SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

# Weekly Discovery

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17 Mar – 21 Mar 2025

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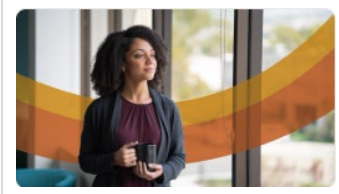

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Leadership Mindsets **34m**
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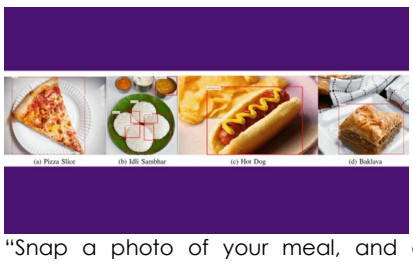
AI

### AI Food Scanner Turns Phone Photos into Nutritional Analysis




"Snap a photo of your meal, and artificial intelligence instantly tells you its calorie count, fat content, and nutritional value — no more food diaries or guesswork.

This futuristic scenario is now much closer to reality, thanks to an AI system developed by NYU Tandon School of Engineering researchers that promises a new tool for the millions of people who want to manage their weight, diabetes and other diet-related health conditions.

The technology, detailed in a paper presented at the 6th IEEE International Conference on Mobile Computing and Sustainable Informatics, uses advanced deep-learning algorithms to recognize food items in images and calculate their nutritional content, including calories, protein, carbohydrates and fat."

Source: NYU (17 Mar 2025)

AI – Survey Report

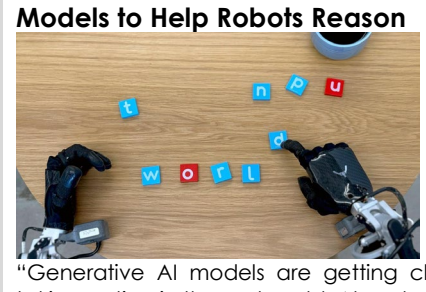
### The State Of AI: How Organizations Are Rewiring to Capture Value


"Organizations are starting to make organizational changes designed to generate future value from gen AI, and large companies are leading the way. The latest McKinsey Global Survey on AI finds that organizations are beginning to take steps that drive bottom-line impact—for example, redesigning workflows as they deploy gen AI and putting senior leaders in critical roles, such as overseeing AI governance. The findings also show that organizations are working to mitigate a growing set of gen-AI-related risks and are hiring for new AI-related roles while they retrain employees to participate in AI deployment. Companies with at least $500 million in annual revenue are changing more quickly than smaller organizations. Overall, the use of AI—that is, gen AI as well as analytical AI—continues to build momentum: More than three-quarters of respondents now say that their organizations use AI in at least one business function. The use of gen AI in particular is rapidly increasing."

Source: mckinsey (18 Mar 2025)

AI ROBOTS

### With Gemini Robotics, Google Aims for Smarter Robots: DeepMind Launches Two New Foundation Models to Help Robots Reason



"Generative AI models are getting closer to taking action in the real world. Already, the big AI companies are introducing AI agents that can take care of web-based busywork for you, ordering your groceries or making your dinner reservation. Today, Google DeepMind announced two generative AI models designed to power tomorrow's robots.

The models are both built on Google Gemini, a multimodal foundation model that can process text, voice, and image data to answer questions, give advice, and generally help out. DeepMind calls the first of the new models, Gemini Robotics, an "advanced vision-language-action model," meaning that it can take all those same inputs and then output instructions for a robot's physical actions. The models are designed to work with any hardware system, but were mostly tested on the two-armed Aloha 2 system that DeepMind introduced last year.

In a demonstration video, a voice says: "Pick up the basketball and slam dunk it" (at 2:27 in the video below). Then a robot arm carefully picks up a miniature basketball and drops it into a miniature net—and while it wasn't a NBA-level dunk, it was enough to get the DeepMind researchers excited."

