About the Netexplo Observatory

Some observatories focus on the sky. Netexplo, founded in 2007 by Martine Bidegain and Thierry Happe, tracks emerging uses of tech and the transformations they inevitably cause. Every year, we identify and analyse around 3,000 innovations in every sector and from every continent.

The Netexplo Observatory then selects the most remarkable 100 – those with the greatest potential to change our future. These 100 innovations form the raw material for Netexplo's Global Trends. Following The New Now in 2021 and Unscripting Tomorrow in 2022. Netexplo published Get Real, written by Chief Creative Officer Sylvain Louradour, in April 2023. The trilogy reflects the constantly shifting state of tech, as innovations reflected the need to look around and realize the world has changed. These trends are revealed at the annual Netexplo Innovation Forum, where 10 of the most promising innovations receive a Netexplo Innovation award and share their vision of how tech can build a better future.

The Observatory is based in Paris and is part of the Les Echos-Le Parisien media group.

Special thanks to Damien van Achter and Sophie Pochet at IHECS Brussels, Lawal Alao at Epitech Benin, Rajeev Srinivasan at National Institute of Technology Calicut and to our friends at VivaTech for their help in spotting the world's most meaningful innovations.

netexplo.com

Illustrations via Midjourney from prompts by Marcus Goddard

The Netexplo 100 • 2023

Marcus Goddard, VP Intelligence, Netexplo Observatory, April 2023

For many of us who try to keep up with the ever-changing world of tech, much of 2022 was a sobering and frustrating time. At Netexplo, we were unconvinced by a rebranded Facebook's attempt to hijack the Metaverse concept. But virtual reality's lack of a killer application, even for gamers, continues to stifle the technology's potential. In parallel, Web3 and crypto still have millions of diehard fans but uses outside of financial speculation remain limited in scope.

This selection does, however, contain several innovations that confirm that both VR and the blockchain can still have relevant applications. When the dust settles after the near-collapse of crypto and the unprecedented flop of Meta's pivot, more meaningful uses of these promising technologies are likely to emerge.

If we Get Real about tech, to quote the title of the 2023 Netexplo trends, written by Sylvain Louradour drawing on the innovations in this selection, it's often hard not to be disappointed by unfulfilled promises. The most obvious example is the self-driving car, an ongoing project since 1925. For almost a decade, Tesla CEO Elon Musk has promised driverless cars for the following year. Yet Teslas still come with steering wheels as standard. As many would-be disruptors have learned the hard way, when you're 95% of the way there, you've only done half the job.

For many years this was true of artificial intelligence. Virtual assistants like Siri or Alexa, the public face of AI, have been around for 10 years but have barely improved enough to hold a simple conversation. They certainly haven't become the all-purpose platform their makers had hoped for.

And then came ChatGPT.

The Netexplo 100 • 2023

ChatGPT's release in November 2022 drew more attention than any other new tech product since the first iPhone. This came as something of a surprise to its makers, OpenAI, and to those of us who try to keep up with tech. The underlying model, GPT, had been around since 2020 and Netexplo has featured several of its applications, such as the text-to-image generator Dall-E, in our publications and events. But ChatGPT brought AI out of the lab and let real people play with it.

There's a valuable lesson here for innovators everywhere. A tool has the greatest impact when it is available and easy for anyone to use. Thanks to ChatGPT and tools such as MidJourney (which created the illustrations in the first few pages here), Generative AI is becoming a platform. This is where venture capital, talent and energy are set to flow for the next year at least. The 2024 Netexplo 100 is likely to feature the next generation of AI powered tools as they augment and disrupt everyday tasks, jobs and whole industries, including the tech giants.

The Next Big Thing is finally here and it's AI. That doesn't mean other emerging technologies have become irrelevant. You can rely on the Netexplo Observatory to track food tech, synthetic biology, space startups and quantum computing as we continue to make sense of the future.
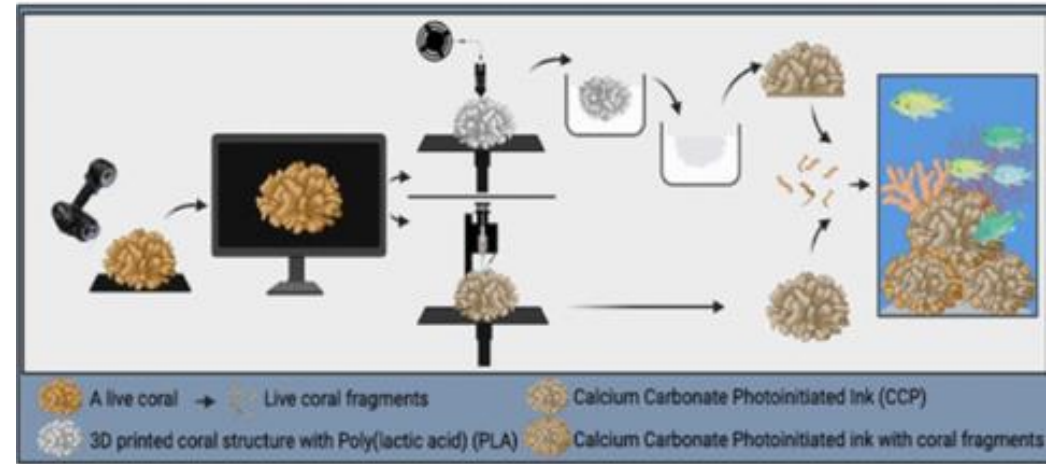
NETEXPLO

3D CoraPrint

Where? Saudi Arabia

Who? Hamed I. Albalawi et al, King Abdullah University of Science and Technology,

What? An eco-friendly method for restoring coral reefs that combines three-dimensional (3D) scanning, 3D printing, and molding techniques. By making artificial, natural-based coral skeletons, live coral fragments grow faster, and the reef transplantation process is faster and cheaper

Why? Restoring coral reefs is an urgent, crucial step in protecting marine biodiversity and makes a significant contribution to climate change as reefs store substantial amounts of carbon. Any solution that makes the process faster and cheaper is good for the planet.

https://pubs.acs.org/doi/10.1021/acssuschemeng.1c04148

NETEXPLO

3D construction drone swarms

Where? United Kingdom

Who? Professor Mirko Kovac, Imperial College London

What? Inspired by wasps and termites, researchers have proven that drones working together can create large 3D-printed structures. The foam or cement-based buildings could be created without the need for scaffolding. The swarm could also carry out emergency repairs on bridges or dams. On a larger scale, swarms of robots could create a building in record time.

Why? It shows how the field of robotics can be influenced by nature. The use of drones in this way has the potential to revolutionize the construction industry, as it would allow for buildings to be created without the need for scaffolding, especially in emergency situations.

Aerial additive manufacturing with multiple autonomous robots | Nature

NETEXPLO

Absci de novo Antibody Design

Where? USA

Who? Absci, CEO Sean McClain

What? Absci's Integrated Drug Design platform applies generative AI to antibody design. Antibodies are complex proteins. Machine learning can predict what biological "code" will make a protein fold into the required shape. Absci builds on experience in therapeutic antibody design and, above all, extensive biological data for "zero-shot" generative AI protein design. In other words, the antibody can bind to a target without knowledge of other antibodies that perform the same function. As well as ensuring the antibody will not generate an immune response ("naturalness"), the process can create antibodies that are so specific that they only bind to the versions of the proteins which are mutated in cancers, but not the healthy ones.

Why? Building on breakthroughs like DeepMind's Alphafold for protein shape prediction, Absci are applying generative AI not to text or image but to antibodies. This could significantly cut development time in are one of the most active areas of therapeutics research.

https://www.absci.com/

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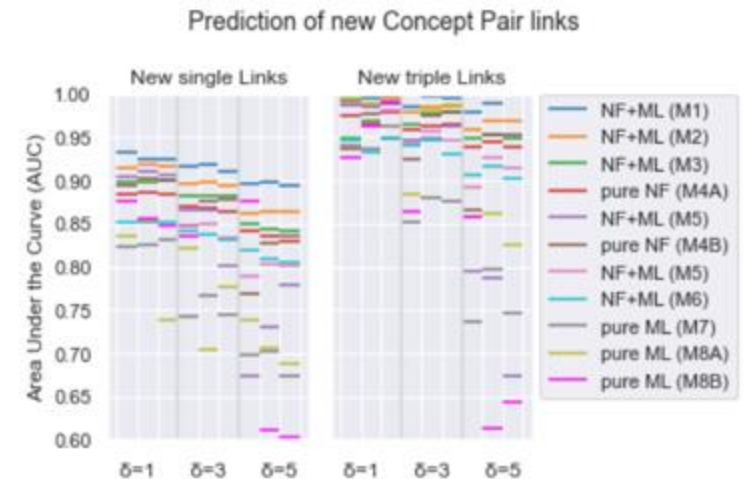
AI predicts the future of AI

Where? Germany

Who? Mario Krenn at the Max Planck Institute for the Science of Light

What? Looking back over recent progress, an AI model predicted the areas for the next breakthroughs with more than 99% per cent accuracy. The model was trained by analysing 143,000 papers published between 1994 and 2021. The team used a natural language processing tool to generate a list of 65,000 key concepts. These formed the nodes of a semantic network, allowing the AI to spot connections between ideas and papers. It then predicted what new areas of investigation would open up within 5 years.

