

Weekly Discovery

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11 Mar – 15 Mar 2024

Al-Generated Food Images Look Tastier Than Real Ones



"According to the researchers, the results suggest that Al-generated food visuals excel at enhancing the appeal of depicted foods by leveraging key features such as symmetry, shape, glossiness, and overall lighting and colour. All of these are known to contribute significantly to the attractiveness of food imagery.

Even subtle tweaks in positioning may enhance the appeal of Al-generated food images. Lead author Giovanbattista Califano (Department of Agricultural Sciences, University of Naples Federico II) explained: 'As humans, we tend to feel uneasy with objects pointing towards us, interpreting them as threats, even when it's just food. When tasked with replicating food photos featuring items pointing at the viewer, such as a bunch of carrots or a piece of cake, the Al often positions the food so that it doesn't directly point at the viewer. This warrants further studies, but it's plausible that this approach enhances the perceived attractiveness of the depicted food.'

In the study, the researchers asked 297 participants to rate real or Al-generated food images on a scale from "Not at all appetizing" to "Extremely appetizing." The images depicted a range of natural, processed, and ultraprocessed foods, from apples and carrots to chocolate milkshakes and potato fries. When participants were told how each image had been created—whether through photography or Al—they tended to rate real and Algenerated versions equally appealing. However, when participants were unaware of the image creation process, the Al-generated version was consistently rated as significantly more appetizing than the real food image."

Source: OXFORD (11 Mar 2024)

Al Making Waves in Marine Data Collection



"Numerous measurement stations around the world provide us with data about air quality, allowing us to enhance it. Although we are increasingly collecting data from marine areas, access to such data is considerably more challenging. Signals are poorly transmitted through water, differences in both pressure and currents hinder measurement devices and there is an absence of pre-constructed computing infrastructure.

Could intelligent technologies help us improve marine data collection? Professor of Computer Science Petteri Nurmi and his research group at the University of Helsinki have joined forces with researchers at the University of Tartu, University of Madeira, and MARE-Madeira, ARDITI, a nonprofit marine research institute, to develop solutions combining sensor technologies and embedded Artificial Intelligence.

The researchers strive to make more efficient and expansive the data collection methods now used in, for example, environmental research.

"The higher the quantity and quality of data about the oceans obtained, the better we can use it to understand and protect the oceans. Our methods help expand the total amount of data gathered from marine areas and reduce the effort required to collect and analyse them," Nurmi says." Going Top Shelf with AI To Better Track Hockey Data



"Researchers from the University of Waterloo got a valuable assist from artificial intelligence (AI) tools to help capture and analyze data from professional hockey games faster and more accurately than ever before, with big implications for the business of sports.

The growing field of hockey analytics currently relies on the manual analysis of video footage from games. Professional hockey teams across the sport, notably in the National Hockey League (NHL), make important decisions regarding players' careers based on that information.

"The goal of our research is to interpret a hockey game through video more effectively and efficiently than a human," said Dr. David Clausi, a professor in Waterloo's Department of Systems Design Engineering. "One person cannot possibly document everything happening in a game."

Al Prompt Engineering Is Dead: Long Live Ai Prompt Engineering



"Since ChatGPT dropped in the fall of 2022, everyone and their donkey has tried their hand at prompt engineering—finding a clever way to phrase your query to a large language model (LLM) or AI art or video generator to get the best results or sidestep protections. The Internet is replete with promptengineering guides, cheat sheets, and advice threads to help you get the most out of an LLM.

In the commercial sector, companies are now wrangling LLMs to build product copilots, automate tedious work, create personal assistants, and more, says Austin Henley, a former Microsoft employee who conducted a series of interviews with people developing LLM-powered copilots. "Every business is trying to use it for virtually every use case that they can imagine," Henley says.

To do so, they've enlisted the help of prompt engineers professionally.

However, new research suggests that prompt engineering is best done by the model itself, and not by a human engineer. This has cast doubt on prompt engineering's future—and increased suspicions that a fair portion of prompt-engineering jobs may be a passing fad, at least as the field is currently imagined."

Source: <u>HELSINKI</u> (12 Mar 2024)

Source: Eurekalert! (11 Mar 2024)

Source: IEEE Spectrum (6 Mar 2024)

Al Al-Generated Images and Video Are Here: How Could They Shape Research?



"Artificial intelligence (AI) tools that translate text descriptions into images and video are advancing rapidly.

Just as many researchers are using ChatGPT to transform the process of scientific writing, others are using Al image generators such as AIR PURIFICATION

Air Filters and Scheduled Window Opening Can Reduce Classroom Pollution by Up To 36% – Surrey Study



"Scientists monitored pollution in two classrooms at an infant school in Guildford, UK. It is 10 metres from the A3 road, passed by 31,000 cars each day.

They studied two classrooms: one facing the road and occupied by 4 to 5-year-olds, and one

ARCHITECTURE

Interiors Within Interiors: 13 Projects That Showcase the Characteristics of Double Skin Facades



"The facade of a building often serves as a reflection of both the urban fabric it is set in, as well as what lies behind it. Beyond aesthetics, facades hold important functional, cultural, and sustainable significance, especially in relation to the interior design. Although natural light, views, and spatial organization are influenced by the DESIGN

Explore All 17 Tokyo Toilet Projects Featured in Wim Wenders' Film Perfect Days



"Designed by architects including Tadao Ando and Kengo Kuma, the Tokyo Toilet project forms the backdrop for the Oscar-nominated film Perfect Days. Here, Dezeen rounds up all 17 facilities.

