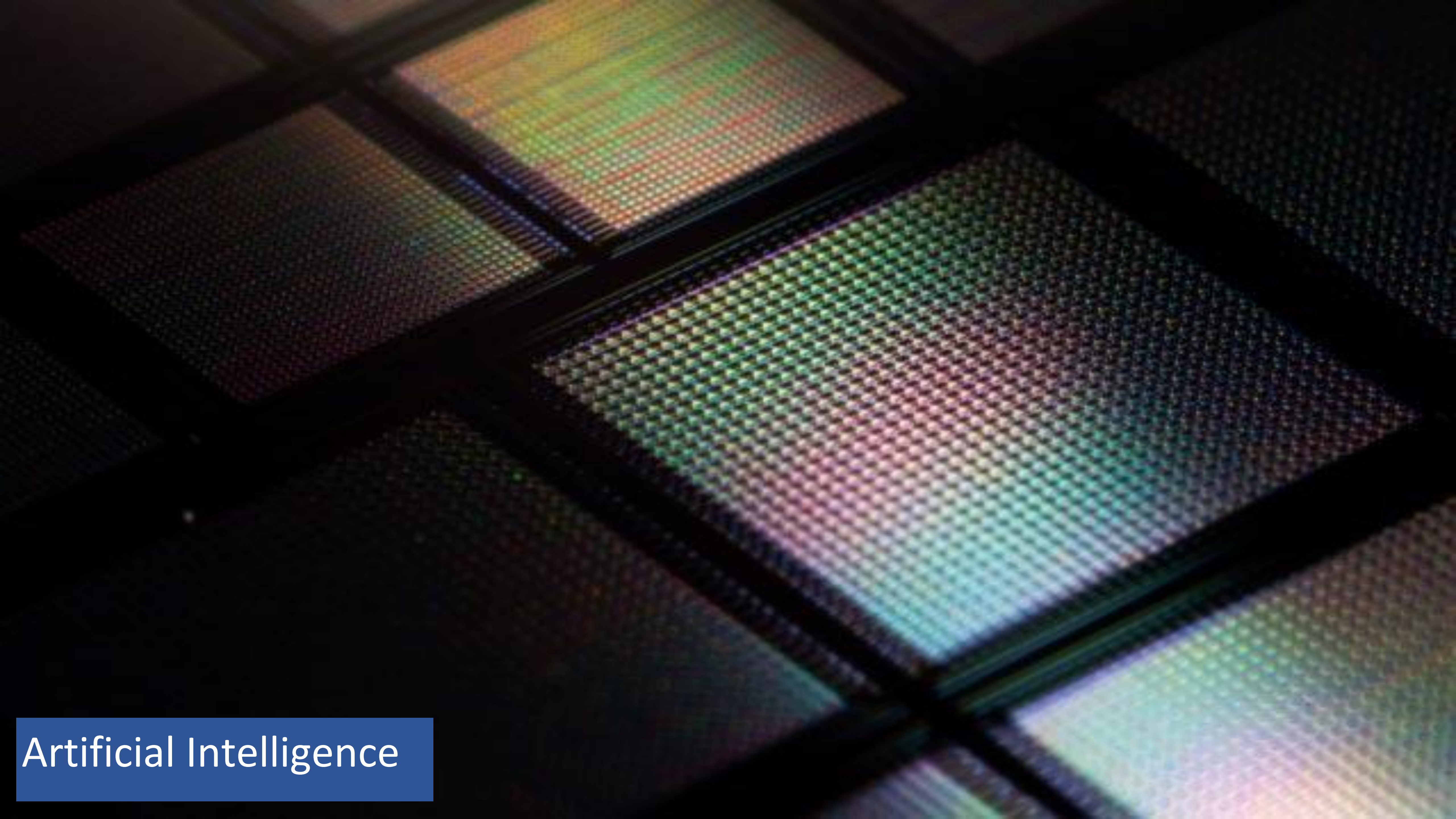By OAK RIDGE NATIONAL LABORATORY   JUNE 7, 2020

Scientists at the Department of Energy Manufacturing Demonstration Facility at Oak Ridge National Laboratory have their eyes on the prize: the Transformational Challenge Reactor, or TCR, a microreactor built using 3D printing and other new approaches that will be up and running by 2023.