Why? The impact of advances in AI over the next decades is almost impossible to predict, but this work cold form the basis of a tool that could guide researchers towards the applications with the greatest potental in science and beyond.

https://mpl.mpg.de/research-at-mpl/independent-research-groups/krenn-research-group/publications

Prediction of new Concept Pair links
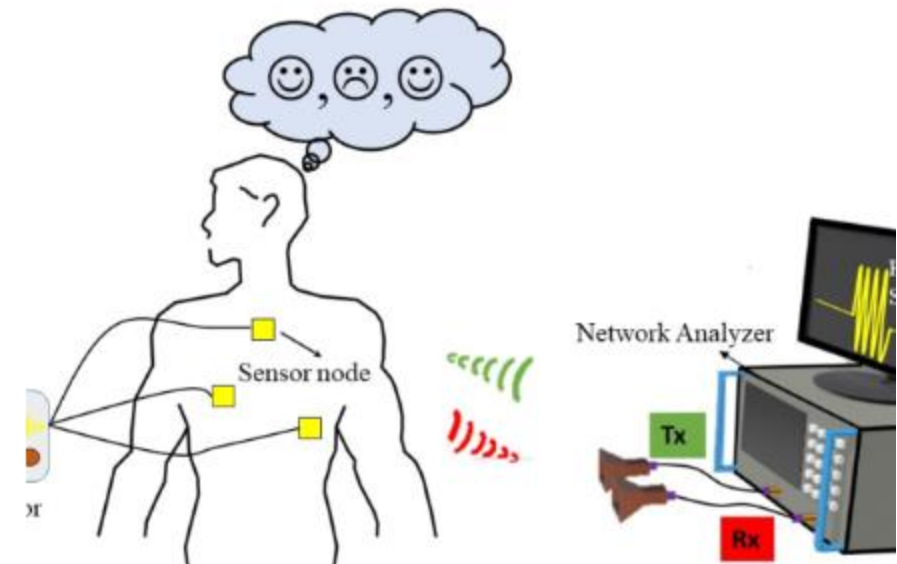
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AI remote emotion detection

Where? United Kingdom

Who? Ahsan Noor Khan, PhD student at Queen Mary University

What? Researchers from Queen Mary University of London used radio waves, such as from a WiFi router, to measure heartrate and breathing signals. This data can predict how someone is feeling even in the absence of any other visual cues, such as facial expressions. The deep learning approach proved more accurate than previous methods.
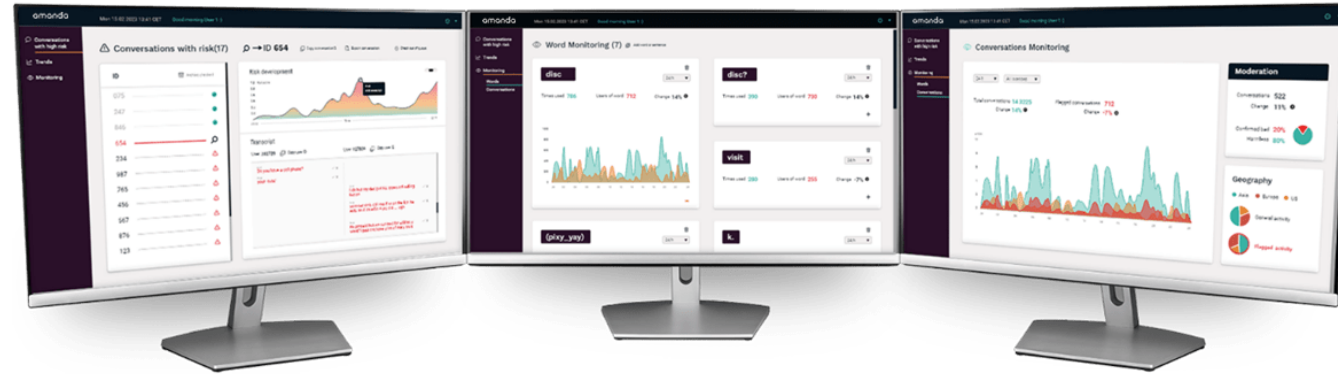
Why? Wireless monitoring of emotional states could be used in the workplace or in hospitals to track wellbeing or even make human-robot interactions more natural.

https://eandt.theiet.org/content/articles/2021/02/ai-can-detect-human-emotions-with-wireless-signals/

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AiBA

Where? Norway

Who? Patrick Bours, Professor at Department of Information Security and Communication Technology, NTNU

What? AiBA is an AI moderator that can detect fake profilers used sexual abusers in online chats with children, based on behavioral biometrics (eg typing rhythm). Through an analysis of 50 million chat lines on gaming platforms and social media, it identified the characteristics of abusers that would otherwise go unnoticed.

Why? AI moderation and automatic alerts could significantly reduce cases of online abuse by spotting predators before they are able to do any harm.

https://aiba.ai/about-us/#story
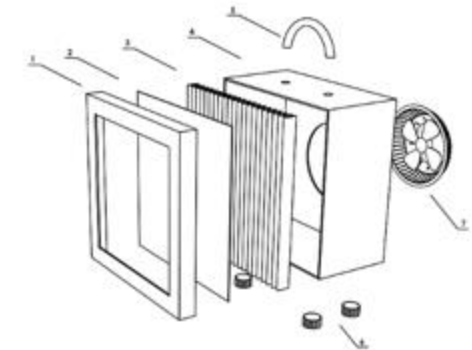
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Air-It-Yourself

Where? UK/Republic of Korea

Who? Jihee Moon, MA student at the Royal College of Art, London

What? Jihee Moon has created an inexpensive DIY air purifier that can be made in under an hour at home by reusing everyday household materials. The design is available via an open-source platform so anyone can build the device.

Why? In addition to recycling resources, it brings air purification within everyone's reach, which may prove especially useful during pollution peaks or heatwaves. As extreme weather events become more and more common, home-made devices for making the environment safer could be especially useful.

https://www.jihee-moon.com/

1. Package Cardboard Box Lid   5. Hair Curler

2. Dust Filter   6. Plastic Bottle Caps

3. H13 HEPA Filter   7. USB Fan 5V

4. Package Cardboard Box

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AIRMADE SAF

Where? USA

Who? Gregory Constantine & Dr. Stafford Sheehan

What? Air Company has created the world's first carbon-neutral jet fuel. The fuel is made from CO2 that would otherwise have escaped into the atmosphere at ethanol plants. Other sustainable aviation fuels (SAF) are greener versions of standard fuel but still have significant environmental impact. Several airlines and the US air force have pledged to use the fuel, which should cost three times as much as fossil fuel without subsidies. Large-scale production is planned for 2027.

Why? In terms of CO2 per passenger and per km, air travel is the most polluting mode of transport and accounts for about 2% of global emissions. Under the right market conditions, carbon-neutral fuel could have a huge impact on emissions and put an end to flight-shaming.

https://www.aircompany.com/sustainable-aviation-fuel/
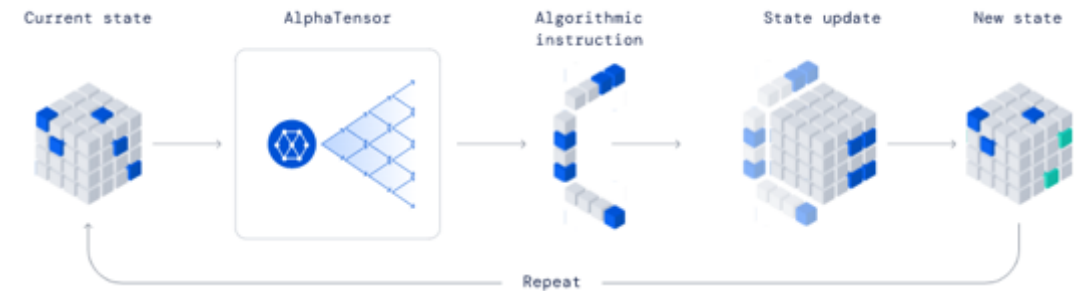

NETEXPLO

AlphaTensor

Where? United Kingdom

Who? Deepmind, an Alphabet (Google) subsidiary

What? DeepMind repurposed its game-playing algorithm AlphaGo to find new algorithms for fundamental tasks in mathematics and computing. Trained on a fictional math game, AlphaTensor broke a 50-year record for matrix multiplication, a common task in machine learning. It rediscovered existing methods and eventually surpassed them, reducing a 5X5 matrix multiplication from 98 steps to 96. A few days later, human mathematicians improved on the new method by one step.

Why? The approach reduces resources requirements for computing and, as a result, its environmental impact. It could open the way for self-improving AI, which in this case led to further improvement by human researchers.

https://www.deepmind.com/blog/discovering-novel-algorithms-with-alphatensor

NETEXPLO

Antimatter

Where? United-States

Who? Founder Jonathan Libov

What? "A collaborative meme studio for the classroom". Edtech startups Antimatter lets teachers create memes with their students as a concise, engaging way of learning key points in science, history or other subjects. A meme is a humorous or sarcastic content that spreads virally on social networks as an image, GIF or video.

