3-D Metal Printing

Emerging technology for 3D Printing

While 3-D printing has been around for decades, it has remained largely in the domain of hobbyists and designers producing one-off prototypes. And printing objects with anything other than plastics—in particular, metal—has been expensive and painfully slow. Now, however, it's becoming cheap and easy enough to be a potentially practical way of manufacturing parts. If widely adopted, it could change the way we mass-produce many products NowIn the short term, manufacturers wouldn't need to maintain large inventories—they could simply print an object, such as a replacement part for an aging car, whenever someone needs it.

adapting to customers' changing needs. The technology can create lighter, stronger parts, and complex shapes that aren't possible with conventional metal fabrication methods. It can also provide more precise control of the microstructure of metals. In 2017, researchers from the Lawrence Livermore National Laboratory announced they had developed a 3-D-printing method for creating stainless-steel parts twice as strong as traditionally made ones.
Also in 2017, 3-D-printing company Markforged, a small startup based outside Boston, released the first 3-D metal printer for under $100,000. Another Boston-area startup, Desktop Metal, began to ship its first metal prototyping machines in December 2017. It plans to begin selling larger

The printing of metal parts is also getting easier. Desktop Metal now offers software that generates designs ready for 3-D printing. Users tell the program the specs of the object they want to print, and the software produces a computer model suitable for printing.

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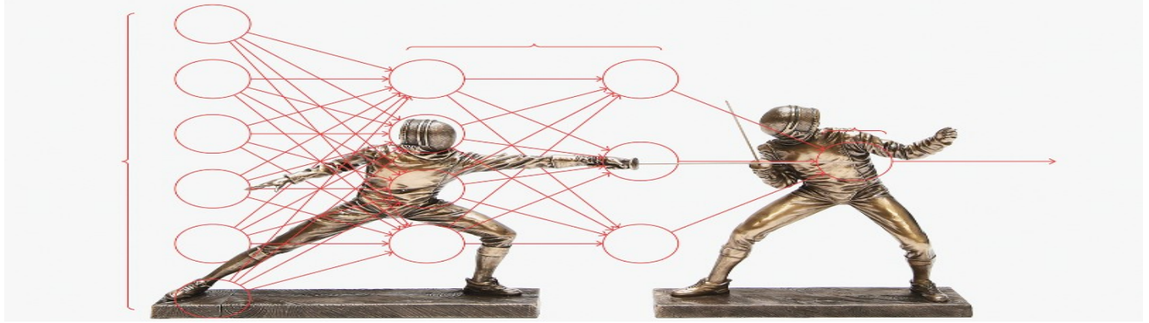


Dueling Neural Networks

Artificial intelligence is getting very good at identifying things: show it a million pictures, and it can tell you with uncanny accuracy which ones depict a pedestrian crossing a street. But AI is hopeless at generating images of pedestrians by itself. If it could do that, it would be able to create gobs of realistic but synthetic pictures depicting pedestrians in various settings, which a self-driving car could use to train itself without ever going out on the road.
The solution first occurred to Ian Goodfellow, then a PhD student at the University of Montreal, during an academic argument in a bar in 2014. The approach, known as a generative adversarial network, or GAN, takes two neural networks—the simplified mathematical models of the human brain that underpin most modern machine learning—and pits them against each other in a digital cat-and-mouse game. known as the generator, is tasked with creating variations on images it's already seen—perhaps a picture of a pedestrian with an extra arm. The second, known as the discriminator, is asked to identify whether the example it sees is like the images it has been trained on or a fake produced by the generator—basically, is that three-armed person likely to be real?
Over time, the generator can become so good at producing images that the discriminator can't spot fakes. Essentially, the generator has been taught to recognize, and then create, realistic-looking images of pedestrians.

GANs have been put to use creating realistic-sounding speech and photorealistic fake imagery. In one compelling example, researchers from chipmaker Nvidia primed a GAN with celebrity photographs to create hundreds of credible faces of people who don't exist. Another research group made not-unconvincing fake paintings that look like the works of van Gogh. Pushed further, GANs can reimagine images in different ways—making a sunny road appear snowy, or turning horses into zebras.
advances in AI in the past decade, able to help machines produce results that fool even humans.
The results aren't always perfect: GANs can conjure up bicycles with two sets of handlebars, say, or faces with eyebrows in the wrong place. But because the images and sounds are often startlingly realistic, some experts believe there's a sense in which GANs are beginning to understand the underlying structure of the world they see and hear. And that means AI may gain, along with a sense of imagination, a more independent ability to make sense of what it sees in the world.

Zero-Carbon Natural Gas

Billions of people could get online for the first

The world is probably stuck with natural gas as one of our primary sources of electricity for the foreseeable future. Cheap and readily available, it now accounts for more than 30 percent of US electricity and 22 percent of world electricity. And although it's cleaner than coal, it's still a massive source of carbon emissions.
A pilot power plant just outside Houston, in the heart of the US petroleum and refining industry, is testing a technology that could make clean energy from natural gas a reality. The company behind the 50-megawatt project, Net Power, believes it can generate power at least as cheaply as standard natural-gas plants and capture essentially all the carbon dioxide released in the process.

If so, it would mean the world has a way to produce carbon-free energy from a fossil fuel at a reasonable cost. Such natural-gas plants could be cranked up and down on demand, avoiding the

> "A technology that could make clean energy from natural gas a reality."

