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### AI New AI Model Could Make Power Grids More Reliable Amid Rising Renewable Energy Use



"As renewable energy sources such as wind and solar become more widespread, managing the power grid has become increasingly complex. Researchers at the University of Virginia have developed an innovative solution: an artificial intelligence model that can address the uncertainties of renewable energy generation and electric vehicle demand, making power grids more reliable and efficient.

Multi-Fidelity Graph Neural Networks: A New AI Solution

The new model is based on multi-fidelity graph neural networks (GNNs), a type of AI designed to improve power flow analysis — the process of ensuring electricity is distributed safely and efficiently across the grid. The "multi-fidelity" approach allows the AI model to leverage large quantities of lower-quality data (low-fidelity) while still benefiting from smaller amounts of highly accurate data (high-fidelity). This dual-layered approach enables faster model training while increasing the overall accuracy and reliability of the system."

Source: [Virginia](#) (24 Oct 2024)

### ARCHITECTURE Florence Institute of Design International presents ten design projects



"A pilot study led by researchers at University of California San Diego School of Medicine found that advanced artificial intelligence (AI) could potentially lead to easier, faster and more efficient hospital quality reporting while retaining high accuracy, which could lead to enhanced health care delivery.

The study results, published in the October 21, 2024 online edition of the New England Journal of Medicine (NEJM) AI, found an AI system using large language models (LLMs) can accurately process hospital quality measures, achieving 90% agreement with manual reporting, which could lead to more efficient and reliable approaches to health care reporting.

Researchers of the study, in partnership with the Joan and Irwin Jacobs Center for Health Innovation at UC San Diego Health (JCHI), found that LLMs can perform accurate abstractions for complex quality measures, particularly in the challenging context of the Centers for Medicare & Medicaid Services (CMS) SEP-1 measure for severe sepsis and septic shock."

Source: [DEZEEN](#) (26 Oct 2024)

### ARCHITECTURE Architecture for Social Well-Being: 10 Community Centers in Mexico

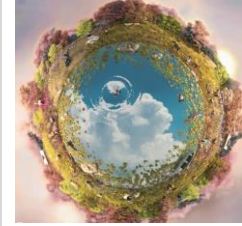


"How do community centers emerge? Why do they often represent a need for the appropriation and development of society? In the pursuit of improving the quality of life in the most vulnerable communities, community centers present themselves as an alternative capable of providing healthcare, educational, cultural, and recreational services, along with spaces that contribute to the present and future development of communities. In Mexico, numerous community centers are created and supported by government institutions, civil foundations, or private companies, as well as co-management initiatives that aim to integrate children, youth, adults, and older adults into spaces for gathering, socializing, and recreation, where they can engage in activities from learning to developing individual and collective skills.

According to the definition provided by the UN, community development is defined as "progress aimed at creating conditions of economic and social advancement for the community, with its participation, and the greatest possible reliance on its initiative". Through a study of the needs and demands of communities, community centers consolidate projects that, beyond encouraging the comprehensive development of individuals in collective environments, allow for the regeneration of their locations by improving the quality of life of their inhabitants."

Source: [archdaily](#) (27 Oct 2024)

### ARCHITECTURE A Unique Blend of Architecture and Cutting-Edge Technology Offered by SCI-Arc's MA2



"Can you imagine a learning experience where traditional architectural knowledge merges seamlessly with gaming, AI, simulation, and augmented reality (AR)? This is exactly what SCI-Arc's MA2 curriculum offers. This innovative blend not only equips students with essential skills in traditional design, theory, and practice, but also provides them with the tools to delve into cutting-edge technologies that are reshaping the design industry.

The MA2 program, accredited by NAAB, ensures that graduates meet the highest standards of professional practice while also opening doors to non-traditional design fields such as interactive environments, digital media, AI, and immersive experiences. This forward-thinking approach prepares students for a wide range of career paths, with alumni thriving in both conventional and non-conventional sectors. Graduates find themselves at the forefront of design innovation, where creativity meets technology. Let's explore the journeys of some of these trailblazing professionals."

Source: [archdaily](#) (25 Oct 2024)

### ARCHITECTURE Melike Altınışık Architects unveils spaceship-like robot museum in Seoul



"Turkish studio Melike Altınışık Architects has unveiled the Seoul Robot & AI Museum in South Korea, where visitors can "explore the endless possibilities of robotics and AI".