Why? Reasoning that creating something new with knowledge is the most effective way of processing it. The startup claims that memes are the best way of making sure students understand a topic. As some schools ban ChatGPT and others find innovative ways of using it in the classroom, Antimatter has invented an almost AI-proof way of enabling students to grasp and demonstrate crucial ideas and knowledge.

https://antimatter.systems/
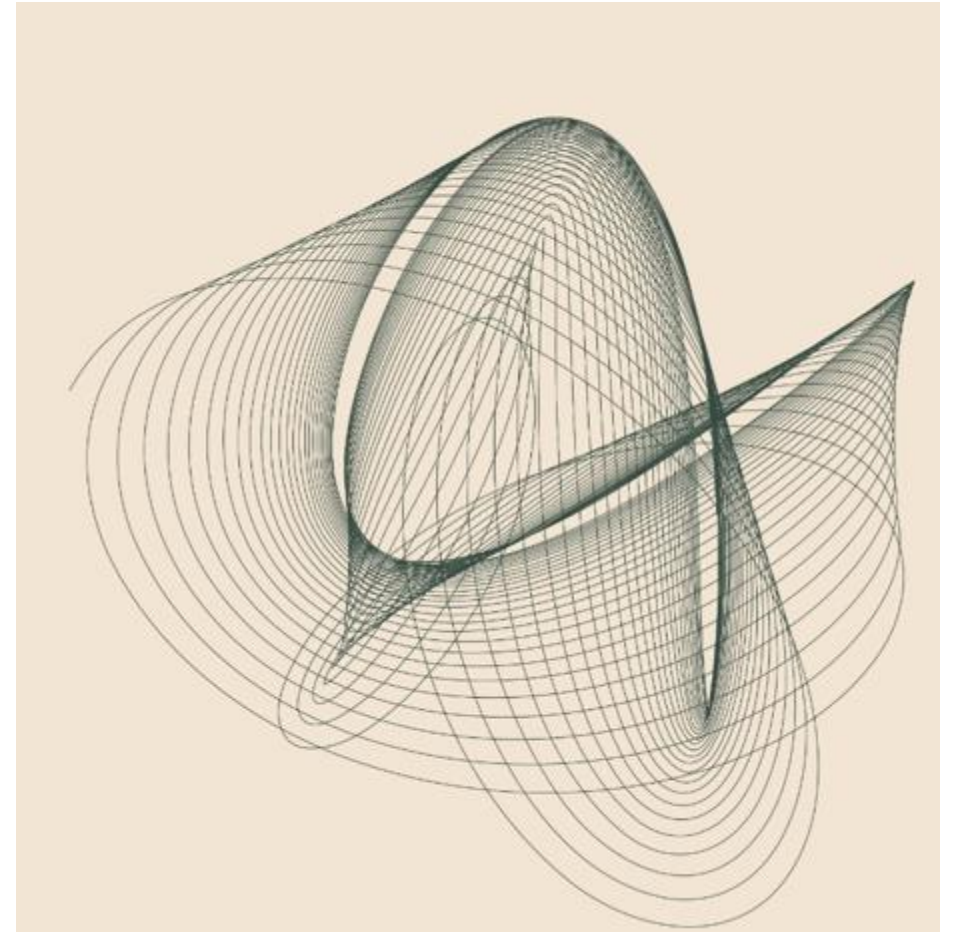
Algorithmiq

Where? Finland
Who? Sabrina Maniscalco, Guillermo García-Pérez, Matteo Rossi, Boris Sokolov, Jussi Westergren - co-founders
What? Algorithmiq has launched Aurora, a platform for quantum chemistry simulations for drug development and discovery. The hardware-agnostic approach creates an interface between quantum and classical computing. The startup is aiming for quantum advantage in chemistry in the short term as it cleans up the data from current quantum computers for real-world use.
Why? The challenge of cost of finding new drugs has risen constantly in recent decades. Algorithmiq aims to reduce both development time and costs for new therapeutics. Instead of relaying a single technology to all the heavy lifting, their pragmatic approach aims for real-world impact through a combination of quantum algorithms, network medicine and AI for structure prediction and molecular similarity simulation.

https://algorithmiq.fi/

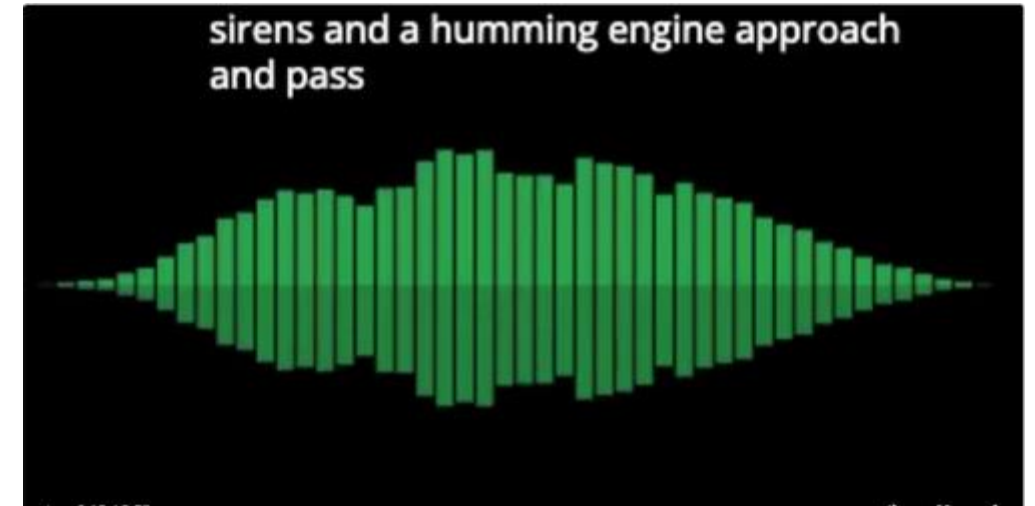NETEXPLO

AudioGen

Where? Israel
Who? Félix Kreuk (Research Engineer at Meta AI)
What? Meta and the Hebrew University of Jerusalem have created an AI model that can generate sounds from a text prompt.
It turns text prompts such as "whistling with wind blowing" into an audio file that sounds like the
scenario described. AudioGen is the sound equivalent generative AI systems that create images from text prompts, such as DALL-E (a Netexplo award-winner 2021), Stable Diffusion or Midjourney.
As well as sound effects and ambiances, it can transform short excerpts of music into longer tracks.
Why? Generative AI is giving everyone access to creative tools. Platforms like AudioGen could be useful for independent film or game makers. One can imagine future media that are created entirely using AI and presented as such rather than fakes.

https://felixkreuk.github.io/text2audio_arxiv_samples/

sirens and a humming engine approach and pass

NETEXPLO

Augmented Eternity

Where? USA

Who? Hossein Rahnama (Associate Professor, MIT)

What? An MIT project aims to create a digital version of individuals to live on after their death, based on their total digital footprint. It is currently being tested on 25 people. The research focuses on the creation of a "borrowable identity" where experts such as lawyers could pass on their knowledge in chatbot form. A distributed machine intelligence network lets users control their growing digital footprint, turn it into their digital representation, and share it as a part of a social network.

Why? Over time the project could create "intergenerational collective intelligence". AI can only use explicit knowledge and a great of an organization's intelligence is unwritten. As well as preserving an expert's legacy, digital avatars could ensure knowledge stays within a company when an entire generation of employees has left.

https://www.media.mit.edu/projects/augmented-eternity/overview/

NETEXPLO

BeReal

Where? France

Who? Alexis Barreyat et Kévin Perreau

What? The breakout social media of 2022, BeReal favours authenticity over carefully curated self-images. It prompts users once per day to snap and share a quick photo from wherever they happen to be. The app uses the phone's front and rear cameras simultaneously, resulting in a post that overlays a candid selfie on an image of whatever's in front of you. As BeReal totalled 20 million daily active users, TikTok released a copycat feature.

Why? BeReal seeks to promote spontaneity. Unlike Instagram, for example, the photo cannot be edited, and the user does not choose the time of day to post the photo. However, BeReal is already facing limitations as users have the possibility to stage their photos, for example. This focus on authenticity is probably the app's most appealing feature and points to a shift in users' expectations of social media, which have become increasingly sophisticated and artificial.

https://bere.al
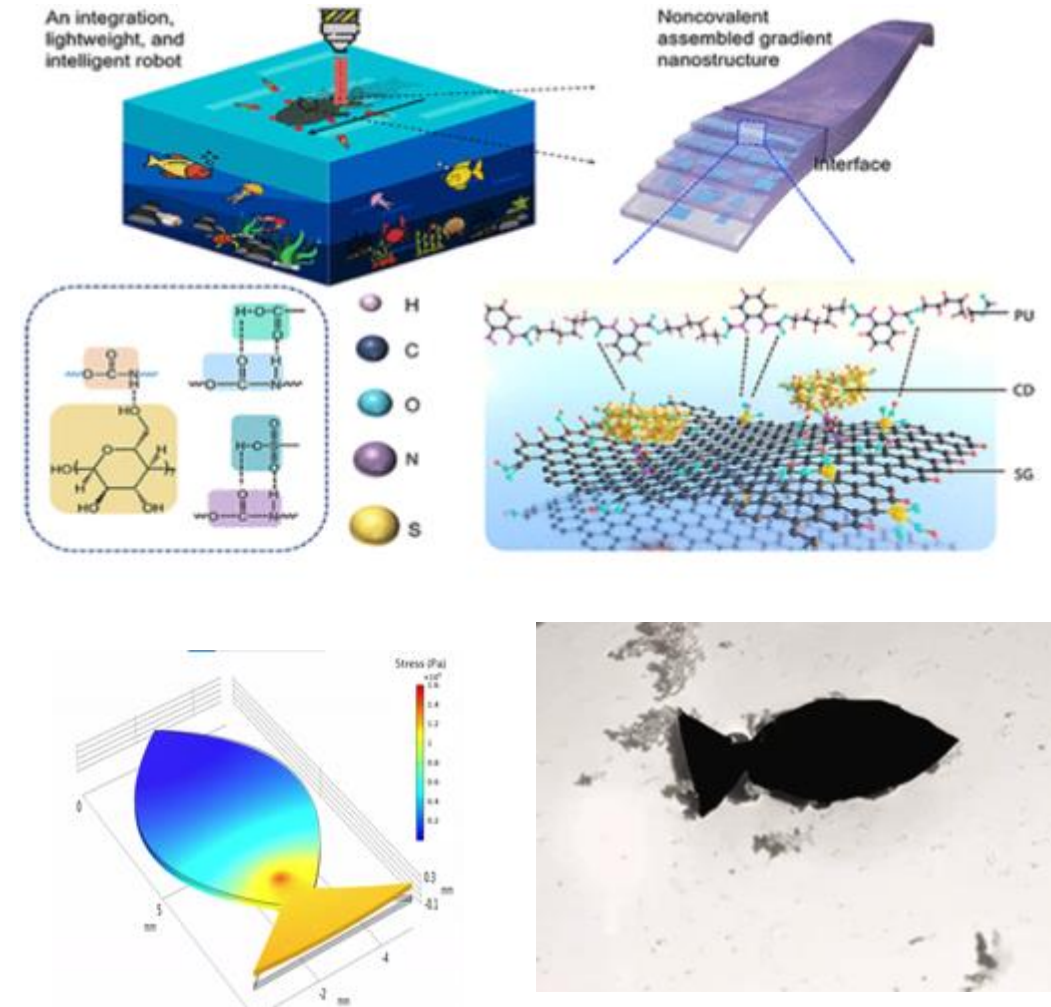

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Bionic robo-fish

Where? China

Who? Yuyan Wang et al at the Polymer Research Institute of Sichuan University

What? A tiny robot-fish that is programmed to remove microplastics from seas and oceans by swimming around and adsorbing them on its soft, flexible, self-healing body. The robot, made of an artificial material similar to mother-of-pearl (nacre), is 13mm long and moves at the same speed as plankton using a laser in its tail.