Source: IEEE Spectrum (12 Mar 2025)

ARCHITECTURE

### Discover The Winning Projects of The Upcoming 2025 Edition of Concéntrico Festival in Logroño

"The renowned festival of ephemeral architecture and the city, Concéntrico, is gearing up for its eleventh edition, which, as every year, will take place in the city of Logroño. In 2025, the event will be held from June 19 to 24, featuring a program that includes various activities, conferences, and tours aimed at reflecting on public space, cities, and the ways we intervene in and interact with them.

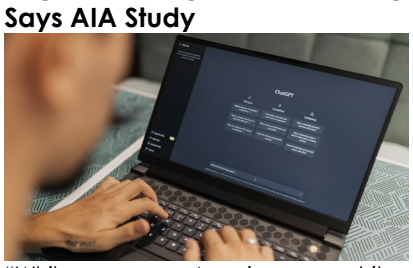
The upcoming edition of Concéntrico will introduce new formats and initiatives, with activities not only in Logroño but also in Milan, Barcelona, Madrid, Dammam, and Huesca. With this expansion to different cities and formats, Concéntrico will also strengthen educational programs and citizen participation, fostering dialogue between architects, designers, and communities.

Among these new formats, the call for the incorporation of a permanent project stands out as a new development, with construction planned for 2026. This project responds to a call for the design of a Permanent Urban Climate Island in Logroño, which will be located on the lake of Parque Felipe VI. The winners of this call were Carlos Iraburu Elizalde, Álvaro Oriol, José Rodríguez-Losada, and Carlos Iraburu Bonafé, from the Madrid-based architecture studio K37.lab, with their project titled 'Al agua patos.'"

Source: Archdaily (17 Mar 2025)

ARCHITECTURE

### Only Six Per Cent of Architects Regularly Using Artificial Intelligence Says AIA Study



"While many American architects are interested in artificial intelligence only a small minority have implemented it regularly into their practice, says a study released by the American Institute of Architects.

According to the American Institute of Architects' (AIA) periodic Journey to Specification research study, only six per cent of architects in the United States regularly use artificial intelligence (AI) tools in their practice.

Over 500 AIA-registered architects responded to the study, which asked questions about both individual and firm-wide implementation of AI software.

**Majority of architects concerned**

Of the individual respondents, 53.1 per cent have experimented with AI in some capacity, while only eight per cent of studios have implemented AI directly into their processes – the majority of these were larger firms.

A majority of respondents were optimistic about the potential for AI to help with complex problems (84 per cent), but nearly all (90 per cent) expressed concerns about AI.

Architects who responded noted concern with inaccuracy, unintended consequences and privacy as the top-line concerns.

The study was carried out in collaboration with software companies Deltek and Construct Connect.

"AI is transforming the design industry, creating both challenges and opportunities for Building Product Manufacturers," said Construct Connect VP of sales Derek Guffey.

"This research offers key insights into AI and its impact on go-to-market strategies and product selection in this brave new world," he continued. "The Journey to Specification serves as a guidepost for manufacturers planning for an AI-driven future.""

ARCHITECTURE

### Growth Collection by Gensler for The Good Plastic Company

"Global architecture firm Gensler collaborated with The Good Plastic Company to produce a new nature-informed range of the brand's Polygood recycled plastic panels.

The Growth collection reimagines traditional surface materials such as marble and terrazzo using The Good Plastic Company's signature technique of pressing recycled plastic into panels that can be used for surfacing bartops, tabletops, reception desks and other structures."