But their end goal is bigger than a single reactor: It's to revolutionize manufacturing in the nuclear industry — and in other industries, too.

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MEDICAL & DENTAL

TREATING BOMB INJURIES IN SYRIA WITH 3D PRINTED 'BONE BRICK'

ANAS ESSOP – JUNE 19TH 2020 – 11:47AM   15   0

Researchers from the **University of Manchester** have developed a simple and cheap method for repairing broken limbs using 3D printed "bone brick", in response to the need for urgent medical care in Syrian refugee camps.

With thousands of Syrian refugees suffering from horrific blast injuries after being hit by barrel bombs and other explosives in their war-torn homeland, many are left without access to the necessary medical care due to the collapse of the healthcare system.

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Artificial Intelligence

Engineers Put Tens of Thousands of Artificial Brain Synapses on a Single Chip for Portable AI Devices

TOPICS: Artificial Intelligence   Brain   Electrical Engineering   MIT   Nanotechnology

By JENNIFER CHU, MASSACHUSETTS INSTITUTE OF TECHNOLOGY   JUNE 19, 2020
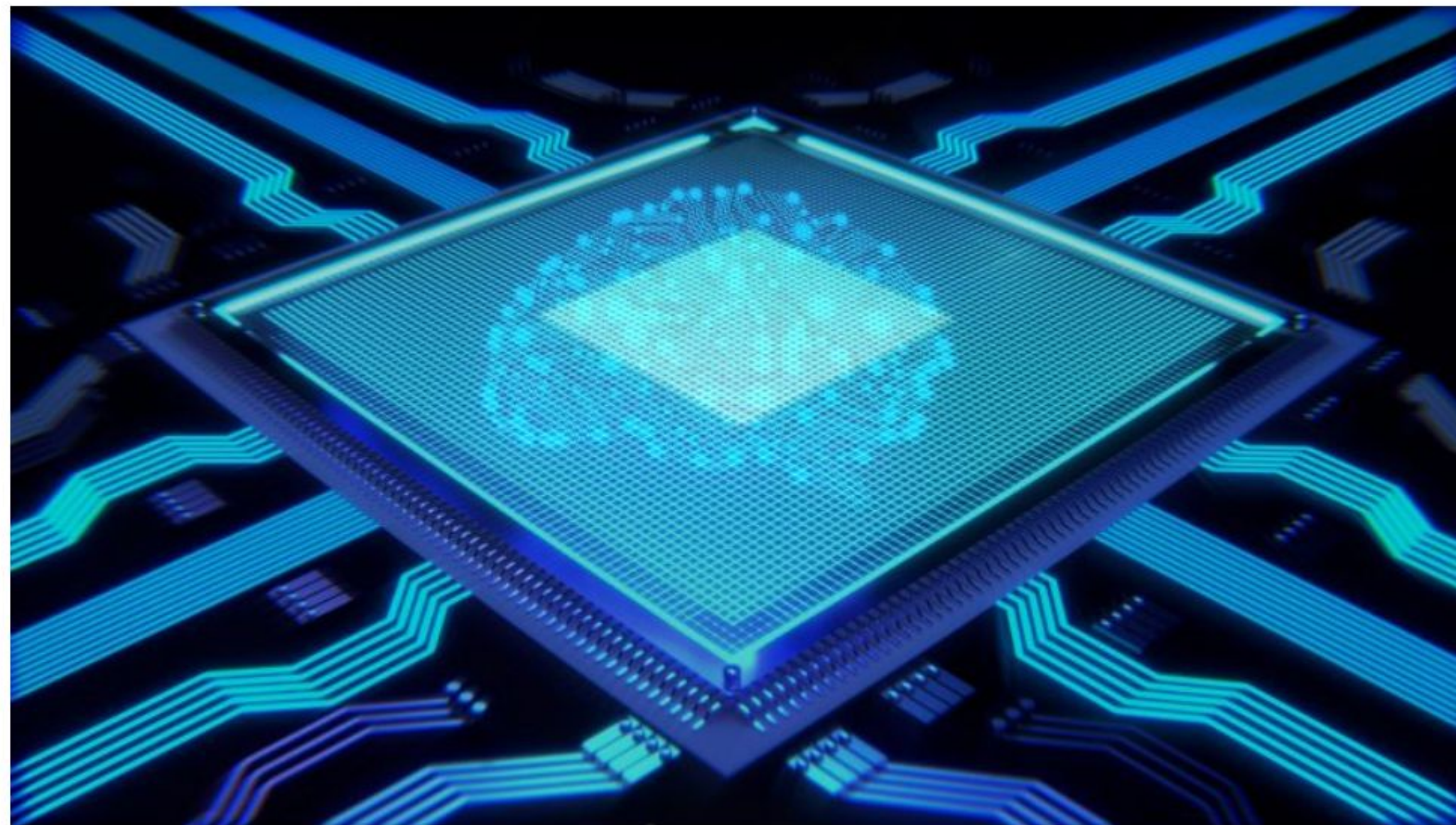
MIT engineers have designed a "brain-on-a-chip," smaller than a piece of confetti, that is made from tens of thousands of artificial brain synapses known as memristors — silicon-based components that mimic the information-transmitting synapses in the human brain.