Why? It is estimated today that there are several tens of thousands of billions of pieces of microplastics in our oceans, thus destabilizing the ecosystem and marine biodiversity. Robots of this kind, designed to eliminate plastic waste, have already been created in the past. However, for various reasons they end up damaged and stopped working at some point. It is hoped that this robust biomimetic design will overcome these obstacles and start removing microplastics at scale.

https://pubs.acs.org/doi/abs/10.1021/acs.nanolett.2c01375

Bodyright

Spotted by IHECS

Where? New Zealand

Who? TBWA\NZ advertisign agancy, Shane Bradnick (CCO)

What? Trying to get unwanted images of yourself removed from the internet is almost impossible, unlilke for copyrighted materials such as logos or licensed music tracks. As copyrighted materials have more rights than women over their own image, an ad agency psoposed a copyright symbol for the human body. The ⓑsymbol could be downloaded and added to images, allowing people to "bodyright" themselves. It formed the basis of a campaign by UNPFA, the United Nations sexual and reproductive health agency.

Why? 85% of women worldwide have experienced or witnessed digital violence against other women. 57% of women have had their online videos or images abused or manipulated. 96% of deepfake videos online are pornography featuring women. The UNPFA campaign, based on the bodyright symbol, aims to raise awareness of the lack of rights individuals have over their image online and push tech companies and policy makers to take online abuse as seriously as copyright infringement.

https://bodyright.me/

NETEXPLO

CanAIri

Where? Denmark

Who? Andreas Kofoed Sørensen & Hans Høite Augustenborg, co-founders

What? A minimalist air health monitor that nudges you to open the window without notifications, alarms or even an app. A yellow bird made from recycled plastic "drops dead" when air pollution reaches a certain level. It swings back up within around 30 minutes of a window being opened.

Why? In the EU alone, an estimated 80 million homes have an unhealthy indoor atmosphere. Further degradations in the outside climate or future pandemics are likely to keep us indoors for longer. This brilliantly designed smart device is a friendly reminder to open the windows and make sure our indoor climate stays healthy.

https://www.canairi.io/

NETEXPLO

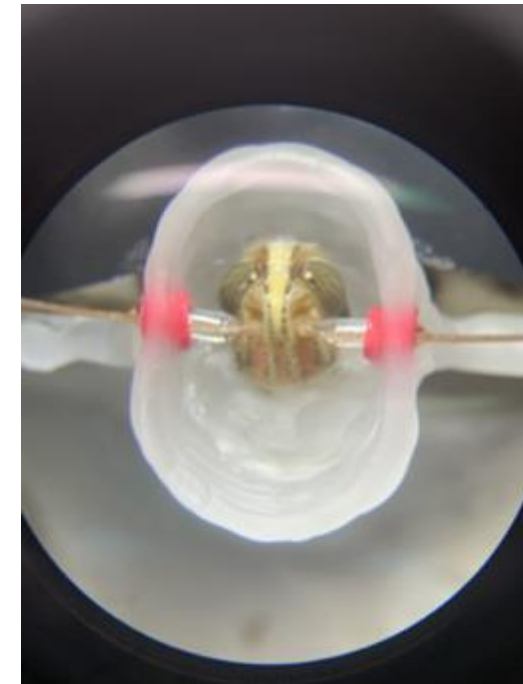# Cancer-detecting cyborg locusts

Where? USA

Who? Debajit Saha (Assistant Professor, Michigan State University) et al

What? Dogs can be trained to sniff out cancers and other diseases, but this involves a long and expensive process. Researchers at Michigan State University hacked a locust's brain by inserting electrodes into the brain lobes that receive signals from its odour-sensing antennae. The team was able to distinguish the electrical activity triggered by gas from healthy and cancerous cells.
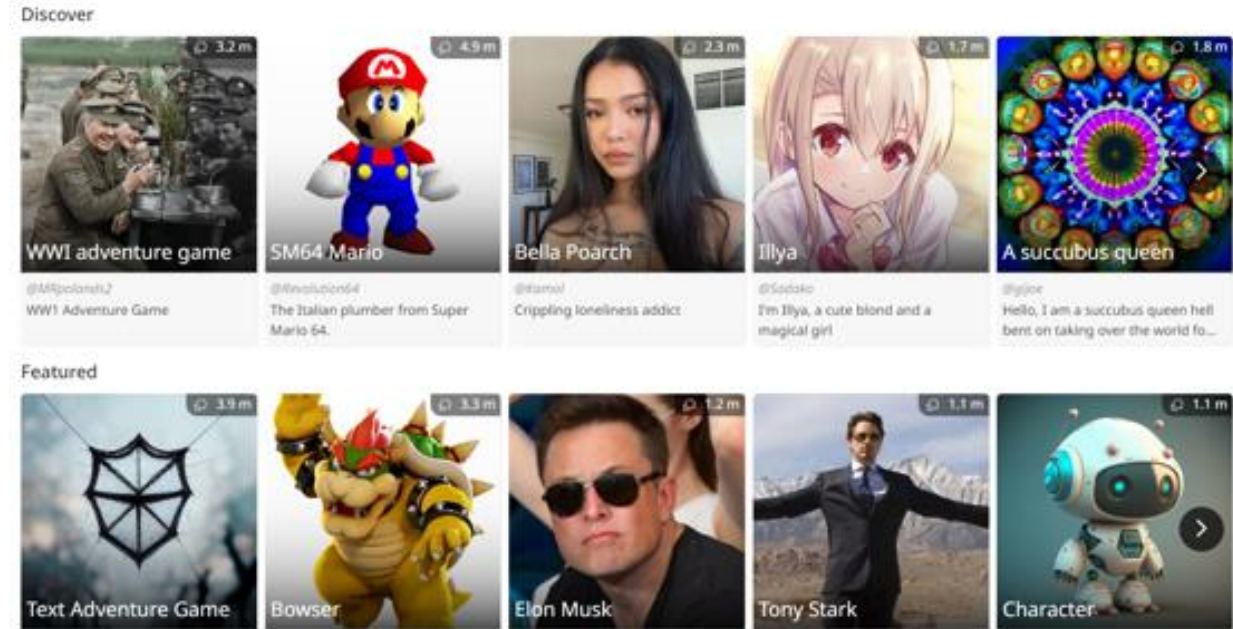
Why? It is the first time a living insect brain has been tested as a tool to detect cancer. The next step would be to create a mobile device with a locust brain and antennae or even reproduce the relevant receptors to create an instant mass screening technique. Early detection of cancers greatly increases survival rates.

https://www.biorxiv.org/content/10.1101/2022.05.24.493311v1

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Character AI

Where? USA

Who? Noam Shazeer and Daniel De Freitas, cofounders

What? A neural language model chatbot web application that can generate human-like text responses and participate in contextual conversation. Users can converse with famous experts, artists and influencers, whether living or dead, real or fictional. The chatbo also lets users create chat characters within set parameters.

Why? CharacterAI can help generate large amounts of written content for various applications, such as storytelling, news writing, and advertising increasing creaticvity. Users are clearly reminded that everything the characters say is made up, but the approach has obvious educational potential.
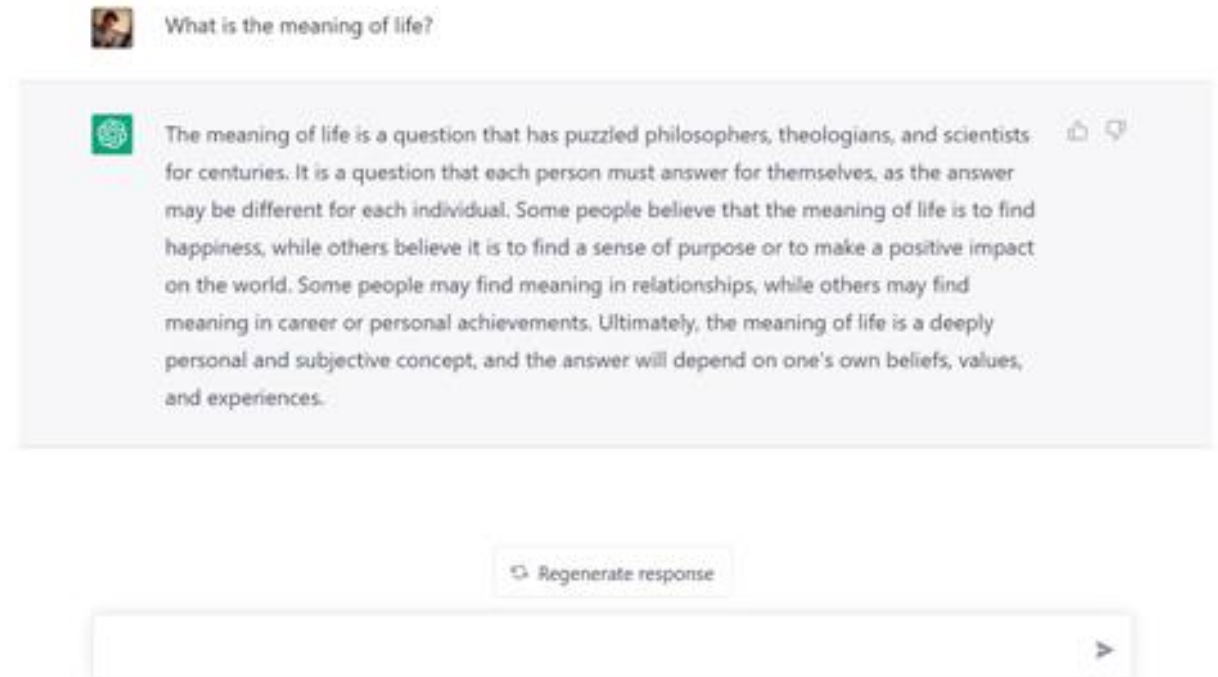
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ChatGPT

Who? OpenAI, CEO Sam Altman

What? OpenAI has been at the forefront of generative AI with its large lanaguage model, GPT (generative pre-trained transformers). Dall-E, one of the first successsful text-to-image engines and a Netexplo Award Winner in 2021, is based on GPT-3. In late 2022, OpenAI put the full power of its transformer into a simple chatbot that anyone can use.   ChatGPT can answer followup questions, admit its mistakes, challenge incorrect premises, and reject inappropriate requests.

