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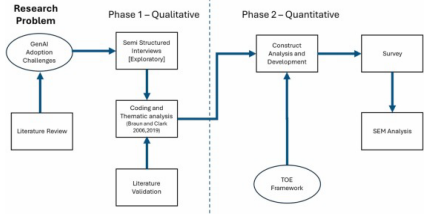
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AI
Adapting to change is the real key to unlocking GenAI’s potential, ECU research shows



“Generative artificial intelligence (GenAI) has had a transformative impact on business, enabling the automation of routine tasks, freeing up employees to focus on more strategic and creative work, while also reducing costs and accelerating time to market.

However, [new research from Edith Cowan University \(ECU\)](#) published in the *International Journal of Information Management* and funded by the SBL Business Intelligence Research group, has highlighted some of the issues that could be hindering the adoption of these emerging technologies.

GenAI uses large language models to produce content, based on specific prompts provided by its users. It is estimated that by 2027, 35 per cent of projected \$297.9 billion AI software spending will target GenAI, up from 8 per cent in 2023.

ECU Associate Professor Laurie Hughes noted that GenAI's rapid adoption raises questions about the evolving role of human input and the organisational readiness to adapt."

Source: [Eurekalert!](#) (3 Nov 2025)

ARCHITECTURE
From Concrete to Cultivation: How AI and Robotics Are Rewriting Architecture’s Material Logic



"Architecture has entered a pivotal moment. As cities continue to grow under the weight of climatic and social pressures, the materials and systems that shape them are being redefined. [Artificial intelligence](#) and robotics, once used to accelerate construction processes, are now being rethought as tools for cultivation. [Printed structures that grow](#), breathe, and decay. Cultivation, in this context, refers to designing with biological materials, where growth and decay are active parameters, merging digital precision with ecological intelligence. This evolution shows the shift from efficiency to empathy, where architecture becomes an agent of active repair. The introduction of [mycelium and other natural materials](#) into [3D printing](#) presents a new paradigm in architecture: the logic of the living. A place where computation and fabrication meet biological adaptability.

AI and robotics, once associated with industrial efficiency, are now opening new ways of designing. Early examples, such as [ICON's 3D-printed housing prototypes](#), focused on speed and automation but offered little response to their surroundings. Newer projects, such as the MycoMuseum at the [2025 Venice Architecture Biennale](#), reinterpret these tools through a biological lens. Instead of shaping concrete, they cultivate living materials, marking a shift from pure optimization toward regeneration."

Source: [Archdaily](#) (3 Nov 2025)



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ARCHITECTURE
"Sinuous structural system" supports Hangzhou footbridge by Zaha Hadid Architects



"UK studio Zaha Hadid Architects has unveiled the Grand Canal Gateway Bridge, a curving footbridge in Hangzhou that weaves around a trio of arches.

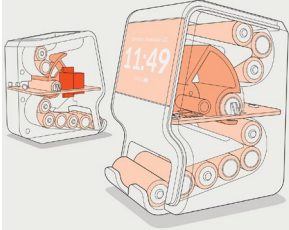
Set to open to the public later this year, the tied-arch bridge is designed as the centrepiece of the Seamless City masterplan, which contains a park, housing and civic and commercial districts, also designed by Zaha Hadid Architects.

Drawing upon Hangzhou's history in silk embroidery, Zaha Hadid Architects created three white arches that stretch over and under the Grand Canal Gateway Bridge.

The steel bridge spans across China's Grand Canal – the world's oldest and longest man-made waterway – where it meets the Qiantang River, which is known in Hangzhou for its "Silver Dragon" bore – a type of tidal phenomenon."

Source: [Dezeen](#) (31 Oct 2025)

BATTERY
A Hassle-Free Battery Charger Put NiMH cells back in the game



"[Lithium-ion](#) batteries' ability to deliver a lot of power from a small package have made them the go-to for makers and manufacturers alike. It's not unusual now to find, say, microcontroller boards with [integrated Li-ion chargers](#). Lithium-ion is [so popular](#), in fact, that it's easy to forget that other battery technologies exist, even when they're a better fit.

These worthy alternatives include removable rechargeable [nickel-metal hydride batteries](#). While NiMH cells can't be recharged as many times as lithium-ion cells can and don't offer the same [power density](#), they're cheaper and also safer. No need to ship them in boxes emblazoned with [fire warning labels](#). The fact that NiMH cells deliver lower voltages than lithium has become less of an issue as the voltage demands of [integrated circuits](#) have fallen, with 3.3-volt and 1.8-V chips rapidly displacing the ubiquitous 5-V standard of yesteryear."