The Tokyo Toilet project brings together 17

ROBOTICS Anyware Robotics' Pixmo Takes Unique Approach to Trailer Unloading: A Clever Accessory Helps This Robot	ROBOTICS Robotic Interface Masters a Soft Touch	VR Opening New Doors in The VR World, literally	WELLBEING Happiness Can Be Learnt, But We Have to Work at It – Study Finds
Nature looks at how researchers are using these tools, and what their increasing popularity could mean for science." Source: <u>Nature</u> (7 Mar 2024)	alternated with scheduled window openings. Coarse particle pollution fell by 18% in the classroom nearest the road and 36% in the other classroom. Carbon dioxide fell 28% in the classroom nearest the road and 11% in the other classroom. Smaller improvements were detected when windows were opened without air purifiers." Source: <u>SURREY</u> (12 Mar 2024)	influencing the way people design their living space. So responding to these ever-changing needs and habits, along with the focus on overall wellbeing, architects offset the facade and ceiling - and in some particular cases, floors - to create interiors within interiors; secondary envelopes that protect the interior space from the outside environment." Source: <u>Archdaily</u> (8 Mar 2024)	"a symbol of Japan's world-renowned hospitality culture", the unique facilities are now the subject of Perfect Days, an Oscar- nominated film by German filmmaker Wim Wenders that follows the daily life of a local janitor who cleans the toilets – played by Kōji Yakusho. Following the movie's release and in the run- up to the 2024 Oscars ceremony on 10 March, Dezeen has rounded up all 17 of the Tokyo Toilets, which their designers say were created with safety, cleanliness and inclusivity in mind." Source: Dezeen (8 Mar 2024)
Midjourney, Stable Diffusion and DALL-E to cut down on the time and effort it takes to produce diagrams and illustrations. However, researchers warn that these AI tools could spur an increase	on the other side of the building, occupied by 6 to 7-year-olds. In both classrooms, the best improvements in air quality happened when air purifiers were	facade, architects have been prioritizing the relationship between the building's envelope and the <i>quality</i> of the interior, keeping in mind current cultural, economical, and environmental changes	public toilets in the city's Shibuya district, created by architects and designers over the past six years. Commissioned by The Nippon Foundation as



"You've seen this before: a truck-unloading robot that's made up of a mobile base with an arm on it that drives up into the back of a trailer and then uses suction to grab stacked boxes and put them onto a conveyor belt. We've written about a couple of the companies doing this, and there are even more out there. It's easy to understand why—trailer unloading involves a fairly structured and controlled environment with a very repetitive task, it's a hard job that sucks for humans, and there's an enormous amount of demand.

While it's likely true that there's enough room for a whole bunch of different robotics companies



"EPFL researchers have developed a haptic device capable of reproducing the softness of various materials, from a marshmallow to a beating heart, overcoming a deceptively complex challenge that has previously eluded roboticists.

The perception of softness can be taken for granted, but it plays a crucial role in many actions and interactions – from judging the ripeness of an avocado to conducting a medical exam, or holding the hand of a loved one. But understanding and reproducing softness perception is challenging, because it



"Room-scale virtual reality (VR) is one where users explore a VR environment by physically walking through it. The technology provides many benefits given its highly immersive experience. Yet the drawbacks are that it requires large physical spaces. It can also lack the haptic feedback when touching objects.

Take for example opening a door. Implementing this seemingly menial task in the virtual world means recreating the haptics of grasping a doorknob whilst simultaneously preventing users from walking into actual walls in their surrounding areas.



"The team behind the University of Bristol's 'Science of Happiness' course had already discovered that teaching students the latest scientific studies on happiness created a marked improvement in their wellbeing.

But their latest study found that these wellbeing boosts are short-lived unless the evidence-informed habits learnt on the course – such as gratitude, exercise, meditation or journaling - are kept up over the long-term.

Senior author Professor Bruce Hood said: "It's like going to the gym – we can't expect to do one class and be fit forever. Just as with

in the trailer-unloading space, a given customer is probably going to only pick one, and they're going to pick the one that offers the right combination of safety, capability, and cost. Anyware Robotics thinks they have that mix, aided by a box-handling solution that is both very clever and so obvious that I'm wondering why I didn't think of it myself. The overall design of Pixmo itself is fairly standard as far as trailer-unloading robots go, but some of the details are interesting. We're told that Pixmo is the only trailer-unloading system that integrates a heavy-payload collaborative arm, actually a fairly new commercial arm from Fanuc. This means that Anyware Robotics doesn't have to faff about with their own hardware, and also that their robot is arguably safer, being ISO-certified safe to work directly with people. The base is custom, but Anyware is contracting it out to a big robotics original equipment manufacturer."	involves so many sensory and cognitive processes. Robotics researchers have tried to address this challenge with haptic devices, but previous attempts have not distinguished between two primary elements of softness perception: cutaneous cues (sensory feedback from the skin of the fingertip), and kinesthetic cues (feedback about the amount of force on the finger joint)."	Now, a research group has developed a new system to overcome this problem: RedirectedDoors+. The group was led by Kazuyuki Fujita, Kazuki Takashima, and Yoshifumi Kitamura from Tohoku University and Morten Fjeld from Chalmers University of Technology and the University of Bergen."	physical health, we have to continuously work on our mental health, otherwise the improvements are temporary." Launched in 2018, the University of Bristol's Science of Happiness course was the first of its kind in the UK. It involves no exams or coursework and teaches students what the latest peer-reviewed studies in psychology and neuroscience say really makes us happy. Students who took the course reported a 10 to 15% improvement in wellbeing. But only those who continued implementing the course learnings maintained that improved wellbeing when they were surveyed again two years on."
Source: <u>IEEE Spectrum</u> (5 Mar 2024)	Source: <u>EPFL</u> (13 Mar 2024)	Source: <u>TOHOKU</u> (13 Mar 2024)	Source: <u>BRISTOL</u> (11 Mar 2024)

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