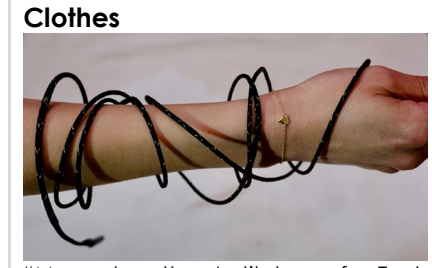
COMPUTER VISION

### A Computer Vision Solution for Behavioral Recognition in Red Pandas

"The survival of the red panda, an endangered arboreal mammal, is challenged by two main factors: habitat loss and health risks that contribute to high morbidity and mortality. Abnormal behaviors, such as reduced social and locomotor behaviors and sleep deprivation, are often signals of potential health problems. Non-invasive behavioral monitoring using computer vision can provide valuable insights to advance health research and welfare practices. This study presents a dataset of 3142 images of red panda behavior, collected using a motion-activated camera and web crawler technology at Bifengxia Wildlife World. This study proposes an improved lightweight and efficient YOLOv8 model for behavior recognition. The model incorporates adaptive histogram equalization and the GMBottleNeck module, which enhance detail accentuation and reduce parameters. The training process was enhanced through the integration of the SimAM attention mechanism and feature fusion learning. The aforementioned enhancements led to the YOLOv8s-Red Panda model attaining a 90.6% accuracy rate, representing a 1.4% improvement and a 1/3 reduction in model size in comparison to the data-enhanced baseline model (YOLOv8s-DE). The model exhibits exemplary performance in the recognition of red panda behavior, with the potential to significantly advance healthcare and optimize animal welfare."

DESIGN

### MIT Researchers Create "Fibre Computer" That Can Be Woven into Clothes



"Massachusetts Institute of Technology researchers have created a thin and flexible fibre computer and woven it into clothes, suggesting a potential alternative to current wearable electronics.

Created by the Fibers@MIT lab, the computer is made up of a series of minute devices – including sensors, a microcontroller, digital memory and a battery – all stretched out to create a single elastic fibre.

Several of these fibre computers were mixed with traditional fibres to create a top and leggings. These articles of clothing were then used to analyse movement, and in the next stage of testing, they will be incorporated into base layers worn by the US Army and Navy service on a real-world Arctic research mission.

The fibre computer will monitor the service members' health on the 30-day mission, where they will be exposed to extreme cold, in the hope that they can ultimately predict and prevent injury.

Fibers@MIT principal investigator Yoel Fink said that the fibre computer is more geared to this kind of task than conventional wearables, because it is widely distributed over the body rather than concentrated on a single spot like the wrist or chest.

"Our bodies broadcast gigabytes of data through the skin every second in the form of heat, sound, biochemicals, electrical potentials and light, all of which carry information about our activities, emotions and health," said Fink. "Unfortunately, most if not all of it gets absorbed and then lost in the clothes we wear."

For this reason, he wants the clothes themselves to do the work of capturing, analysing, storing and communicating data."

Source: Dezeen (14 Mar 2025)

MEDTECH

## Robotics And Spinal Stimulation Restore Movement in Paralysis

"Spinal cord injuries are life-altering, often leaving individuals with severe mobility impairments. While rehabilitation robotics—devices that guide movement during therapy—have improved training for those with spinal cord injuries, their effectiveness remains limited. Without active muscle engagement, robotic-assisted movement alone does not sufficiently retrain the nervous system.

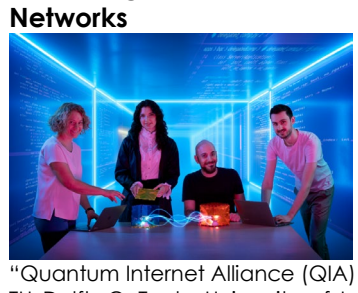
A team at NeuroRestore, led by Grégoire Courtine and Jocelyne Bloch, has now developed a system that seemlessly integrates an implanted spinal cord neuroprosthesis with rehabilitation robotics. The researchers' device delivers well-timed electrical pulses to stimulate muscles in harmony with robotic movements, resulting in natural and coordinated muscle activity during therapy. The neuroprosthetics innovation leveraged the robotic expertise of Professor Auke Ijspeert's lab at EPFL. This advancement not only enhances immediate mobility but also fosters long-term recovery."

