

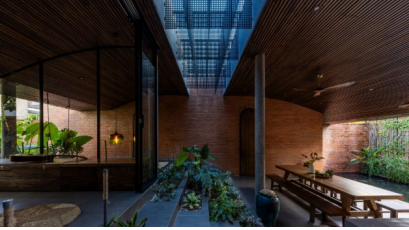


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ARCHITECTURE

CTA shelters annexe in Vietnam beneath curved roof to "evoke the sensation of being in a cave"



"Scale-shaped shingles cover the sweeping, canopy-like roof of Casa Mac, an annexe in Vietnam designed by local architecture studio CTA.

CTA, which stands for Creative Architects, sheltered this space with a gently curving, canopy-like roof, bisected at its centre by a long skylight through which light is filtered by a series of hanging, perforated metal screens.

"We wanted to draw nature into the living space as much as possible, while minimising or concealing typical residential elements like doors, roofs, and walls," co-founder Nguyen Thanh told Dezeen."

"This, combined with the vaulted arch, evokes the sensation of being inside a cave," she continued. "All daily human activities and elements of nature coexist harmoniously beneath a single, expansive canopy of shade."

Long walls of exposed brick flank either side of the space, with the only concession to partition walls and doors being made for a slim block containing a rest room and bathroom along the southern edge. This is accessed via tall, arched openings.

Source: [Dezeen](#) (27 July 2026)

ARCHITECTURE

The Architecture of the FIFA World Cup: Looking Back at 2026 and Ahead to 2030



The conclusion of the FIFA World Cup 2026 marks the end of the tournament's largest edition to date. Hosted across Canada, Mexico, and the United States, the competition expanded to 48 national teams and brought together sixteen host cities distributed across three countries. For decades, FIFA World Cups have served as catalysts for architectural production. Each edition has generated a distinct collection of stadiums, transportation investments, public spaces, and urban interventions that often remain part of their host cities long after the tournament concludes. While recent competitions have become associated with landmark stadium projects and ambitious national building programs, the 2026 edition followed a different trajectory, relying primarily on existing venues adapted to FIFA's technical and operational requirements.

Source: [Archdaily](#) (20 June 2026)

ARCHITECTURE

From Data to Digital Twins: Japan's PLATEAU Project Offers Open-Access Models of More Than 250 Cities



"Map the New World" is the motto of [Project PLATEAU](#), led by Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT), to develop and expand access to 3D models representing the diversity of cities across the country. [Japan comprises a total of 744 cities](#), including 14 with populations exceeding one million, 190 with between 100,000 and one million inhabitants, and 540 with populations between 10,000 and 100,000. To date, 3D models of more than 250 cities have been made available as open data through the country's public G-Spatial Information Center, and can also be accessed via an online browser viewer. According to public authorities, the project aims to strengthen urban resilience by providing society with new tools to address local challenges. This involves not only urban space modeling but also collaboration with local governments, private companies, and technology communities. The project also includes a digital reconstruction of the [recently closed Osaka World Expo site](#).

Source: [Archdaily](#) (27 July 2026)

ARCHITECTURE

Seven British dormer extensions that take design to another level



For our latest [roundup](#), we've collected seven dormer [extensions](#), from a design that takes cues from Italian palazzos and paintings to an extension clad in [recycled plastic](#) tiles designed to look like slate.

Dormer extensions are common in London, where they're often added to the city's many terraced houses, but can be found all over UK. Below, we've gathered eight practical and creative examples of how to add more space to your house.

Source: [Dezeen](#) (25 July 2026)

COMPUTING

An ordinary laptop solved a problem thought to require a quantum computer



"Physicists have used an ordinary computer, advanced mathematics, and specialized software to solve a difficult quantum physics problem that had been described as beyond the reach of classical machines.

The work was carried out by researchers at the Center for Computational Quantum Physics (CCQ) at the Simons Foundation's Flatiron Institute, together with collaborators at Boston University. Their method proved efficient enough for some of the calculations to run on a personal laptop.."