Source: [IEEE Spectrum](#) (30 Oct 2025)

BIOMEDICAL
Spider-Inspired Microbots Could Replace Invasive Gut Diagnostics: The magnetically controlled bots roll through the digestive tract



"Deadly intestinal cancers are on the rise, and the best chance to beat them is with an early diagnosis. But current techniques used to inspect the digestive tract are highly invasive, scaring many patients away. Some researchers hope that soft, magnetically controlled robots the size of a vitamin capsule could replace these diagnostic methods in a few short years.

A team led by [Qingsong Xu](#), a professor of electromechanical engineering at the University of Macau in [China](#), recently [unveiled a micro-robot prototype](#) inspired by the [locomotion](#) of an African spider that cartwheels across the desert dunes of Namibia instead of crawling.

The robot, made of a rubber-like magnetic material, has been tested in animal stomachs, colons, and small intestines. The researchers said it successfully navigated the "complex environment" of the digestive tract, full of mucus, sharp turns, and obstacles as tall as 8 centimeters high.

Today's procedures use endoscopes, flexible tubes fitted with a camera that doctors insert into the patient's digestive tracts through the mouth or rectum. The procedure requires sedation due to the extreme discomfort it causes to the patient, and improper manipulation with the endoscope can cause serious injuries, including bowel perforation. Some patients might delay the investigation out of fear, which could have catastrophic consequences as [cancer](#) might spread. Other diseases, such as stomach ulcers and [Crohn's disease](#) are also diagnosed with endoscopy."

Source: [IEEE Spectrum](#) (2 Nov 2025)

CLIMATE CHANGE
How to fight climate change without the US: a guide to global action



"When the world's nations meet for COP30 in Belém, Brazil, on 10 November to lock down new commitments to limit dangerous climate change, it will be the first such conference since US President Donald Trump announced in January that his country would, for the second time, [exit the landmark Paris climate treaty](#).

Trump and his administration have [championed fossil fuels](#), called climate change "[the greatest con job ever perpetrated on the world](#)" and rolled back [federal funding and tax breaks for clean energy](#) introduced under former president Joe Biden.

The United States is the world's second biggest greenhouse-gas emitter, accounting for 11% of global emissions. Although US emissions will continue to fall under Trump, they could increase by up to 470 million tonnes annually — more than three times the annual total from the Netherlands — over the next decade compared with what they would have been under Biden policies, according to an analysis led by researchers at Princeton University in New Jersey ([J. Jenkins et al. Preprint at Zenodo https://doi.org/10.26434/chemrxiv-2025](#); see 'Trump's climate legacy')

Source: [Nature](#) (3 Nov 2025)

DESIGN
Eight of the best avant-garde student projects from Dutch Design Week



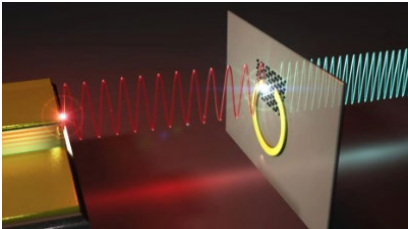
"[Dutch Design Week](#) is known for bringing out the best and most original [student design](#). This year, that included broom weapons, a swinging oven and a Chinese censorship detector.

Students come from all over the world to study at the Netherlands' more than 30 design schools. And every October, all of those schools – plus several from Europe – make their way to Eindhoven for [Dutch Design Week](#).

This year's edition was no exception, with high-achieving students dominating the exhibition spaces with works that challenge, inspire and push the boundaries of design. Here, contributing editor Rima Sabina Aouf shares eight of her favourites."