The researchers borrowed from principles of metallurgy to fabricate each memristor from alloys of silver and copper, along with silicon. When they ran the chip through several visual tasks, the chip was able to "remember" stored images and reproduce them many times over, in versions that were crisper and cleaner compared with existing memristor designs made with unalloyed elements.

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15 Tech Experts Share Potential Impacts Of AI On Society

Expert Panel® Forbes Councils Member
Forbes Technology Council COUNCIL POST | Paid Program
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The age of artificial intelligence is here, and it will eventually change how most businesses and industries operate. With so much potential, AI could prove a powerful tool in addressing certain societal problems; however, as with any new technology, it may cause problems, too.

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Augmented and Virtual Reality

This German town replicated itself in VR to keep its tourism alive

by CITIES TODAY — 15 hours ago in SYNDICATION

Credit: Wikimedia

I SHOOK HANDS with a stranger the other day. Even made a fist bump. Before you get your pitchforks out, this all happened virtually. I was in my Brooklyn living room, wearing sweatpants and a hoodie, and I tapped knuckles with Spatial's vice president of business development and strategy, who was standing in his own apartment 6 miles away. No hand sanitizer required.

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Blockchain

Amazon Patented a Blockchain System for Supply Chain Tracking

World's top ecommerce firm Amazon filed a patent for a blockchain system that tracks goods as they move on the supply chain.