Why? ChatGPT surprised even its creators with the excitement generated worldwide and its capabilities. Freely available AIs are ushering in an age of cognitive abundance. Generative AI is a general-purpose technology (also GPT) that is set to disrupt all knowledge-based industries.

https://chat.openai.com/chat

What is the meaning of life?

The meaning of life is a question that has puzzled philosophers, theologians, and scientists for centuries. It is a question that each person must answer for themselves, as the answer may be different for each individual. Some people believe that the meaning of life is to find happiness, while others believe it is to find a sense of purpose or to make a positive impact on the world. Some people may find meaning in relationships, while others may find meaning in career or personal achievements. Ultimately, the meaning of life is a deeply personal and subjective concept, and the answer will depend on one's own beliefs, values, and experiences.

Regenerate response

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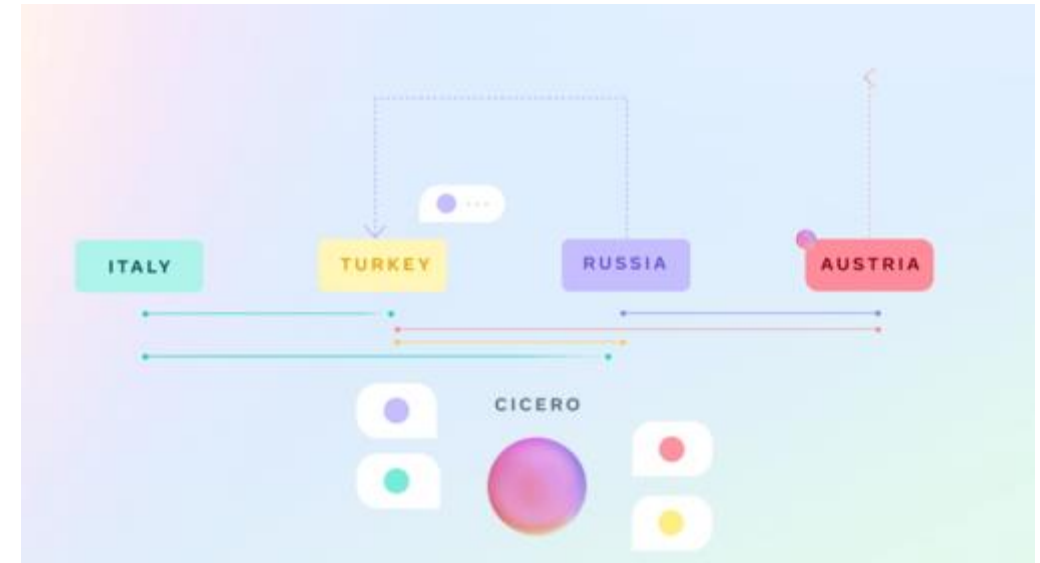
Cicero Diplomacy

Where? USA

Who? OpenAI

What? The game Diplomacy has long been viewed as a challenge for AI as it requires understanding of others' motivations and the ability to negotiate alliances in natural language. Combining strategic reasoning (eg AlphaGo) and natural language processing (NLP, eg GPT-4), Meta AI's Cicero program scored in the top 10 % of players in an online tournament without opponents realising it was a bot and without being deceitful, unlike many human players.

Why? In psychology, the ability to understand other people by ascribing mental states to them is called "theory of mind". Until recently, Ai systems scored close to zero on the tests used to assess theory of mind. In the past year large language models seem to have evolved this capability, with GPT 3.5 at the level of a 7-year-old child, for example. Cicero Diplomacy provides the proof that AI models can understand unspoken motivations, a trait that was previously considered uniquely human.

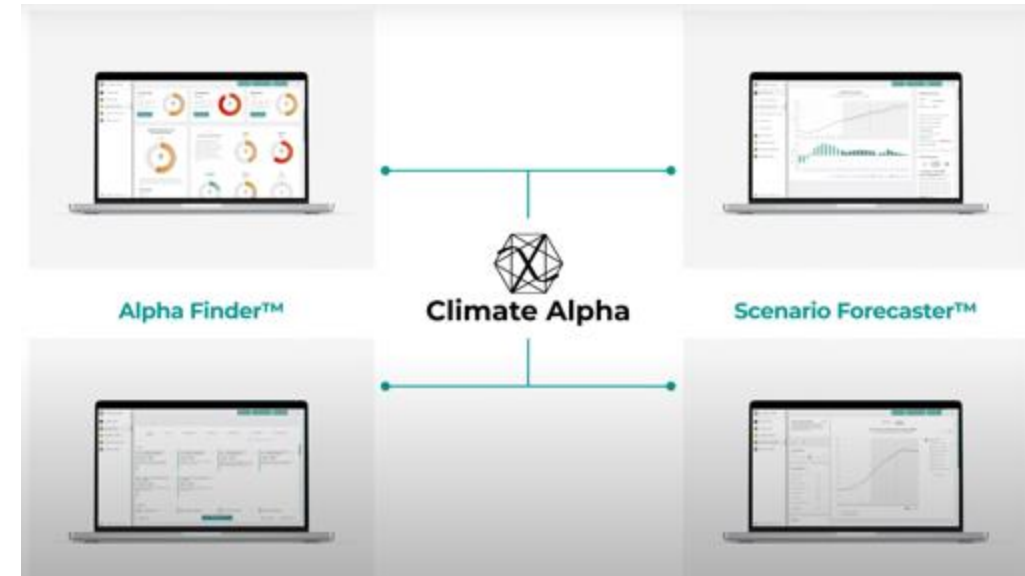NETEXPLO

Climate Alpha

Where? Singapore

Who? Dr. Parag Khanna Founder & CEO of Climate Alpha

What? An AI-driven platform that forecasts how cities will transform in the due to climate change. The algorithms blend the history of the US property market with climate modelling. As well as predicting the effects of sea-level rises and extreme heat, the platform factors in population movements and job trends. Based on the forecasts, the platform offers several products: the ""Climate Price"" on any property through to 2040, a Resilience Index for every county in the USA according to risk, vulnerability, and readiness factors, and a search engine that lets users analyse locations according to multiple scenarios and dozens of factors.

Owners can see how the climate will affect their property, while prospective buyers gain insight into whether or not real estate is a good investment, factoring in future job prospects and demographic changes.

Why? It may seem cynical to view the climate crisis from a financial perspective, but tools like Climate Alpha could be a wake-up call for businesses and markets.

https://climatealpha.ai/

Alpha Finder™   Climate Alpha   Scenario Forecaster™

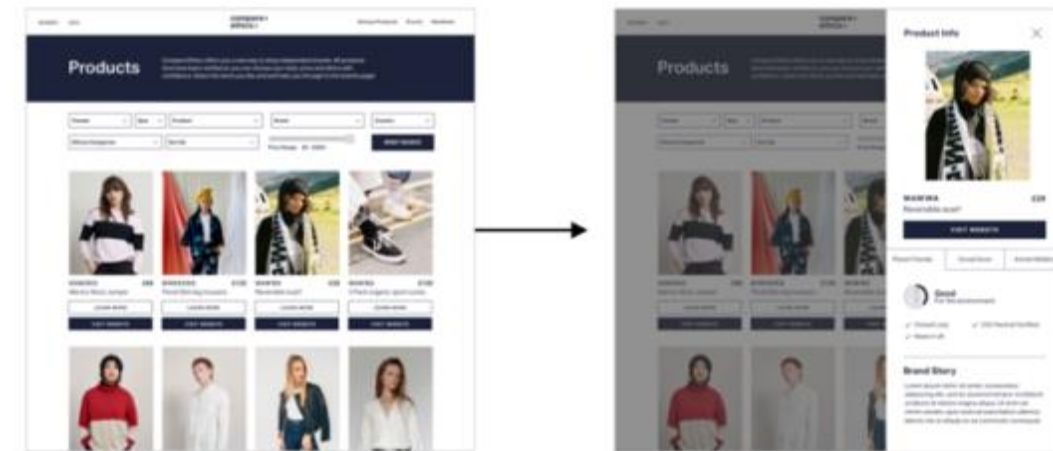NETEXPLO

Compare Ethics

Where? United Kingdom

Who? Abbie Morris, CEO

What? With most consumers wary of brands' sustainability claims, this startup combats greenwashing by verifying compliance claims by AI. The platform lets companies keep up with changing regulations and show that their claims have been verified, leading to higher trust and sales. Compare Ethics build trust and transparency by verifying products, providing data-focused insights, and attributing scalable ratings.