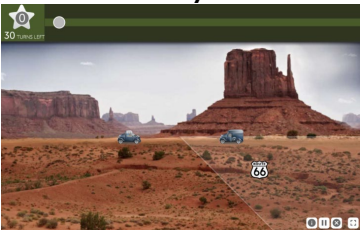
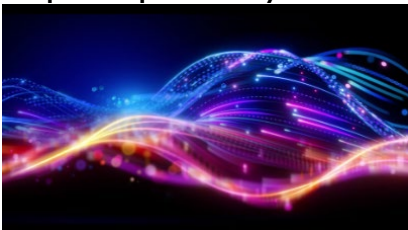
Source: [Dezeen](#) (31 Oct 2025)

EDUCATION
Quantum light breakthrough could transform technology



"Scientists have achieved a breakthrough in light manipulation by using topological insulators to generate both even and odd terahertz frequencies through high-order harmonic generation (HHG). By embedding these exotic materials into nanostructured resonators, the team was able to amplify light in unprecedented ways, confirming long-theorized quantum effects. This discovery opens the door to new terahertz technologies with vast implications for ultrafast electronics, wireless communication, and quantum computing."

Source: [CAS](#) (2 Nov 2025)

ENERGY This artificial leaf turns pollution into power  "Cambridge researchers have engineered a solar-powered "artificial leaf" that mimics photosynthesis to make valuable chemicals sustainably. Their biohybrid device combines organic semiconductors and enzymes to convert CO₂ and sunlight into formate with high efficiency. It's durable, non-toxic, and runs without fossil fuels—paving the way for a greener chemical industry." Source: Cambridge (2 Nov 2025)	HEALTH Researchers at The Neuro show a brain exercise yields benefit  "A McGill University-led clinical trial is the first in humans to show online brain training exercises can improve brain networks affecting learning and memory. The study found 10 weeks' use of the game-like app BrainHQ by older adults enhanced cholinergic function, a chemical system in the brain that typically declines with age and influences attention, memory and decision-making. "The training restored cholinergic health to levels typically seen in someone 10 years younger," said senior author Dr. Etienne de Villers-Sidani, an Associate Professor in McGill's Department of Neurology and Neurosurgery and neurologist at The Neuro (Montreal Neurological Institute-Hospital). "This is the first time any intervention, drug or non-drug, has been shown to do that in humans," he said. Alzheimer's disease involves particularly steep declines in cholinergic health. This study offers a biochemical explanation of prior findings showing these exercises reduce dementia risk and boost cognition. The researchers say this training could offer a lower-risk alternative to medication or be used alongside it." Source: Mcgill (14 Oct 2025)	HEALTHCARE Electricity reprograms immune cells to speed up recovery  "By electrically stimulating macrophages, scientists at Trinity College Dublin have found a way to calm inflammation and promote faster healing. The process turns these immune cells into tissue-repairing helpers, enhancing regeneration and blood vessel growth. Safe, effective, and based on human cells, this discovery could revolutionize treatments for inflammation and injury recovery." Source: Trinity College Dublin (30 Oct 2025)	OPTICS Beyond electronics: Harnessing light for faster computing  "The proposed optical computing chip enables the high-speed, parallel processing for quantitative trading with unprecedented low latency, accelerating the crucial and demanding step of feature extraction. Image courtesy of H. Chen, Tsinghua University. Many modern artificial intelligence (AI) applications, such as surgical robotics and real-time financial trading, depend on the ability to quickly extract key features from streams of raw data. This process is currently bottlenecked by traditional digital processors. The physical limits of conventional electronics prevent the reduction in latency and the gains in throughput required in emerging data-intensive services. The answer to this might lie in harnessing the power of light. Optical computing—or using light to perform demanding computations—has the potential to greatly accelerate feature extraction. In particular, optical diffraction operators, which are plate-like structures that perform calculations as light propagates through them, are highly promising due to their energy efficiency and capacity for parallel processing. However, pushing these systems to operating speeds beyond 10 GHz in practice remains a technical challenge. This is mainly due to the difficulty of maintaining the stable, coherent light needed for optical computations. To tackle this issue, a research team led by Professor Hongwei Chen from Tsinghua University, China, has engineered a remarkable solution. As reported in Advanced Photonics Nexus, they developed an optical feature extraction engine (dubbed OFE2) that performs optical feature extraction for a variety of practical applications. A core innovation lies in the OFE2 data preparation module. Providing high-speed and parallel optical signals for optical cores operating in a coherent environment is highly challenging, as using fiber-based components for power splitting and delay introduces strong phase perturbations. The team solved this by developing an integrated on-chip system with tunable power splitters and precise delay lines. This module effectively de-serializes the data stream by sampling the input signal into multiple stable parallel branches. Moreover, an adjustable integrated phase array allows OFE2 to be reconfigured as necessary." Source: SPIE (27 Oct 2025)
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