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AI
What The Human Brain Can Do That AI Can't



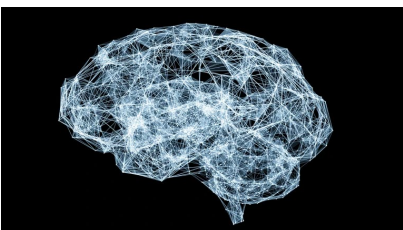
"How do you intuitively know that you can walk on a footpath and swim in a lake? Researchers from the University of Amsterdam have discovered unique brain activations that reflect how we can move our bodies through an environment. The study not only sheds new light on how the human brain works, but also shows where artificial intelligence is lagging behind. According to the researchers, AI could become more sustainable and human-friendly if it incorporated this knowledge about the human brain.

When we see a picture of an unfamiliar environment - a mountain path, a busy street, or a river - we immediately know how we could move around in it: walk, cycle, swim or not go any further. That sounds simple, but how does your brain actually determine these action opportunities?

PhD student Clemens Bartnik and a team of co-authors show how we make estimates of possible actions thanks to unique brain patterns. The team, led by computational neuroscientist Iris Groen, also compared this human ability with a large number of AI models, including ChatGPT. 'AI models turned out to be less good at this and still have a lot to learn from the efficient human brain,' Groen concludes."

Source: [UVA](#) (16 Jun 2025)

AI
This AI 'Thinks' Like a Human — After Training On 160 Psychology Studies



"An innovative artificial-intelligence (AI) system can predict the decisions people will make in a wide variety of situations — often outperforming classical theories used in psychology to describe human choices."

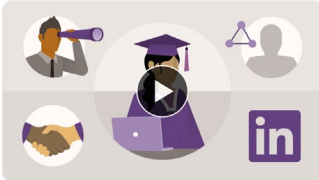
The researchers who developed the system, called Centaur, fine-tuned a large language model (LLM) using a massive set of data from 160 psychology experiments, in which 60,000 people made more than 10 million choices across many tasks.

Most computer models and cognitive theories stick to a single task. For instance, Google Deepmind's [AlphaGo can only play the strategy game Go](#), and prospect theory can only predict how a person will choose between potential losses and gains. Centaur, by contrast, can simulate human behaviour across a spectrum of tasks — including gambling, memory games and problem-solving. During testing, it was even able to predict people's choices in tasks it had not been trained on. The development of Centaur is described in a paper published today in *Nature*[1](#).

The team that created the system thinks that it could one day become a valuable tool in cognitive science. "You can basically run experimental sessions *in silico* instead of running them on actual human participants," says study co-author Marcel Binz, a cognitive scientist at the Helmholtz Institute for Human-Centered AI in Munich, Germany. That could be useful when conventional studies would be too slow, he says, or when it's difficult to recruit children or people with psychiatric conditions.

"Building theories in cognitive science is very difficult," says Giosuè Baggio, a psycholinguist at the Norwegian University of Science and Technology in Trondheim, Norway. "It's exciting to see what we can come up with help from machines."

Source: [Nature](#) (2 Jul 2025)



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ARCHITECTURE
Architecture in the Age of Platforms: What Role Does Software Play in Practice Today?



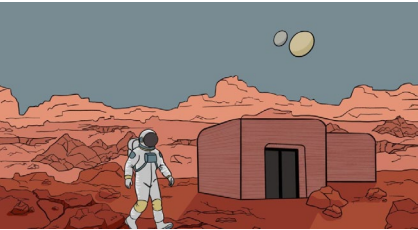
"How many software tools and platforms are involved today in developing a contemporary project? From designing a single-family house to a public library, relying on just one or two programs is no longer common. Instead, multiple tools combine, overlap, and interact throughout various stages, including analysis, design, rendering, coordination, and construction. This widespread use of software in the virtual world reflects not only the technical complexity of today's practice but also a more subtle yet equally significant shift: software has become less a specific tool and more an environment that accompanies and even challenges the process.

While some choose to maintain a certain distance, others integrate these technologies intensively into their [workflow](#), even [merging computational design with craftsmanship](#) or applying [augmented reality to build structures without the need for physical guides](#). The truth is that software does not assume a leading role on its own but through the value each person decides to assign to it. Although not strictly indispensable, its presence invites broader reflection: What place does it occupy in the architecture we create today? How does it relate to our decisions, our time, and our ways of designing?

