SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

Weekly Discovery

We SHARE to inspire and ignite ideas!

15 Sep - 19 Sep 2025

LinkedIn Learning Invest in Yourself

Did you know 1 cent doubled for 30 days = $5.368 Million

Similarly, your actions everyday can amount to much more!

Learn a new skill today with LinkedIn Learning and start investing in yourself!

Activate you free LinkedIn Learning Account and get started!

Featured Course

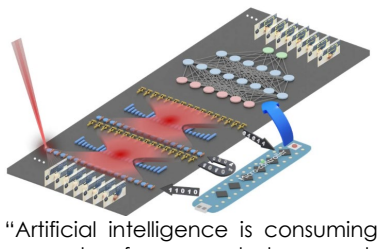
How to Manage Feeling Overwhelmed

42m

Click Here to Start Learning

AI

Light-Powered Chip Makes AI 100 Times More Efficient

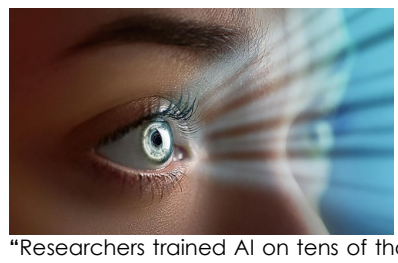


"Artificial intelligence is consuming enormous amounts of energy, but researchers at the University of Florida have built a chip that could change everything by using light instead of electricity for a core AI function. By etching microscopic lenses directly onto silicon, they've enabled laser-powered computations that cut power use dramatically while maintaining near-perfect accuracy."

Source: SPIE (13 Sep 2025)

AI

AI Can Now Predict Who Will Go Blind, Years Before Doctors Can

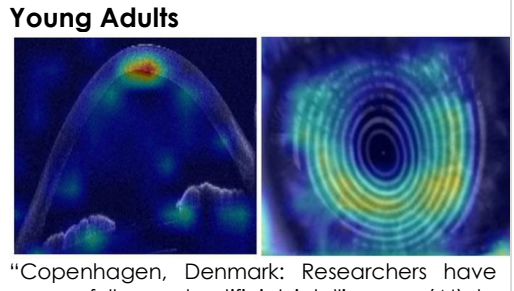


"Researchers trained AI on tens of thousands of eye scans, enabling doctors to predict which keratoconus patients need early treatment and which can be safely monitored, cutting down on unnecessary procedures while preventing vision loss."

Source: European Society of Cataract and Refractive Surgeons (14 Sep 2025)

AI

AI Can Spot Which Patients Need Treatment to Prevent Vision Loss in Young Adults



"Copenhagen, Denmark: Researchers have successfully used artificial intelligence (AI) to predict which patients need treatment to stabilise their corneas and preserve their eyesight, in a study presented today (Sunday) at the 43rd Congress of the European Society of Cataract and Refractive Surgeons (ESCRS).

The research focused on people with keratoconus, a visual impairment that generally develops in teenagers and young adults and tends to worsen into adulthood. It affects up to 1 in 350 people. In some cases, the condition can be managed with contact lenses, but in others it deteriorates quickly and if it is not treated, patients may need a corneal transplant. Currently the only way to tell who needs treatment is to monitor patients over time."

Source: Eurekalert! (13 Sep 2025)

AI

AI Tool Detects LLM-Generated Text in Research Papers and Peer Reviews

"An analysis of tens of thousands of research-paper submissions has shown a dramatic increase in the presence of text generated using artificial intelligence (AI) in the past few years, an academic publisher has found.

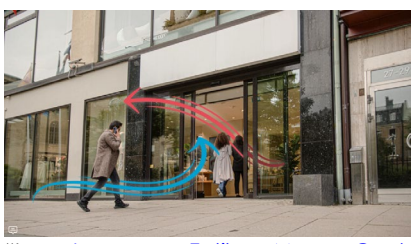
The American Association for Cancer Research (AACR) found that 23% of abstracts in manuscripts and 5% of peer-review reports submitted to its journals in 2024 contained text that was probably generated by large language models (LLMs). The publishers also found that less than 25% of authors disclosed their use of AI to prepare manuscripts, despite the publisher mandating disclosure for submission.

To screen manuscripts for signs of AI use, the AACR used an AI tool that was developed by Pangram Labs, based in New York City. When applied to 46,500 abstracts, 46,021 methods sections and 29,544 peer-review comments submitted to 10 AACR journals between 2021 and 2024, the tool flagged a rise in suspected AI-generated text in submissions and review reports since the public release of OpenAI's chatbot, ChatGPT, in November 2022."