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COINTELEGRAPH

amazon

NEWS
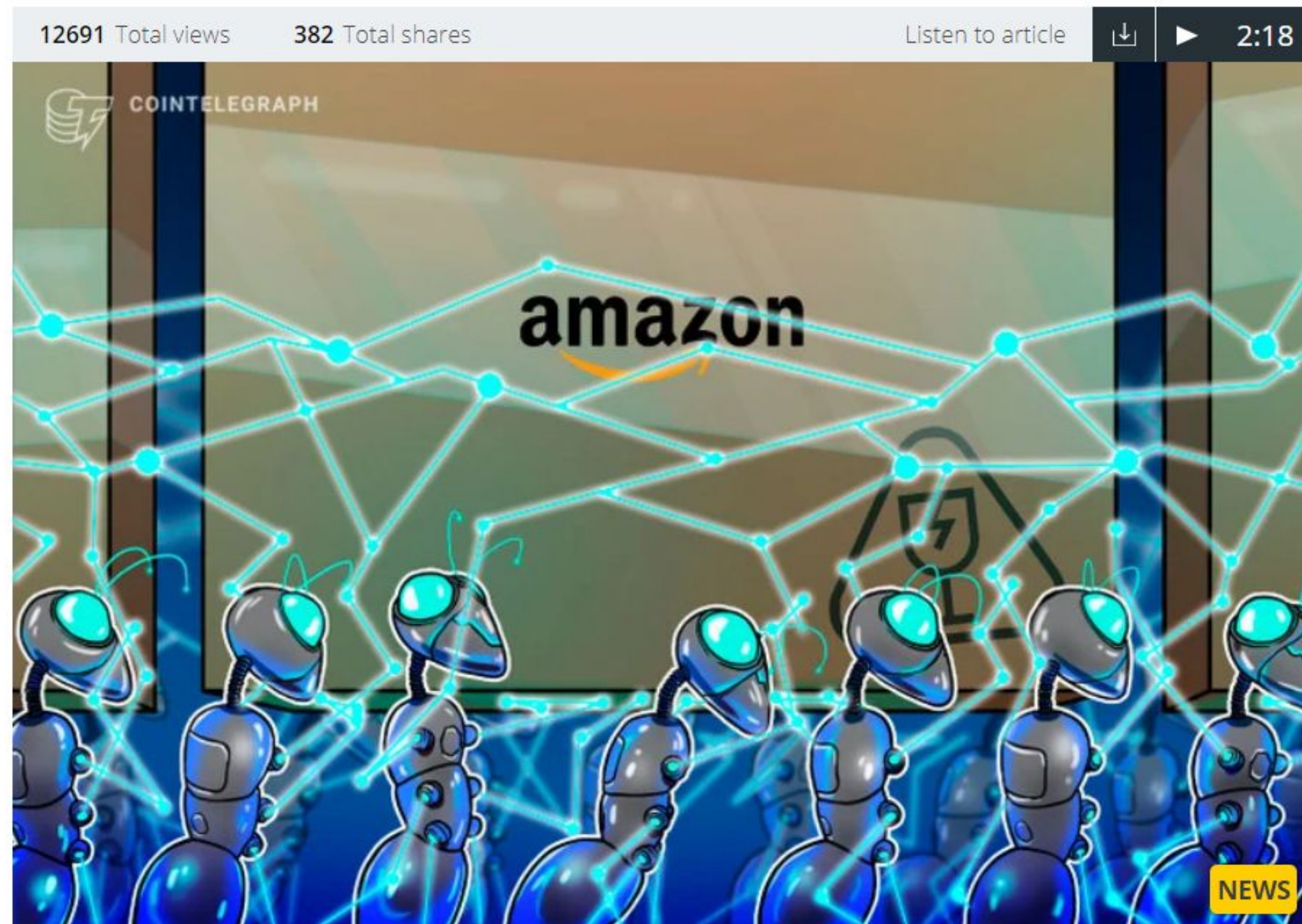
World's top ecommerce firm, Amazon, filed a patent for a blockchain system that tracks goods as they move on the supply chain.

Amazon's patent — dated May 26 — describes a "distributed ledger certification" system. The document explains that the tracking solution would ensure that consumer goods that are sold on its ecommerce site are authentic

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ANTÓNIO MADEIRA   JUN 06, 2020

Blockchain to Disrupt Music Industry and Make It Change Tune

Blockchain technology is tipping the scales of the music industry, shifting the power from intermediaries back to artists.

Blockchain technology has the power to increase financial inclusion and change the lives of many throughout the world, especially in emerging economies where it's needed the most. While the potential of blockchain technology has been widely recognized, even among the harshest critics of Bitcoin (BTC) itself, the possible use cases for blockchain technology are often thought of as limited only to the financial industry.

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Want To Fly? You'll Need This Blockchain–Backed Health Passport

Carlton Reid Senior Contributor ⓘ
Transportation
I have been writing about transport for 30 years.