Net Power is a collaboration between technology development firm 8 Rivers Capital, Exelon Generation, and energy construction firm CB&I. The company is in the process of commissioning the plant and has begun initial testing. It intends to release results from early evaluations in the months ahead.
The plant puts the carbon dioxide released from burning natural gas under high pressure and heat, using the resulting supercritical CO_2 as the

Much of the carbon dioxide can be continuously recycled; the rest can be captured cheaply.

A key part of pushing down the costs depends on selling that carbon dioxide. Today the main use is in helping to extract oil from petroleum wells. That's a limited market, and not a particularly green one. Eventually, however, Net Power hopes to see growing demand for carbon dioxide in cement manufacturing and in making plastics and other carbon-based materials

Programmable Robot Swarms

Autonomous artificial swarms of robots could enable new approaches for search and rescue mission, construction efforts, environmental remediation and medical applications.

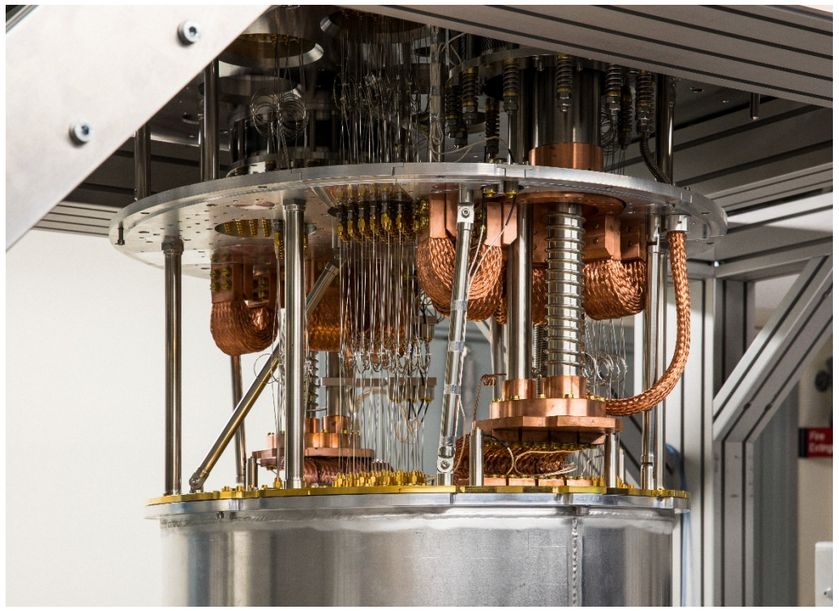
Collective behaviors enable animals like ants to achieve remarkable, colony level feats through the distributed actions of millions of independent agents. These collective behaviors are inspiring engineers at Wyss Institute to build simple mobile robots that harness the demonstrated power of the swarm, performing collective tasks like transporting large objects or autonomously building human-scale structures.

Today, most robots are designed to work by themselves, not as part of a team. Wyss researchers are developing robotic systems and algorithmic approaches to make artificial swarms of robots that collaboratively work towards a common goal.

In one licensed application of the technology, a collective of 1024 "Kilobots"(meaning "one thousand robots") can be programmed to exhibit complex swarming behaviors, such as forging and firefly-inspired synchronization, while a user can interact with the swarm as a whole, no matter how many robots there are.

Do you know what

Materials' Quantum Leap is?



The prospect of powerful new quantum computers comes with a puzzle. They'll be capable of feats of computation inconceivable with today's machines, but we haven't yet figured out what we might do with those powers.

One likely and enticing possibility: precisely designing molecules.

Chemists are already dreaming of new proteins for far more effective drugs, novel electrolytes for better batteries, compounds that could turn sunlight directly into a liquid fuel, and much more efficient solar cells.

We don't have these things because molecules are ridiculously hard to model on a classical computer.

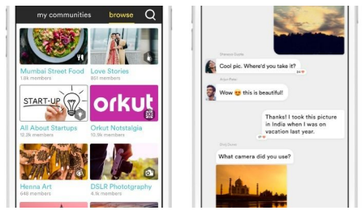
Try simulating the behavior of the electrons in even a relatively simple molecule and you run into complexities far beyond the capabilities of today's computers.

But it's a natural problem for quantum computers, which instead of digital bits representing *1*s and *0*s use "qubits" that are themselves quantum systems. Recently, IBM researchers used a quantum computer with seven qubits to model a small molecule made of three atoms.

ITECH UPDATE

SONY'S NEW XPERIA XZ2 PREMIUM MAY HAVE THE WORLD'S BEST LOW-LIGHT CAMERA EVER ON A SMARTPHONE

The hardware supposedly combines data from both sensors to optimize for low light, and reduce noise to get you results you can actually see at those insane ISO levels.



REMEMBER ORKUT? ITS FOUNDER HAS BUILT A NEW SOCIAL NETWORK, IF YOU WANT TO DELETE YOUR FACEBOOK

Here, you make friends based on meaningful engagements initiated by common interests, just like you would in the real world.

At Hello Network's core are communities, something Orkut focused on as well. Instead of Facebook's method of filling your News Feed with posts from friends, family, and publishers, Hello, only shows you posts from groups you're subscribed to ie, your interests