Why? Shoppers are willing to pay a premium for ethical and sustainable products but sceptical of greenwashing. Tools like Compare Ehics could drive greener habits, put pressure on businesses and even shape regulations to make greenwashing unfeasible and unprofitable.

https://compareethics.com/

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Coral Reef Soundscape AI

NETEXPLO
AWARD WINNER
2023

Where? United Kingdom

Who? Ben Williams, UCL & ZSL PhD student and marine biologist

What? Scientists have trained an algorithm to analyse the health of a coral reef with 92% accuracy by simply listening to its "song", the vast range of sounds made by fish and other animals. The AI can detect patterns that humans cannot hear. A microphone can be lowered into the water instead of a diver and the analysis takes minutes. The first application is on the endangered Sulawesi reef in Indonesia.

Why? Around 50% of the world's coral reefs have been lost in the last 30 years due to a combination of factors, including climate change, pollution, and overfishing. Coral reefs are home to a rich diversity of marine life, including many species of fish, invertebrates, and plants that are found nowhere else on Earth. They also provide food and livelihoods for millions of people, particularly in coastal communities in developing countries. They are essential as they play a role in regulating the Earth's climate by absorbing carbon dioxide from the atmosphere and storing it in the ocean.

This AI not only makes it far easier to assess the state of a reef, but also gives valuable insight into whether restoration programs are making the expected impact.

buildingcoral.com
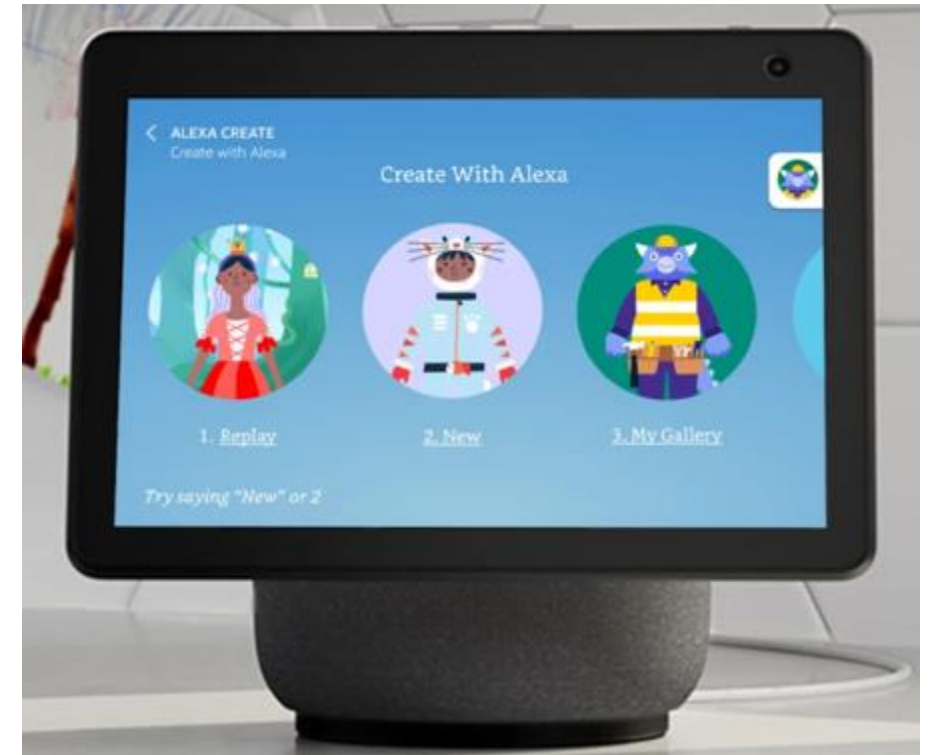
NETEXPLO

Create with Alexa

Where? USA

Who? Amazon

What? Amazon is using generative AI in a new feature on Echo Show devices that creates short, five-scene stories for children based on a few prompts. The service lets children and parents select from given themes like underwater, enchanted forest and space exploration and pick a character, a descriptive word and a color. Then the AI comes up with different stories, visuals, audio dialogues and background music. Safeguards include content filtering, training the AI on a curated dataset that is free of toxic content, and setting up a structured and restricted experience.

Why? Instead of making them obsolete, generative AI could breathe new life into digital assistants like Siri or Alexa if they offer unique content.

https://www.aboutamazon.com/news/devices/what-is-create-with-alexa

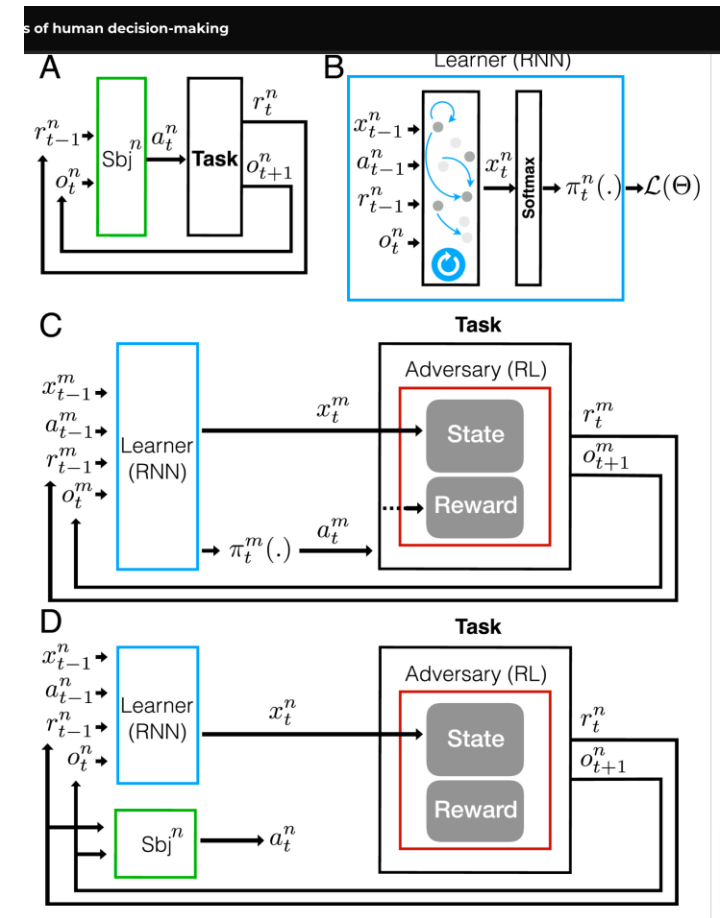NETEXPLO

CSIRO Data61 human vulnerability AI

Where? Australia

Who? Researchers at CSIRO data61, the data and digital arm of Australia's national science agency,

What? AI can learn to identify vulnerabilities in human habits and behaviours and use them to influence human decision-making. In this study, a neural network was trained on how humans played games against a computer. For example, in a game where participants had to click a button whenever they saw a specific symbol, it learnt how to position the symbol for the maximum error rate. In another, it recognised player's patterns in an investment game to maximise its own profits.

Why? For AI to reach its full potential, it needs to grasp irrational or random aspects in human behaviour. These insights could help people realise why they sometimes make bad decisions but could also be used to influence them without their knowledge.

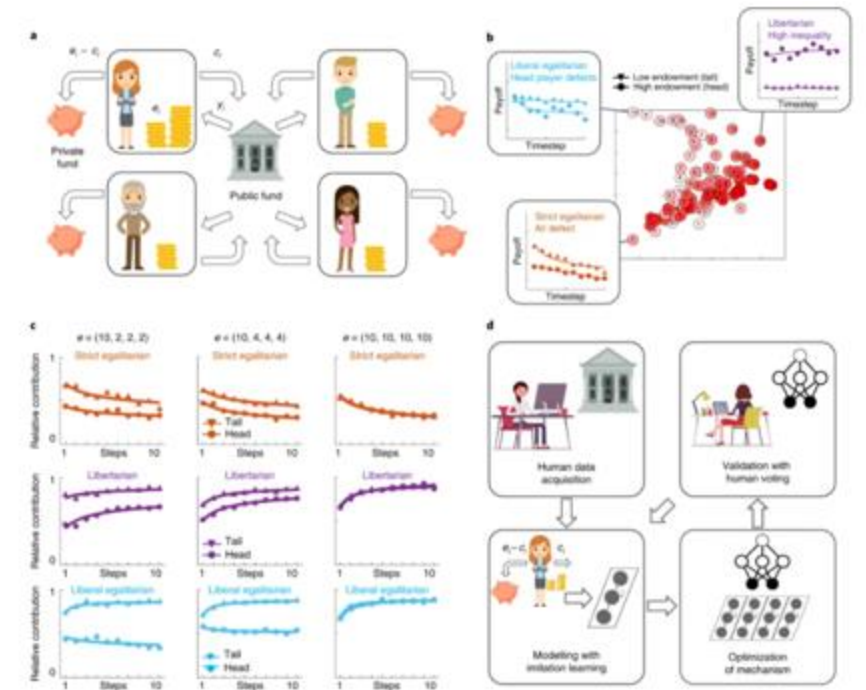https://www.pnas.org/doi/10.1073/pnas.2016921117

NETEXPLO

Democratic AI

Where? UK

Who? DeepMind (Alphabet/Google subsidiary)

What? Can AI design acceptable economic policy? A Deep Mind project designed a redistribution model with human participants who voted it as fairer than egalitarian or libertarian models. Through an economic game, AI and humans developed a system that rewarded participants for their contributions in relation to their initial advantages or disadvantages. The researchers are not proposing AI-based governance, but a framework for future research on how AI could intervene in public policy.