The Hi+ card could be your (digital health) passport to the world.   TDDS

To travel internationally shortly you won't just need a paper passport; you'll likely need a digital one. This will be a smartphone app—secured by blockchain protocols—that certifies you're not infected with COVID-19.

This is one of the takeaways from a webinar held on June 5 with Cristina Del Río Fresen of the Canary Islands. The leader of the Ministry of Tourism's Global Tourism Safety Lab told travel industry executives and journalists on the Zoom call that a July flight from Madrid to the Canary Islands will be a world first: it will test a digital health passport app that will use data from health authorities to certify that travelers are free of COVID-19.

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Drones

Combat drone to compete against piloted plane

By Paul Rincon
Science editor, BBC News website

5 June 2020

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The XQ-58A Valkyrie is one example of a combat drone aircraft. It is not known which planes will be used in the test

SENIOR AIRMAN JOSHUA HOSKINS / USAF

The US Air Force will pit an advanced autonomous aircraft against a piloted plane in a challenge set for July 2021.

The project could eventually lead to unpiloted fighter aircraft that use artificial intelligence (AI).

Lt Gen Jack Shanahan, head of the Pentagon's Joint Artificial Intelligence Center, called the test a "bold, bold idea".

Air Force Magazine also described the development of autonomous fighter jets as a "big Moonshot" for the military.

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Quantum Computing

The Quantum App Store Is Coming

Quantum computing is still the province of specialized programmers—but that is likely to change very quickly

By Dario Gil on June 9, 2020

Currently, quantum computing researchers and enthusiasts need to know quantum programming; it's simply a must. Soon, though, all they will need is a quantum app store and a line of code. Not an app store like in your smartphone, but similar to a code repository of today, such as GitHub—a type of digital library where software developers make the code they have written available to anyone. And in the near future, developers will be able to put in their lines of code that will call on quantum computers to deal with specific tasks a regular computer can't.