Located in the north of the city, the 7,400-square-metre museum dedicated to robotics and artificial intelligence (AI) opened to the public earlier this month.

The Seoul Robot & AI Museum (RAIM) has a distinctive form that the studio believes could have passersby asking "is that a spaceship".

"RAIM is designed to stir up all kinds of emotions – wonder, curiosity, reflection, and maybe even a bit of 'Whoa, what is that?!'" Melike Altınışık Architects founder Melike Altınışık told Dezeen.

"The museum isn't just a place to look at cool tech; it's all about building deeper connections between people and the technology shaping our future, offering experiences that are as exciting as they are meaningful," she continued.

"When RAIM appears on Seoul's skyline, some folks might do a double take: Wait... is that a spaceship?' And just like that, the adventure begins! Its bold, dynamic design beckons you inside, inviting you to explore the endless possibilities of robotics and AI."

Source: [Dezeen](#) (23 Oct 2024)

### HUMAN BEHAVIOUR "With a grain of salt": How humans learn from others



"When we make decisions, we are often guided by the opinions and experiences of those around us. Yet we actually have quite different preferences, tastes and goals. An international research team led by the Universities of Tübingen and Konstanz investigated how we learn from others despite individual differences. The scientists found that humans tend to treat social information as a recommendation – with some scepticism. They also use it to save themselves costly exploration. The results open up new paths to incorporate similar learning principles into artificial intelligence (AI)."

Source: [uni-konstanz](#) (23 Oct 2024)

### ENVIRONMENT New study warns that melting Arctic sea-ice could affect global ocean circulation



"Our finding that enhanced melting of Arctic sea-ice likely resulted in significant cooling in northern Europe in the earth's past is alarming," says Mohamed Ezat from the iC3 Polar Research Hub, lead author of the new study. "This reminds us that the planet's climate is a delicate balance, easily disrupted by changes in temperature and ice cover."

Ice-free summer conditions are expected to occur in the Arctic Ocean from the year 2050 onwards.

Earlier this month, dozens of climate scientists warned in an open letter that climate change is generating a "serious risk of a major ocean circulation change in the Atlantic [that] would have devastating and irreversible impacts".

Source: [eurekalert](#) (27 Oct 2024)

### MATERIALS Advancement in 3D-Printed Concrete Promises Strength, Durability and Lower Carbon Emissions



" Researchers from the University of Virginia have made significant strides in the rapidly advancing field of 3D-printed concrete by developing a more sustainable, printable cementitious composite. This new material, which combines graphene with limestone and calcined clay cement (LC2), offers enhanced strength and durability while significantly reducing carbon emissions, making it a powerful solution for addressing the environmental challenges in 3D printed construction.

"Our goal was to design a printable concrete that performs better and is more eco-friendly," said Osman Ozbulut, a professor at UVA's Department of Civil and Environmental Engineering. "The addition of graphene to LC2 cement offers a unique opportunity to lower carbon emissions while maintaining the strength and flexibility required for 3D printed construction."

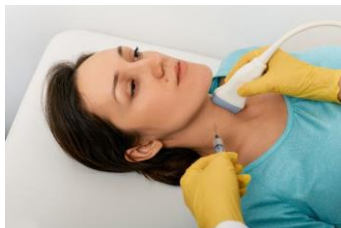
Source: [virginia](#) (25 Oct 2024)

### OPTICS Aston University researcher develops new optical technique that could revolutionise medical diagnostics

### SUSTAINABILITY Watershed Moment: Engineers Invent High-Yield Atmospheric Water Capture Device for Arid Regions

### ROBOTICS Study: Robotic Automation, AI Will Accelerate Progress in Science Laboratories

### SOCIAL MEDIA Young people's moods directly affected by social media 'likes'



"An Aston University researcher has developed a new technique using light which could revolutionise non-invasive medical diagnostics and optical communication.

The research showcases how a type of light called the Orbital Angular Momentum (OAM) can be harnessed to improve imaging and data transmission through skin and other biological tissues.

A team led by Professor Igor Meglinski found that OAM light has unmatched sensitivity and accuracy that could result in making procedures such as surgery or biopsies unnecessary. In addition it could enable doctors to track the progression of diseases and plan appropriate treatment options.

