TOP 10 EMERGING TECHNOLOGIES OF 2017

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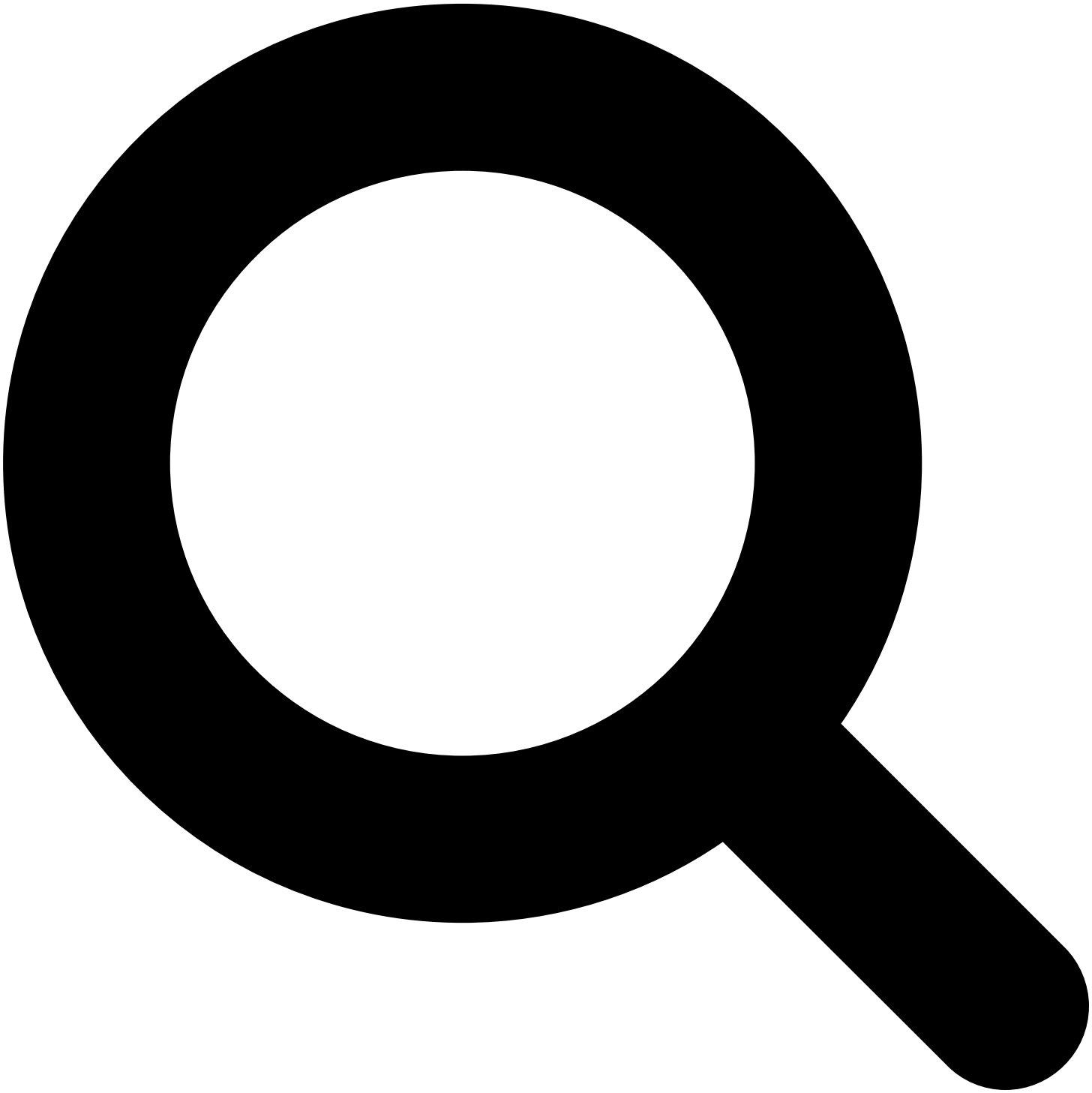

Drinking water extracted from the air, artificial intelligence for visual tasks, genomic vaccines, or the design of eco-sustainable communities. The Future Network of Experts and Global Councils of the World Economic Forum, together with *Scientific American* magazine, have selected a list of ten emerging technologies for their potential to improve lives, transform industries, and safeguard the planet. According to experts, these are technologies that have already reached a

sufficient level of maturity to be able to open up to the large market in the next 3-5 years.