[During events like AIA25](#), it became clear that large companies are investing in multiplatform environments designed to centralize the entire project [workflow](#), while other, more specialized solutions focus on addressing specific challenges with targeted tools. This change is not only technical but also profoundly design-oriented. In a way, it represents an evolution that transforms the relationship between the architect, the workflow, and technology. It is not just about using software but about how we activate—or even resist—it as part of our practice."

Source: [Archdaily](#) (1 Jul 2025)

ARCHITECTURE
Growing Homes on Mars: Texas A&M Research Pioneers Autonomous Construction Using Synthetic Lichens



"Inhabiting Mars has long been a futuristic fantasy fueled by science fiction. However, successful landings on our neighboring planet over the past half-century have made this seemingly far-fetched idea increasingly plausible.

But don't start packing just yet. First, we must figure out how to build structures millions of miles from Earth. Sending rockets carrying massive payloads of construction materials into space isn't practical or affordable. So, how can we use the resources already present on the Red Planet to build your dream home?

Enter Texas A&M University's Dr. Congrui Grace Jin with the possible answer.

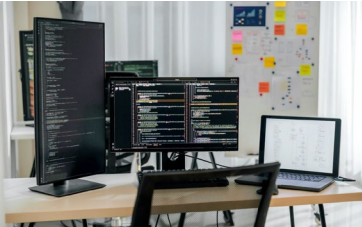
Jin and her colleagues from the University of Nebraska-Lincoln have worked for years on bio-manufacturing engineered living materials and have developed a synthetic lichen system that can form building materials with no outside intervention. Their latest study, funded by the NASA Innovative Advanced Concepts program and recently published in the Journal of Manufacturing Science and Engineering, applies this research to the autonomous construction of structures on Mars, using the planet's regolith, which includes dust, sand and rocks.

This advancement has the potential to revolutionize extraterrestrial construction by enabling structures to be built in the most demanding environments with restricted resources.

"We can build a synthetic community by mimicking natural lichens," explains Jin. "We've developed a way to build synthetic lichens to create biomaterials that glue Martian regolith particles into structures. Then, through 3D printing, a wide range of structures can be fabricated, such as buildings, houses and furniture."

Source: [TAMU](#) (24 Jun 2025)

CODING
The Best AI Coding Tools You Can Use Right Now: Cursor and Claude Code are among the options worth your time



"AI-powered software development tools are rapidly evolving. What began as enhanced autocomplete has expanded into AI agents that can write applications, debug problems, and manage entire codebases—or, at least, try.

"This has been remarkably quick," says Josh Knowles, founder and chief engineer of the software development company Frescher Southern LTD. "We're going through something like a phase shift right now."

That shift has led to a pack of AI-powered coding tools vying to become king of this new hill. Several of the leading tools come from startups that didn't even exist just a few years ago. But tech giants aren't lying idle; other top options are from established players, like Microsoft, and well-heeled AI labs, like Anthropic.

Abhay Bhargav, founder and chief research officer at security company AppSecEngineer, says AI has already changed how his company works. "We use AI to build a lot of proofs-of-concepts and minimum viable products to get the ball rolling."

The rapid pace of change means software engineers eager to dive into AI may find themselves leaping between tools like rafts in whitewater. Still, a few leaders have proven

DESIGN
AI-Powered Dream Recorder Lets Users Play Back Their Dreams



"Dutch design studio Modem says it has brought dream journaling into the intelligence age with the Dream Recorder, an AI bedside device that replays dreams as short videos.

In contrast to the many new artificial intelligence (AI) devices that have promised complex functionality, the Dream Recorder does just one simple thing.

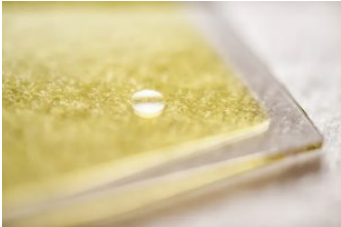
Users are able to wake up in the morning, roll over to the device, push a button and tell it their recollections of their dreams from the previous night. The AI model then generates a video reel that is played back on its screen in a grainy, impressionistic style befitting the mystical nature of dreams.