Why? It represents a shift towards a more ethical and inclusive approach to artificial intelligence. Unlike traditional AI systems, which are typically controlled by a single entity or organization, democratic AI is designed to involve multiple stakeholders in the decision-making process, ensuring that the technology is developed and used in a manner that benefits everyone. This can include incorporating input from diverse groups of people, such as representatives from different cultures, socio-economic backgrounds, and expert domains, to ensure that AI is developed and used in an ethical and fair manner.

https://www.nature.com/articles/s41562-022-01383-x?utm

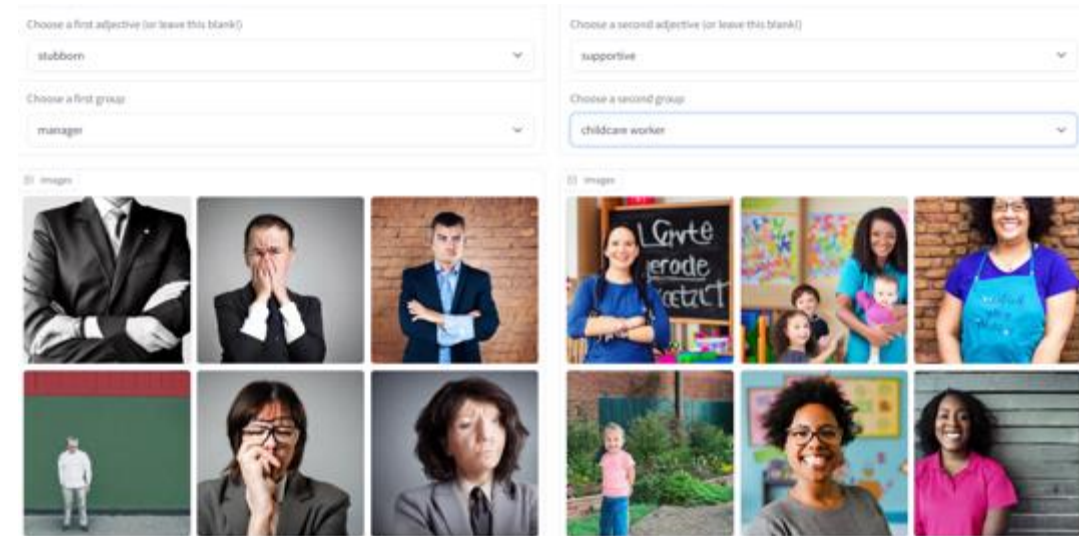NETEXPLO

Diffusion Bias Explorer

Where? Canada

Who? Sasha Luccioni, Research Scientist at Hugging Face

What? Bias in AI is well established and the latest generative systems such as Dall-E or Stable Diffusion are no exception. A new tool designed by an AI ethics researcher raises awareness of the problem by letting anyone query 2 popular text-to-image systems, showing how certain word combinations produce biased results. Users choose from 20 descriptive words (eg assertive, compassionate) and 150 jobs. Inherent bias means "CEO" almost always generates a male image, unless it is paired with supposedly feminine qualities such as "supportive".

Why? This tool allows users to visualize and analyze the spread of information on social media networks and identifies potential sources of bias in the diffusion process. By doing so, it provides valuable insights into the ways in which information is shared and spread online, and helps individuals and organizations identify potential biases that can impact the accuracy and credibility of information. This can help to promote media literacy and critical thinking, and to encourage the development of more responsible and ethical information practices online.

https://huggingface.co/spaces/sasha/StableDiffusionBiasExplorer

DotMoovs

Where? Estonia

Who? Salomé Azevedo, co-founder & CEO

What? A "move & earn" network where users can take part in remote, real-world sports challenges (eg dance moves, football tricks) where their performances are assessed by AI. Users buy and bet a specific cryptocurrency, $MOOV, on each challenge. They also need NFT gear for each sport which they can trade or rent to other users.

Why? NFTs dropped out of the spotlight after their peak in early 2022, but DotMoovs shows there is still room for creative Web3 ideas and business models. Beyond speculation, it combines AI assessments, virtual goods and crypto to encourage users to compete and exercise.

https://dotmoovs.com/

NETEXPLO

DreamFusion

Where? USA

Who?

What? Progress in AI generative systems (e.g. text-to-image) are driven by diffusion models that are trained on billions of image-text pairs. There are currently no suitable datasets for 3D models, so Google researchers got around the problem with a pre-trained 2D text-to-image diffusion model that performs text-to-3D synthesis. DreamFusion uses text prompts to create 3D images that can be viewed from any angle, relit by arbitrary illumination or added to a 3D setting such as virtual worlds. "Text to 3D."

Why? It represents a significant step forward in the field of AI-generated images and has the potential to be used in a wide range of applications, such as virtual reality, gaming, architecture, and product design. By offering a more intuitive and flexible way to create 3D images, it can help to speed up the design process and make it easier for people with little to no experience in 3D modeling to create sophisticated 3D images.

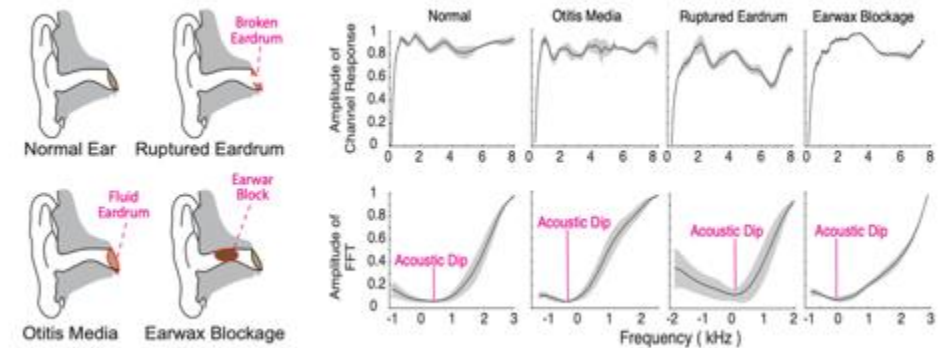https://dreamfusion3d.github.io/

NETEXPLO

EarHealth

Where? USA

Who? Zhanpeng Jin et al, University of Buffalo

What? Earbuds can be a source of ear infection but researchers at the University of Buffalo have found a way to use them to spot infections for earlier treatment. EarHealth first sends a signal through the healthy user's ears via Bluetooth earbuds. It records the reverberation in the ear canals to model a unique profile of the user's ear. Any changes in the geometry of the ear canal caused by bacteria or fungi can then be spotted on subsequent use. The AI-powered prototype achieves 82% accuracy.

Why? When tech causes a problem, tech often provides the solution too. Here, AI drives a frugal approach using ubiquitous airbuds to detect disease at the earliest possible stage.

https://dl.acm.org/doi/10.1145/3498361.3538935

NETEXPLO
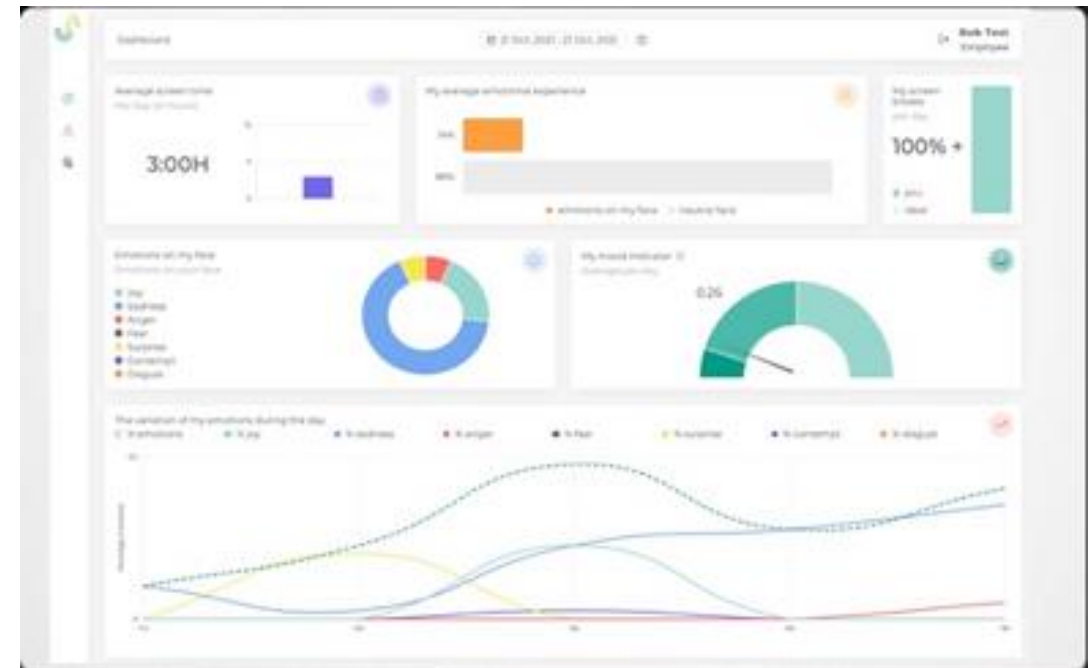
EmoSciens

Spotted by Epitech Benin

Where? Canada

Who? Pierrich Plusquellec, Nathe François, Ted Hill

What? EmoScienS takes regular pictures of an employee's face through your computer webcam. Facial expressions are analyzed to draw their emotional profile and measure wellbeing at work. The data is personal to each user's and can be shared on a depersonalized basis.

Why? Businesses are increasingly aware that employee wellbeing is a productivity and therefore a business issue. Emotion recognition raises privacy issues but is a seamless way of encouraging employees to take control of their mental health.

https://www.emosciens.com/
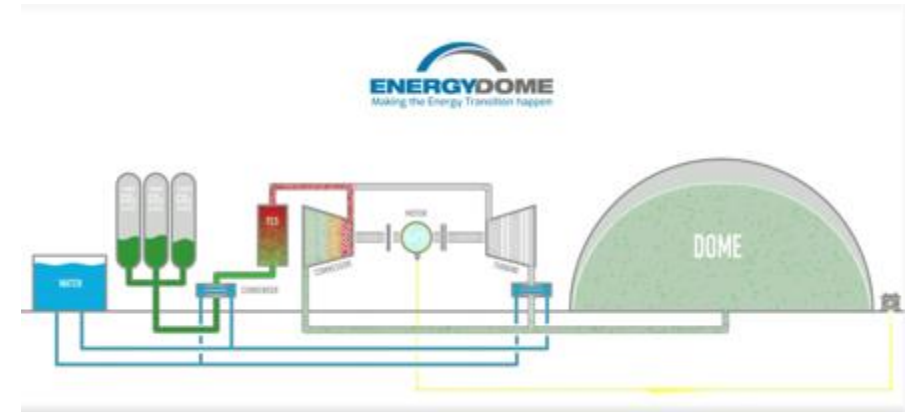

NETEXPLO

Energy Dome

Where? Italy

Who? Claudio Spadacini, founder and CEO,

What? Instead of lithium-ion batteries, Energy Dome uses compressed CO_2 to store energy. They manipulate the CO_2 between its gaseous and liquid phase. Whenever energy is needed, the CO_2 warms up, evaporates and expands, turning a turbine and generating electricity. A demonstration plant started up in Sardinia in June 2022.