OAM is defined as a type of structured light beams, which are light fields which have a tailored spatial structure. Often referred to as vortex beams, they have previously been applied to a number of developments in different applications including astronomy, microscopy, imaging, metrology, sensing, and optical communications.

The study reveals that OAM retains its phase characteristics even when passing through highly scattering media, unlike regular light signals. This means it can detect extremely small changes with an accuracy of up to 0.000001 on the refractive index, far surpassing the capabilities of many current diagnostic technologies."

Source: [aston](#) (25 Oct 2024)



"The idea of turning the air around us into drinking water is a marvel on its own. And grabbing a sustainable amount of it from low-humidity environments has long been closer to science fiction than reality.

As a megadrought stresses the water supply throughout the Southwest, revolutionary research out of UNLV is answering this problem with a groundbreaking technology that pulls large amounts of water from the air in low humidity. The research was published Oct. 22 in the journal Proceedings of the National Academy of Sciences (PNAS).

UNLV mechanical engineering professor H. Jeremy Cho leads a team of researchers with a radically different approach to atmospheric water harvesting, or transforming water vapor in the air around us into a usable form. Existing atmospheric water harvesting approaches have low yields and diminishing returns below 30% humidity.

"This paper really establishes that you can capture water at a very fast rate," said Cho. "We can start to forecast how big of a system we would need to produce a set amount of water. If I have one square meter, which is around three feet by three feet, we can generate about a gallon of water per day in Las Vegas, and up to three times more in humid environments."

This technology and approach has been tested outdoors in Las Vegas, and is effective down to 10% humidity. It directly captures water in a liquid salt solution that is suitable for subsequent processing into drinking water or energy production, enabling new capabilities for arid regions."

Source: [UNLV](#) (24 Oct 2024)



"Science laboratories across disciplines—chemistry, biochemistry and materials science—are on the verge of a sweeping transformation as robotic automation and AI lead to faster and more precise experiments that unlock breakthroughs in fields like health, energy and electronics, according to UNC-Chapel Hill researchers in the paper, "Transforming Science Labs into Automated Factories of Discovery," published in Science Robotics, the most prestigious journal covering robotics research.

"Today, the development of new molecules, materials and chemical systems requires intensive human effort," said Dr. Ron Alterovitz, senior author of the paper and Lawrence Grossberg Distinguished Professor in the Department of Computer Science. "Scientists must design experiments, synthesize materials, analyze results and repeat the process until desired properties are achieved."

This trial-and-error approach is time-consuming and labor-intensive, slowing the pace of discovery. Automation offers a solution. Robotic systems can perform experiments continuously without human fatigue, significantly speeding up research. Robots not only execute precise experimental steps with greater consistency than humans, they also reduce safety risks by handling hazardous substances. By automating routine tasks, scientists can focus on higher-level research questions, paving the way for faster breakthroughs in medicine, energy and sustainability.

"Robotics has the potential to turn our everyday science labs into automated 'factories' that accelerate discovery, but to do this, we need creative solutions to allow researchers and robots to collaborate in the same lab environment," said Dr. James Cahoon, a co-author of the paper and chair of the Department of Chemistry. "With continued development, we expect robotics and automation will improve the speed, precision and reproducibility of experiments across diverse instruments and disciplines, generating the data that artificial intelligence systems can analyze to guide further experimentation."."

Source: [UNC](#) (23 Oct 2024)



" Young people today are growing up in a social media-saturated world where technology plays a central role in shaping most of their experiences. And the rapid rise of social media use has consequently created parental and societal fears about young people's social and psychological well-being. Now, for the first time, a team of researchers led by the University of Amsterdam has used real social media data to show that young people may indeed be more sensitive to social media feedback (likes) than adults, and that this directly impacts their engagement and their mood. Their results were published on 23 October in the journal Science Advances.

One of the fears surrounding social media is that it could provoke anxiety in young people by driving them to keep using the apps more than they want to so they can gather more and more likes. Team member Wouter van den Bos: 'Adolescence is a developmental period during which both reward and rejection sensitivity are particularly strong, and these have, respectively, been linked to increased impulsive behaviour and depressive symptoms.' ."

Source: [UVA](#) (23 Oct 2024)

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