Source: [Simons Foundation](#) (20 July 2026)

MEDTECH

Sleep Patch Could Track Brain's Nightly Cleansing Ritual Monitoring the elusive activity of the glymphatic system could aid Alzheimer's research



"When you get a good night's sleep, you aren't just giving your brain a chance to rest. Sleep activates a system only discovered in 2012 that washes out brain waste. Called the glymphatic system, it's comparable to the better-known lymphatic system that moves and filters fluids throughout your body. A healthy glymphatic system is linked to good cognitive function and could prevent neurodegenerative diseases like Alzheimer's, but monitoring it during sleep has been practically impossible in humans, because today's methods require noisy, confining MRIs and invasive spinal injections.

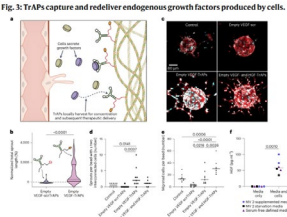
A new wearable device developed by researchers at Georgia Tech and Seoul National University (SNU) could offer a safer and more sleep-friendly alternative. The technology shines near-infrared light to detect brain water, a soup of the fluids that constantly flood your brain. The brain-water mixture contains cerebrospinal fluid (CSF), which is what the glymphatic system uses to flush out waste particles like plaques that block in-brain communication. Measuring total brain water could be a way to study how the glymphatic system moves CSF around to clean the brain, researchers say.

The patch, the design of which was published this month in Science Advances, is intended for ease of use. It's the size of a Band-Aid and less than a centimeter thick. Its soft silicone body conforms to the user's forehead, and it doesn't require a wired connection during sleep. Plus, it can be recharged and used over multiple nights, capturing more long-term information than what traditional sleep studies and MRIs can.."

Source: [IEEE Spectrum](#) (02 July 2026)

MEDTECH

Smart wound dressing speeds up healing by triggering body's own repair signals



"A bioinspired material, developed by scientists at Imperial College London, accelerates wound healing and the repair of human skin.

The material captures the body's own healing proteins, releasing them only when repair cells pull on them, delivering healing signals precisely where and when they are needed.

In new research published in Nature Materials, the dressings helped wounds on a mouse model close faster and improved the repair of human skin tissue in laboratory tests - the first time this mechanism has been shown to work in living, repairing tissue.

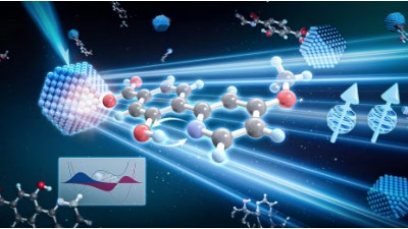
Wounds like diabetic foot ulcers, burns, and traumatic injuries affect millions of people and cost the NHS billions every year. Wounds that fail to heal fully leave patients in pain and at risk of infection, putting strain on health systems.

The researchers say the approach could one day reduce the need for costly manufactured drugs by using repair molecules harvested directly from a patient's own wounds or blood."

Source: [Imperial College London](#) (27 July 2026)

QUANTUM

A strange quantum effect dramatically boosts energy transfer



"Researchers discovered a proton-assisted mechanism that greatly improves how triplet energy moves between quantum dots and nearby molecules. The proton briefly shifts position, helps coordinate electron movement, and then returns to where it started. This quantum-driven shuttle could offer a powerful new way to tune solar cells, lasers, and catalytic reactions.

Electron and proton motion often work together in both living systems and engineered materials. The most familiar example is proton-coupled electron transfer (PCET), a process that plays a central role in bioenergetics, cellular respiration, photosynthesis, and nitrogen fixation. PCET has also influenced the design of many artificial materials used for energy conversion and storage. More recently, scientists identified another related process known as proton-coupled singlet energy transfer (PCEnT)..."