Source: ACTU (13 Mar 2025)

Source: Dezeen (18 Mar 2025)

QUANTUM NETWORKS

## QIA Researchers Create First Operating System For Quantum Networks



"Quantum Internet Alliance (QIA) researchers at TU Delft, QuTech, University of Innsbruck, INRIA and CNRS recently announced the creation of the first operating system designed for quantum networks: QNodeOS. The research, published in Nature, marks a major step forward in transforming quantum networking from a theoretical concept to a practical technology that could revolutionize the future of the internet.

"The goal of our research is to bring quantum network technology to all. With QNodeOS we're taking a big step forward. We're making it possible – for the first time – to program and execute applications on a quantum network easily", says Prof. Dr. Stephanie Wehner, Professor of Quantum Computer Science at TU Delft's quantum technology research institute QuTech who led the study. "Our work also creates a framework opening entirely new areas of quantum computer science research."

Lowering barriers for developers

The ability to easily program classical computing hardware such as laptops or phones has had a transformative impact on our world and enabled the creation of a wide range of applications. "The system is like the software on your computer at home: you don't need to know how the hardware works to use it," says Mariagrazia Iuliano, PhD student at QuTech.

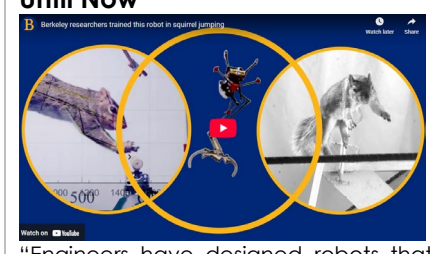
By essentially removing the barrier between networking hardware and software, the operating system will allow developers to create applications with ease and across a large spectrum of hardware solutions, paving the way for the development of software that can bring quantum network technology to society."

Source: tudelft (12 Mar 2025)

Source: Nature (17 Mar 2025)

ROBOTICS

## No Robot Can Match a Squirrel's Ability to Leap from Limb to Limb — Until Now




"Engineers have designed robots that crawl, swim, fly and even slither like a snake, but no robot can hold a candle to a squirrel, which can parkour through a thicket of branches, leap across perilous gaps and execute pinpoint landings on the flimsiest of branches.

University of California, Berkeley, biologists and engineers are trying to remedy that situation. Based on studies of the biomechanics of squirrel leaps and landings, they have designed a hopping robot that can stick a landing on a narrow perch.

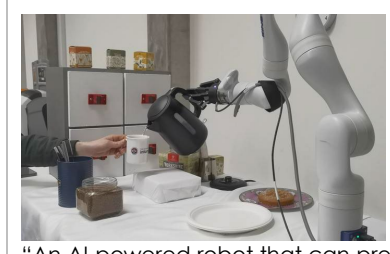
The feat, reported March 19 in the journal Science Robotics, is a big step in the design of more agile robots, ones that can leap among the trusses and girders of buildings under construction or robots that can monitor the environment in tangled forests or tree canopies."

Source: Berkeley (19 Mar 2025)

Source: Dezeen (27 Feb 2025)

ROBOTICS

## Coffee-Making Robot Breaks New Ground for AI Machines



"An AI-powered robot that can prepare cups of coffee in a busy kitchen could usher in the next generation of intelligent machines, a study suggests.

Using a combination of cutting-edge AI, sensitive sensors and fine-tuned motor skills, the robot can interact with its surroundings in more human-like ways than ever before, researchers say.

The new technology, developed by a team at the University of Edinburgh, could transform robots' ability to carry out tasks that previously could only be done by people.

While robots are adept at working in tightly controlled settings such as factories and production lines, they struggle in dynamic, unpredictable places like kitchens, experts say.

This is because robots have traditionally relied on pre-programmed actions and responses, and lack the ability to adapt to unforeseen obstacles in real-time, the researchers say.

Now, the Edinburgh team has combined advances in sensitive motor skills and AI to create a robot that can interact skilfully with objects and people in challenging settings. Previous developments in these areas had taken place largely independent of each other, the team says.

The new device – a robotic arm with seven movable joints – first interprets verbal instructions it receives, then analyses its surroundings."

Source: Eurekalert! (18 Mar 2025)

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