The Dream Recorder also diverges from most tech products in that it is fully open-source, just like [Modem's previous AI project Terra](#). Both the code and hardware documentation are on software hosting service [GitHub](#), and users can build the device themselves by 3D printing the shell and using off-the-shelf internal components.

Modem's co-founders told Dezeen that they wanted to create the device to allow people to reflect on their subconscious thoughts before ceding the day to more intrusive gadgets.

There are seven slots for storing a week's worth of dreams, so users can pick up on any

ENERGY
More Effective Production Of "Green" Hydrogen with New Combined Material

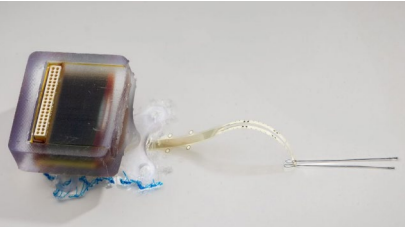


"The production of new petrol and diesel cars will be banned in the EU as of 2035. Electric motors are expected to become increasingly common in vehicles – but they are not suitable for all types of transport.

"Passenger cars can have a battery, but heavy trucks, ships or aircraft cannot use a battery to store the energy. For these means of transport, we need to find clean and renewable energy sources, and hydrogen is a good candidate," says Jianwu Sun, associate professor at Linköping University, who has led the study published in the Journal of the American Chemical Society.

The LiU researchers are working on developing materials that can be used to produce hydrogen (H2) from water (H2O) by using the energy in sunlight."

HEALTH TECH
Device Study Offers Hopes for Spinal Cord Injuries



"An implantable electronic device has restored movement following spinal cord injury in an animal study, raising hopes for an effective treatment for humans and even their pets.

"We developed an ultra-thin implant designed to sit directly on the spinal cord, precisely positioned over the injury site in rats," Dr Harland says.

The device delivers a carefully controlled electrical current across the injury site.

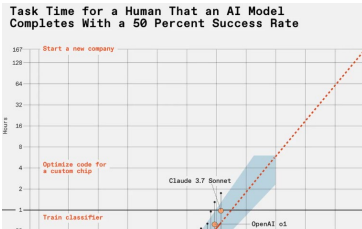
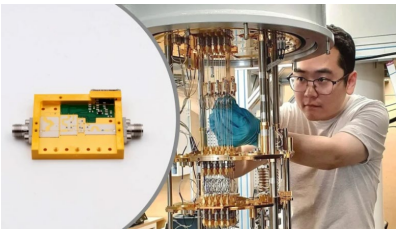
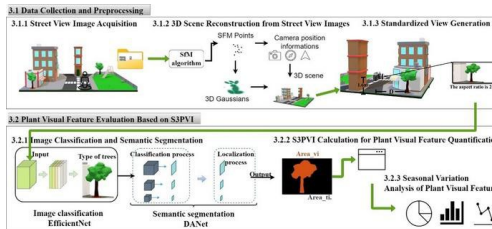
"The aim is to stimulate healing so people can recover functions lost through spinal-cord injury," Professor Darren Svirkis, director of the CatWalk Cure Programme at the University's School of Pharmacy says.

Unlike humans, rats have a greater capacity for spontaneous recovery after spinal cord injury, which allowed researchers to compare natural healing with healing supported by electrical stimulation.

After four weeks, animals that received daily electric field treatment showed improved movement compared with those who did not.

Throughout the 12-week study, they responded more quickly to gentle touch.