Source: [Dalian Institute of Chemical Physics](#) (22 July 2026)

SEMICONDUCTOR

Scientists create an “electron lighthouse” with laser light. Laser light can now do more than switch an

SEMICONDUCTOR

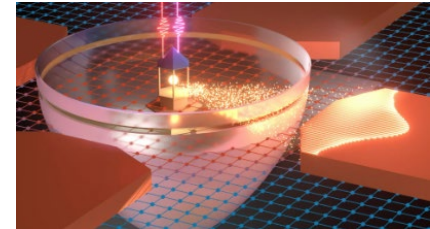
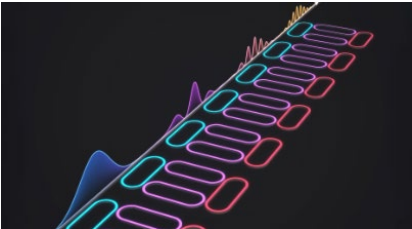
We’re Squandering LEDs’ Potential to Save Our Night Skies. Bad decisions have turned efficient technology into

SEMICONDUCTOR

New programmable photonic chip can control how fast light moves

RADAR & ELECTRONIC WAREFARE

Improving the Capabilities of Cognitive Radar and Electronic Warfare Systems (whitepaper)

electric current on: it can aim a narrow beam of electrons in a chosen direction.  “Researchers at the University of Michigan have developed a semiconductor device that uses laser light to direct the movement of electrons without requiring an applied electric field or electrical power source. The device was primarily designed to investigate fundamental physics and demonstrate a behavior that had never previously been observed. However, the discovery could eventually support technologies that combine optics and electronics, including advanced sensing, imaging, and telecommunications. It may also lead to better ways of transmitting signals between devices and encoding more information within them. "This electrical device that we manufactured at the Lurie Nanofabrication Facility has the potential to turn into something that measures different aspects of light," said Yiming Gong, who helped lead the project as a doctoral student in the U-M Department of Physics. "But this originates from a very fundamental level of physics, which is the interference between different optical absorption processes." Source: University of Michigan (28 July 2026)	a driver of light pollution. There is a better way  “Digital control for smarter lighting Wandering from Trafalgar Square along the edge of St. James's Park, Thorp and I find ourselves near Westminster Bridge, one of nine city bridges that in 2021 were part of the Illuminated River project, meant to make the Thames more beautiful at night. Each bridge now features a new LED lighting scheme that moves and changes color and intensity to create a coordinated work of art. But Thorp is frustrated that the project did nothing to correct the often glary lighting on the riverbanks. “Why don't you pay the money to correct all of this bad lighting instead of adding new lighting?” he says. LED technology, he points out, has the potential to fix that problem. In fact, this may be the most meaningful potential of LEDs: the ability for a community to control when, where, at what levels, and in which colors its lights shine. A public space like Trafalgar Square could be lit more brightly during rush hour, then dimmed as the night progresses, the lights not only connected to one another but to the surrounding streetlights and commercial lights. Anywhere in the world, LED streetlights could be programmed to rise and fall in brightness depending on the time of night or time of year. They could even be turned off during bird migrations, to reduce the number of birds that are disoriented by the lights and ultimately killed in collisions with reflective and illuminated windows.” Source: IEEE Spectrum (6 July 2026)	 ““Scientists have created a programmable optical chip that can slow light on demand, giving engineers far greater control over how optical signals propagate through a circuit. The technology could provide the delays, synchronization, and buffering functions needed to make light-based computing more practical. A single chip could eventually perform several tasks that currently require separate devices, potentially reducing energy use, cost, and complexity in AI servers and data centers. The team was led by Professors Namkyoo Park and Sunkyu Yu of the Department of Electrical and Computer Engineering at Seoul National University, working with Professor Xianji Piao of the School of Electrical and Computer Engineering at the University of Seoul. .” Source: Seoul National University (21 July 2026)	 “With today's emerging threats, traditional radar and electronic warfare (EW) systems that rely on static threat libraries face a critical vulnerability: mode-agile emitters operating in non-traditional modes that cannot be matched against predefined databases. A cognitive RF system addresses this challenge through artificial intelligence and machine learning techniques, enabling autonomous perception, reasoning, and response to unknown threats in the RF spectrum. This white paper reviews the architecture of cognitive AI/ML radar and EW systems, including key functional blocks such as RF acquisition, AI-driven analysis and inferencing, waveform synthesis, and RF generation. It also examines the challenges of training these systems — from acquiring real-world and simulated signal datasets to performing hardware-in-the-loop (HIL) and system-in-the-loop (SIL) testing — and describes how closed-loop testbeds can iteratively develop, validate, and improve the AI/ML algorithms needed to counter unknown threats. ” Source: Wiley (July 2026)
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