Source: Nature (11 Sep 2025)

ARCHITECTURE

How Entrance Systems Are Becoming the Hidden Infrastructure of Smart Buildings



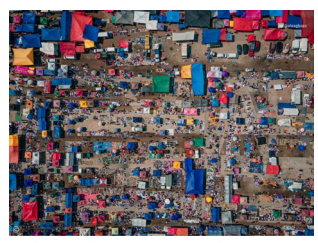
"In Jacques Tati's *Mon Oncle* (1958), architecture itself becomes a character: sliding doors, an automatic fountain, gates that emit mechanical sounds, devices that both enchant and frustrate the inhabitants. The comedy arises precisely from the fact that these seemingly trivial systems silently shape everyday life. More than six decades later, the observation seems prophetic. In contemporary buildings, countless systems work autonomously and discreetly, going unnoticed when they function well. Among them, automatic doors, traditionally seen as secondary elements, are emerging as part of a new "invisible infrastructure": connected, efficient, and intelligent systems that support comfort, sustainability, and operational resilience.

When we think about architectural performance, entrance doors rarely appear among the priorities. At first glance, they seem limited to opening and closing repeatedly throughout the day. But in the transition to sustainable and smart architecture, these systems have taken on new functions: they are now active nodes in digital networks. Equipped with Internet of Things (IoT) platforms, automatic doors can transmit real-time data on usage patterns, anticipate maintenance needs, and be monitored or adjusted remotely. This connectivity reduces downtime, extends equipment lifespan, and lowers corrective maintenance costs, while at the same time transforming doors into building sensors, generating valuable data for building management systems (BMS). Integrated with HVAC, lighting, and security, they become part of an intelligent ecosystem that supports both the user experience and the daily operation of the building."

Source: Archdaily (11 Sep 2025)

ARCHITECTURE

Becoming A City Scientist: How to Draw Urban Spaces with Data



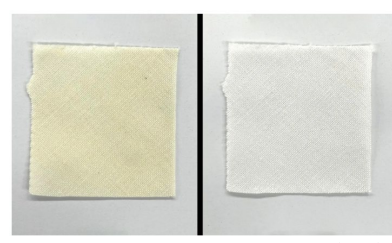
"City Science, a rapidly expanding profession, is the scientific study and engineering of urban systems. It uses advanced technologies, big data, and complex systems physics to tackle challenges such as decarbonization, mobility, and livability. At its core, city science is about data-driven solutions. It employs statistics, modeling, and artificial intelligence to reveal the hidden dynamics of cities, from energy use to human movement. It employs strategies that reduce carbon emissions, enhance efficiency, and foster urban environments that are more sustainable and resilient.

City science views the city as a living system, expanding traditional models of building and street compositions. It builds unified performance models that measure the social, economic, and environmental impact of interventions. It integrates transport planning with land use, analyzes networks of connections, and tests policies through simulation. It operates at the community scale, creating hyperlocal tools that enable neighborhoods and local governments to make informed decisions. The aim is not abstract theory but practical strategies that improve everyday life."

Source: Archdaily (11 Sep 2025)

CHEMISTRY

Sweat And Food Stains Vanish Under Blue Light

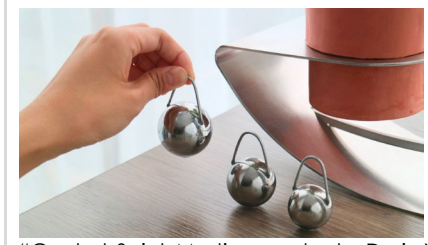


"Forget harsh bleach—scientists have discovered that powerful blue LED light can erase yellow stains from sweat, food, and oils without harming delicate fabrics like silk. By harnessing oxygen in the air as a natural oxidizer, the technique breaks down stubborn pigments such as beta carotene and lycopene, outshining hydrogen peroxide and even UV treatments."

Source: ACM (10 Sep 2025)

DESIGN

Tilt Planter Uses Weights to Demonstrate The "Constant Change" Of Houseplants



"Central Saint Martins graduate Doris Xu has created a weighted planter that shifts from side to side as the plant absorbs water, allowing users to observe its rhythms of growth.

Xu, who graduated from Central Saint Martins' Product and Industrial Design course, developed Tilt in response to the detachment she observed between city-dwelling houseplant owners and nature.

"Rather than seeing a houseplant purely as a static and decorative object, I wanted to emphasise the fact that plants are in fact living and constantly growing by creating a planter that could reflect this constant change," she told Dezeen.