"This indicates that the treatment supported

stable enough to build on." Source: IEEE Spectrum (21 Jun 2025)	recurring themes." Source: Dezeen (30 Jun 2025)	recovery of both movement and sensation," Harland says. "Just as importantly, our analysis confirmed that the treatment did not cause inflammation or other damage to the spinal cord, demonstrating that it was not only effective but also safe." This new study, published in a leading journal, has come out of a partnership between the University of Auckland and Chalmers University of Technology in Sweden. See Nature Communications." Source: Nature (23 Jun 2025)	
LLM Large Language Models Are Improving Exponentially: In A Few Years, AI Could Handle Complex Tasks with Ease Task Time for a Human That an AI Model Completes With a 50 Percent Success Rate  "Benchmarking large language models presents some unusual challenges. For one, the main purpose of many LLMs is to provide compelling text that's indistinguishable from human writing. And success in that task may not correlate with metrics traditionally used to judge processor performance, such as instruction execution rate. But there are solid reasons to persevere in attempting to gauge the performance of LLMs. Otherwise, it's impossible to know quantitatively how much better LLMs are becoming over time—and to estimate when they might be capable of completing substantial and useful projects by themselves. That was a key motivation behind work at Model Evaluation & Threat Research (METR). The organization, based in Berkeley, Calif., "researches, develops, and runs evaluations of frontier AI systems' ability to complete complex tasks without human input." In March, the group released a paper called Measuring AI Ability to Complete Long Tasks, which reached a startling conclusion: According to a metric it devised, the capabilities of key LLMs are doubling every seven months. This realization leads to a second conclusion, equally stunning: By 2030, the most advanced LLMs should be able to complete, with 50 percent reliability, a software-based task that takes humans a full month of 40-hour workweeks. And the LLMs would likely be able to do many of these tasks much more quickly than humans, taking only days, or even just hours." Source: IEEE Spectrum (2 Jul 2025)	QUANTUM COMPUTERS Smart Amplifier Enabler for More Qubits in Future Quantum Computers  "Quantum computers can solve highly complex problems and have the potential to fundamentally transform multiple critical technologies. To harness their computational power, amplifiers are needed to read and amplify the qubit signals. But while amplifiers are essential for interpreting the information, they also generate heat that causes decoherence of the sensitive qubits. Now, researchers at Chalmers University of Technology in Sweden have developed a smart amplifier (left) that consumes just one-tenth of the power required by the best available amplifiers. This breakthrough could play a vital role in scaling up future quantum computers, where the aim is significantly more high-performing qubits. Yin Zeng, one of the study's authors, is seen here mounting the amplifier into a quantum computer's cryostat at Chalmers." Source: chalmers (25 Jun 2025)	SUSTAINABILITY Recycled Plastic Can Affect Hormone Systems  "A single pellet of recycled plastic can contain over 80 different chemicals. A new study with researchers from University of Gothenburg and Leipzig shows that recycled polyethylene plastic can leach chemicals into water causing impacts in the hormone systems and lipid metabolism of zebrafish larvae. The plastic pollution crisis has reached global levels, threatening both planetary and human health, and recycling is proposed as one of the solutions to the plastics pollution crisis. However, as plastics contain thousands of chemical additives and other substances that can be toxic, and these are almost never declared, hazardous chemicals can indiscriminately end up in recycled products. Increasing gene expressions In a new study, researchers bought plastic pellets recycled from polyethylene plastic from different parts of the world and let the pellets soak in water for 48 hours. After which zebrafish larvae were exposed to the water for five days. The experimental results show increases in gene expression relating to lipid metabolism, adipogenesis, and endocrine regulation in the larvae. "These short leaching times and exposure times are yet another indicator of the risks that chemicals in plastics pose to living organisms. The impacts that we measured show that these exposures have the potential to change the physiology and health of the fish," says Azora König Kardgar, lead author and researcher in ecotoxicology at the University of Gothenburg." Source: GU (23 Jun 2025)	URBAN PLANNING Enhancing The “Feel-Good” Factor of Urban Vegetation Using AI And Street View Images  "Osaka, Japan – The benefits of urban green spaces in cities, in terms of ecological sustainability, climate modification, and human well-being, have been known for decades. More recently, additional economic and restorative payoffs from diverse and colorful plantings have been recognized. Now, a research team from Japan has developed a new method to identify vegetation color, structure, and seasonal changes in urban settings. In a study published in Landscape Ecology, researchers at The University of Osaka reveal an innovative approach to capture seasonal changes in urban plant species. This method combines artificial intelligence (AI) techniques and street view imagery to allow planners to improve the visual appeal of urban green spaces throughout the year. "Diversity, in both plant color and species, seems to enhance the 'feel-good' factor of urban green space for city residents and visitors," says Anqi Hu, lead author of the study. "Our aim was to develop a method to visualize urban vegetation configuration and seasonality in much greater detail than before." The method integrates AI in the form of deep learning and 3D reconstruction technology with street view imagery, which significantly improves the accuracy and consistency of urban vegetation analysis. The effectiveness of the technology was tested on streets in Suita City, Osaka Prefecture, and applied to a virtual park design." Source: EurekAlert! (2 Jul 2025)

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