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Science News

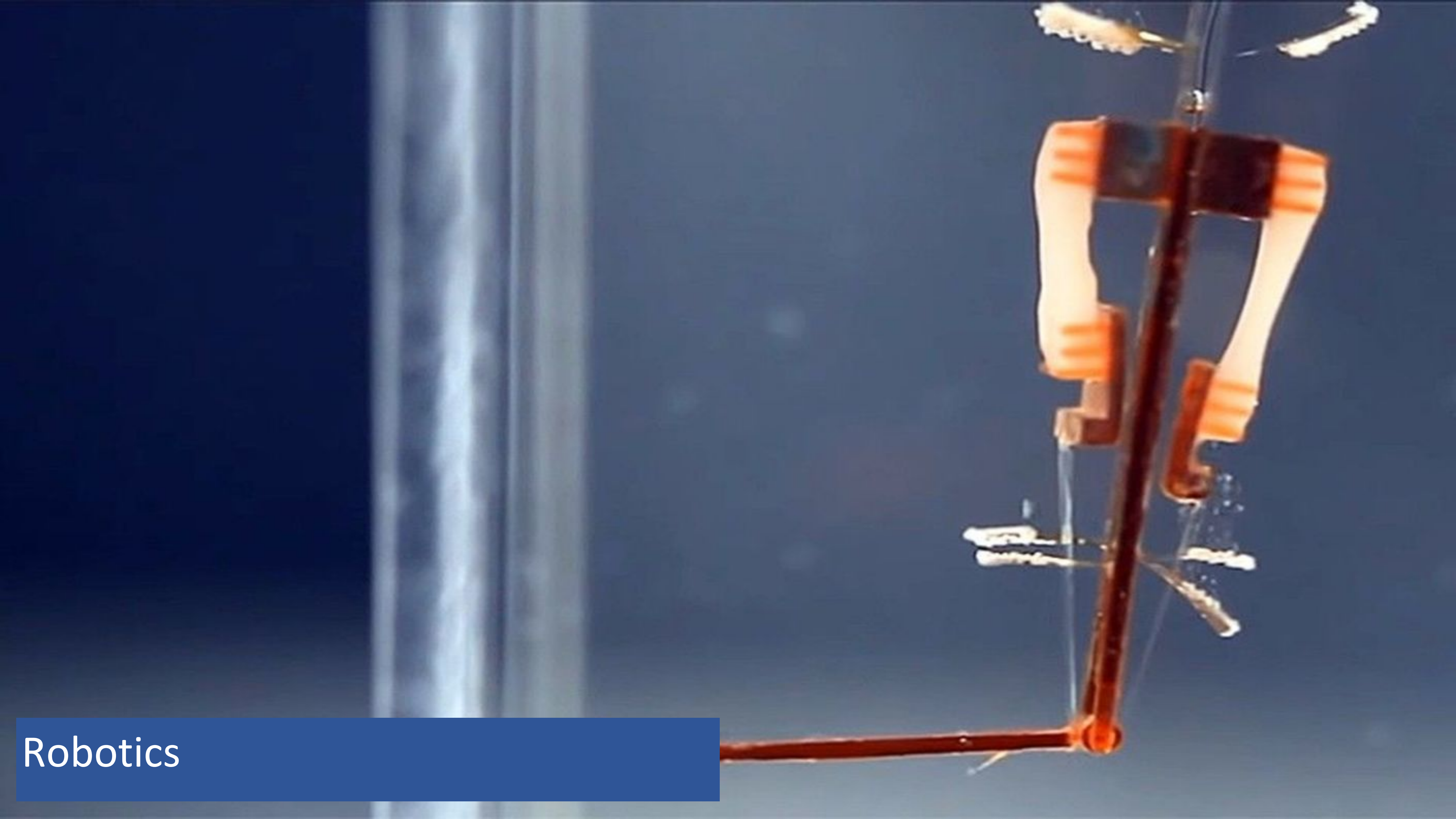*from research organizations*

The first intuitive programming language for quantum computers

Date: June 15, 2020

Source: ETH Zurich

Summary: Several technical advances have been achieved recently in the pursuit of powerful quantum computers. Now, Computer scientists have made an important breakthrough in the field of programming languages: their quantum language is the first of its kind that is as elegant, simple and safe as classical computer languages.

Programming quantum computers is becoming easier: computer scientists at ETH Zurich have designed the first programming language that can be used to program quantum computers as simply, reliably and safely as classical computers. "Programming quantum computers is still a challenge for researchers," says Martin Vechev, computer science professor in ETH's Secure, Reliable and Intelligent Systems Lab (SRI), "which is why I'm so excited that we can now continue ETH Zurich's tradition in the development of quantum computers and programming languages."

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Robotics

Institute of Industrial Science, University of Tokyo

MECHANICAL & MOTION SYSTEMS

Soon, Robots Will Be Flexing Real Muscles

The University of Tokyo has developed realistic muscle tissue for robots that can mimic human-like muscle movement.

Carlos Gonzalez

JUN 19, 2018

Robots have been receiving several upgrades in recent years in light of technological manufacturing innovations. 3D printing has given several robots a lighter footprint, advances in motors and pneumatics have made them more powerful, and artificial intelligence has made them smarter. The next stage comes from a research group at the University of Tokyo that involves giving robots actual living muscles for movement. This new field of biohybrid robotics looks to replace the metal and plastic motion components, with functional living tissue.

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Solar

Solar Dynamics Observatory

The Other Solar Power: How Scientists Are Making Fuel From Sunlight and Air

Scientists find a way to use the sun's energy to pull carbon dioxide from the air and turn it into fuel.

By Frank Swain | June 13, 2020 7:00 PM

Few activities swell our carbon footprint quite like flying. A one-hour flight on a twin-engine jet aircraft burns almost 6,000 pounds of kerosene and adds almost 19,000 pounds of carbon dioxide to the atmosphere. The environmental impact of air travel is so stark that Swedes even have a term for it: *flygskam*, or flight shame. But what if flying could be made zero carbon?