Made out of just two materials, the planter comprises a curved aluminium plate that's punctuated on one end with a hole; inside rests a terracotta pot where users place their plant of choice."

Source: Dezeen (12 Sep 2025)

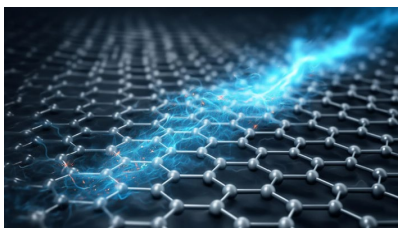
GRAPHENE

MICROPLASTICS

PHYSICS

ROBOTICS

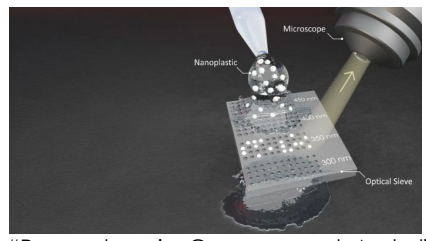
Graphene Just Broke a Fundamental Law of Physics



"For the first time, scientists have observed electrons in graphene behaving like a nearly perfect quantum fluid, challenging a long-standing puzzle in physics. By creating ultra-clean samples, the team at IISc uncovered a surprising decoupling of heat and charge transport, shattering the traditional Wiedemann-Franz law. At the mysterious "Dirac point," graphene electrons flowed like an exotic liquid similar to quark-gluon plasma, with ultra-low viscosity. Beyond rewriting physics textbooks, this discovery opens new avenues for studying black holes and quantum entanglement in the lab—and may even power next-gen quantum sensors."

Source: IISc (12 Sep 2025)

The Invisible Plastic Threat You Can Finally See



"Researchers in Germany and Australia have created a simple but powerful tool to detect nanoplastics—tiny, invisible particles that can slip through skin and even the blood-brain barrier. Using an "optical sieve" test strip viewed under a regular microscope, these particles reveal themselves through striking color changes."

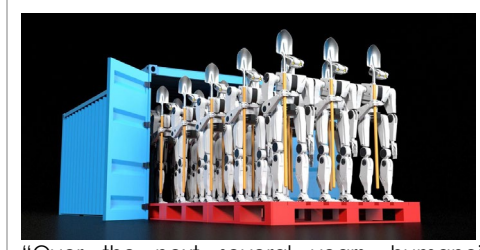
Source: Universitaet Stuttgart (10 Sep 2025)

The Real Reason Ice Is Slippery, Revealed After 200 Years

"For centuries, people believed ice was slippery because pressure and friction melted a thin film of water. But new research from Saarland University reveals that this long-standing explanation is wrong. Instead, the slipperiness comes from the subtle interaction of molecular dipoles between ice and surfaces like shoes or skis. These microscopic electrical forces disorder the crystal structure of ice, creating a thin liquid layer even at temperatures near absolute zero. The discovery overturns nearly 200 years of scientific thought and has wide implications for physics and winter sports alike."

Source: Saarland University (12 Sep 2025)

Reality Is Ruining the Humanoid Robot Hype



"Over the next several years, humanoid robots will change the nature of work. Or at least, that's what humanoid robotics companies have been consistently promising, enabling them to raise hundreds of millions of dollars at valuations that run into the billions.

Delivering on these promises will require a lot of robots. Agility Robotics expects to ship "hundreds" of its Digit robots in 2025 and has a factory in Oregon capable of building over 10,000 robots per year. Tesla is planning to produce 5,000 of its Optimus robots in 2025, and at least 50,000 in 2026. Figure believes "there is a path to 100,000 robots" by 2029. And these are just three of the largest companies in an increasingly crowded space.

Amplifying this message are many financial analysts: Bank of America Global Research, for example, predicts that global humanoid robot shipments will reach 18,000 units in 2025. And Morgan Stanley Research estimates that by 2050 there could be over 1 billion humanoid robots, part of a US $5 trillion market.

But as of now, the market for humanoid robots is almost entirely hypothetical. Even the most successful companies in this space have deployed only a small handful of robots in carefully controlled pilot projects. And future projections seem to be based on an extraordinarily broad interpretation of jobs that a capable, efficient, and safe humanoid robot—which does not currently exist—might conceivably be able to do. Can the current reality connect with the promised scale?"

Source: IEEE Spectrum (10 Sep 2025)

To view past Weekly Alerts CLICK HERE
For more articles or in-depth research, contact us at library@sutd.edu.sg