The 10 technologies chosen in 2017 are the following, among which are some of the ones that we have already talked about from Naider:

Liquid biopsies: A new, faster and less invasive technique to detect tumor mutations in the fight against cancer. An alternative when traditional tissue-based biopsies are not possible, providing a comparatively full range of information. In addition, it detects disease progression or resistance to treatment much faster than symptoms or imaging.

Extraction of clean water from the air : Until now it was possible to extract clean water from the air with a large consumption of electricity, but a team from MIT and Berkeley has successfully tested a process using porous crystals that do not consumes no energy. At the same time, startup Zero Mass Water gets clean water for homes by using of solar panels.

Deep learning for visual tasks: Computers begin to interpret images better than humans, with which artificial intelligence begins to be increasingly used for driving autonomous vehicles, medical diagnoses, damage assessments for claims insurance or control of water levels and crop yields.

Liquid fuels from sunlight: The prospects of being able to imitate a simple leaf and create artificial photosynthesis to generate and store energy are increasingly positive. The system would be based on using catalysts activated by sunlight to separate the water molecules into water and hydrogen. The CO2 from combustion is transformed back into fuel instead of being released into the atmosphere, something that could be revolutionary for the solar and wind industry.

The Atlas of Human Cells: The Chan Zuckerberg Initiative launched in 2016 an initiative to fully decipher the human body, with the aim of identifying each type of cell in each human tissue and obtaining a tool Unmatched for enhancing and personalizing healthcare. This is intended to learn which genes, proteins and other molecules are active in each type and the processes that control that activity, determine where cells are located and how they interact exactly, and what happens to the functioning of the body when genetic aspects undergo changes. , among other things.

Precision Agriculture: Industry 4.0 is providing farmers with new tools to increase crop yields and quality while reducing the use of water and chemicals. Sensors, robots, GPS systems, mapping tools, and data analysis software are being used to customize plant care. Although the use of drones to monitor the health of crops may be beyond the possibilities of most farmers, it has been shown that more accessible technologies such as smartphones and solar panels that are available on the Internet can be used.

Affordable catalytic converters for green vehicles: A promising zero-emission technology is making exciting headway. So far, the high price of platinum, the metal used for catalysts, has prevented much progress, but significant progress has been made to replace this rare and expensive metal.

Genomic vaccines: Gene-based vaccines are superior to conventional ones in many ways. Its manufacture is faster, something crucial in the appearance of aggressive outbreaks. Compared to making proteins in cell cultures or eggs, producing genetic material should be easier and cheaper. A genomic approach also allows for faster adaptation to pathogenic mutations, and allows scientists to identify people who are immune to a pathogen, isolate the antibodies that provide that protection, and design a genetic sequence for a person's cells to generate those antibodies.

Sustainable community design: Applying green construction to multiple buildings simultaneously has the potential to revolutionize the amount of energy and water we consume. Sending locally

produced solar energy to a smart microgrid can cut electricity consumption in half and carbon emissions to zero, if a Berkeley project comes to fruition. The same project plans to redesign wastewater systems so that runoff water is treated and reused on-site; rainwater would be collected for toilets and washing machines, thereby reducing drinking water consumption by 70%.

Quantum computing : The limitless potential of quantum computers is matched only by the difficulty and cost of building them. So the small quantum computers that exist have not exceeded the capabilities of supercomputers. But progress is being made and in 2016 IBM made the first quantum computer in the cloud available to the public. More than 20 academic papers have been published with the tool, and large companies are committed to making quantum computing a reality.

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