"We have developed a solar technology that is able to produce liquid fuels using just two ingredients: solar energy and ambient air," says Aldo Steinfeld, a renewable energy expert at the Swiss Federal Institute of Technology. "These hydrocarbon fuels release only as much carbon dioxide during combustion as was previously extracted from the air."

SOLAR

BlackRock Leads $50M Investment Into Off-Grid Solar Technology That Generates Water

With backers that include Bill Gates' Breakthrough Energy Ventures, Zero Mass Water is scaling up its distributed solar technology — but not for electricity production.

A cleantech startup announced this week that it has raised $50 million to scale distributed solar technology — but not for electricity production.

Zero Mass Water creates boxy solar panels that generate flows of pure, potable water instead of electrons. It offers access to safe water for homes or businesses in arid parts of the world or places with unsafe tap water. That need is set to grow as climate change dries out regions and alters weather patterns.

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- Weekly Exponential Technology Download
- Exponential Technology Database
- Exponential Technology Flipboard
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Exponential Technology Report - 1 April 2020

There are amazing advances of exponential technology taking place all the time. Every week Idea Storm brings you the latest news stories in this easy to read report.

News story 1 - 3D Printing

[Creality's 3D-printed buckle makes wearing face masks more comfortable](#)
Chinese 3D-printer manufacturer Creality is fabricating thousands of buckles that make face masks less painful to wear for medical workers treating coronavirus patients.
Small bars on either side of the plastic buckle hold the elastic taut behind the mask-wearer's head, so that it doesn't put painful pressure on their ears.
Face masks are a key part of protecting front line medical workers from contracting coronavirus, but wearing Personal Protective Equipment (PPE) for an extended period of time can be very uncomfortable for the wearer.

News story 2 - 3D printing

[7 Exciting Ways 3D Printing Is Changing the World Around Us in 2020](#)
The 3D printing industry has experienced consistent and stable growth over the past decade, disrupting multiple industries. Sometimes it is hard to keep track of them all. Innovators and the researchers in the footwear, fashion design, construction, automotive industry, and the aerospace industry have embraced 3D printing to make better products, faster. And that's just the beginning of the story.

News story 3 - Artificial Intelligence

[10 Business Functions That Are Ready To Use Artificial Intelligence](#)
In the grand scheme of things, artificial intelligence (AI) is still in the very early stages of adoption by most organizations. However, most leaders are quite excited to implement AI into the company's business functions to start realizing its extraordinary benefits. While we have no way of knowing all the ways artificial intelligence and machine learning will ultimately impact business functions, here are 10 business functions that are ready to use artificial intelligence.

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Exponential Technology Report

The world is changing at an ever increasing rate. This Exponential Technology report is designed to help us stay in touch with developments in this space and will be updated each Wednesday.

The Exponential Technology categories are:
- 3D printing and digital fabrication
- Artificial intelligence (AI)
- Augmented and virtual reality (AR, VR)
- Autonomous vehicles
- Blockchain
- Data Science
- Digital biology and biotechnology
- Digital medicine
- Drone technology
- Internet of things
- Nanotechnology
- Networks and computing systems
- Quantum computing
- Robotics
- Solar

Download the report by right-clicking on the pdf image below

PDF

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Exponential Technology Flipboard

We have created a Flipboard containing Exponential Technology news stories. Click on the magazine below to access the Exponential Technology magazine.

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Exponential Video Wall

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Output power of new energy electricity generation exceeds 11 mln kW in…

Output power of electricity generated by new energy sources reaches 11.079 million kW i…

01:31

James Dyson explains the engineering behind our robotic vacuums

Powerful, intelligent robotic cleaning. Discover the Dyson 360 Eye™ robot vacuum.* Dyson…

01:15

The Most Beautiful Drone Footage From The Baja Divide #BikePacking

This is a compilation of my favorite drone shots from two separate bike packing trips down th…

15:49

FUTURE OF DRIVERLESS CARS

BAJA MEXICO FROM ABOVE

10:23   05:43

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