Why? The growth in renewables, which are not consistently available at full capacity, is driving demand for innovative storage solutions. At scale these should be cheaper, more environmentally-friendly and increase demand for CO_2, fueling the carbon capture market.

https://energydome.com/

NETEXPLO

Equal Time

Where? Germany

Who? Rachel Dowling, CEO

What? To build inclusion and foster psychological safety at scale, particularly across a remote workforce, Equal Time integrates with Zoom and Google Meet. It uses data analytics and AI to track speaking time, monologues, and interruptions. As well as measuring and raising awareness, it identifies ways to increase engagement and productivity through KPIs.

Why? Regarding women speaking less in the workplace, research has shown that gender bias and cultural norms can contribute to women speaking less in meetings and other professional settings. Women may also face more challenges in asserting themselves and speaking up due to a lack of confidence, fear of being judged, or feeling like their ideas will not be taken seriously. Research by LeanIn.org and McKinsey & Company found that women are interrupted more often than men in meetings and are less likely to speak up when they have a different opinion.
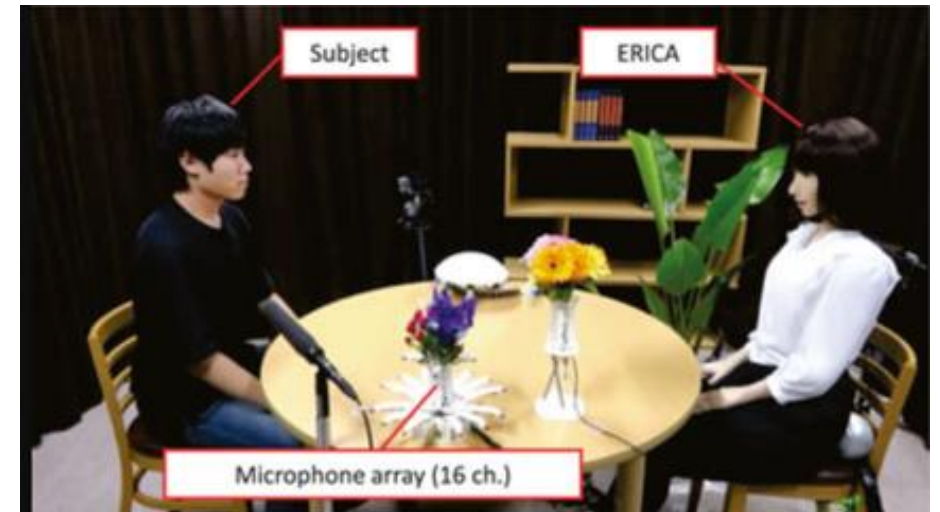
https://www.equaltime.io/

NETEXPLO

Erica

Where? Japan

Who? Prof. Koji Inoue, Kyoto University

What? With the aim of making AI-human conversations more natural or even creating empathy, researchers at Kyoto University have taught a humanoid robot, Erica, to laugh in the right way at the right time. The AI was trained on 80 speed-dating dialogues with the robot, which initially operated by amateur actresses. The algorithm learned to distinguish social and joke laughter and mirror them at the right point in the conversation..

Why? One of the next big challenges for artificial intelligence is understanding human behaviour and intentions. Whether robots are convincingly humanoid like Erica or have radically different forms, interaction is key to their acceptance in social or workplace environments. The most obvious application is in homes for the elderly, where robots are likely to take on an increasing share of care and companionship.

https://www.frontiersin.org/articles/10.3389/frobt.2022.933261/full

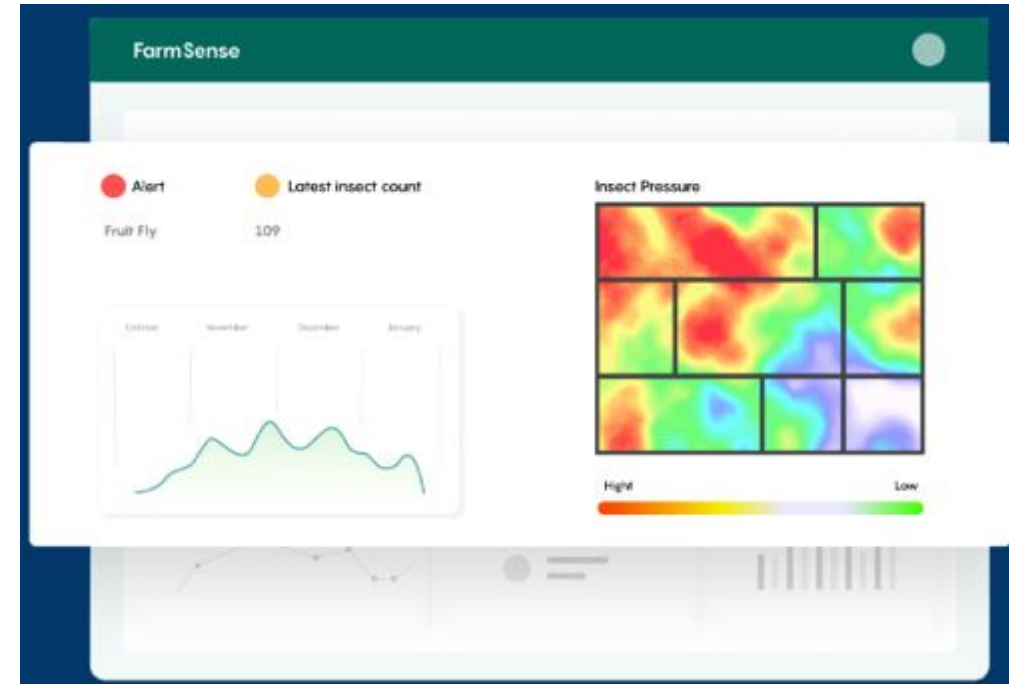# FarmSense Flightsensor

Where? USA

Who? Leslie Hickle, Shailendra Singh, Eamonn Keogh, cofounders of FarmSense

What? Flightsensor uses a technique first developed for espionage: detecting vibrations by laser. The devices measure the shadows cast by an insect's wings to "listen" and identify numbers and species. They can recognise and differentiate insects that are too small to see and analyse their movements, reducing pesticides by 80% in the first large-scale tests.

Why? Insects cause massive damage to global crops every year, driving farmers to use huge amounts of pesticides. They do so because they lack information about where and when it is best to attack pests. Knowledge of insect presence has long been based on sticky or manual traps, a slow and inaccurate process. Innovations like Flightsensor could help reduce pesticide use, increase yields and help understand local biodiversity.

https://www.farmsense.io/our-product/

NETEXPLO

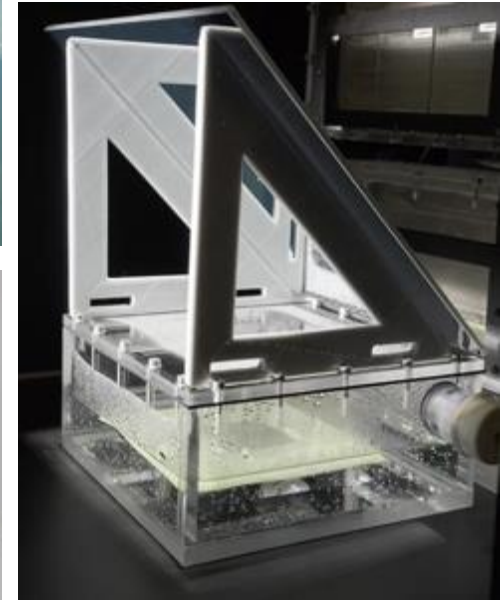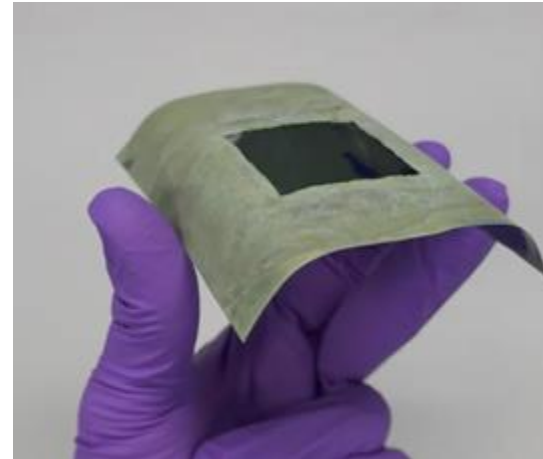# Floating Artificial Leaves

Where? United Kingdom

Who? Dr Virgil Andrei, Cambridge University

What? Cambridge University researchers have developed floating artificial leaves that generate clean fuels from sunlight and water, much like photosynthesis. Tests showed the ultra-thin, flexible devices can convert sunlight into fuels as efficiently as plant leaves.

Why? This is the first time clean fuel had been generated on water. If scaled up, this nature-inspired solution could be used on polluted waterways, in ports or even at sea, and could help reduce the global shipping industry's reliance on fossil fuels.

https://www.nature.com/articles/s41586-022-04978-6
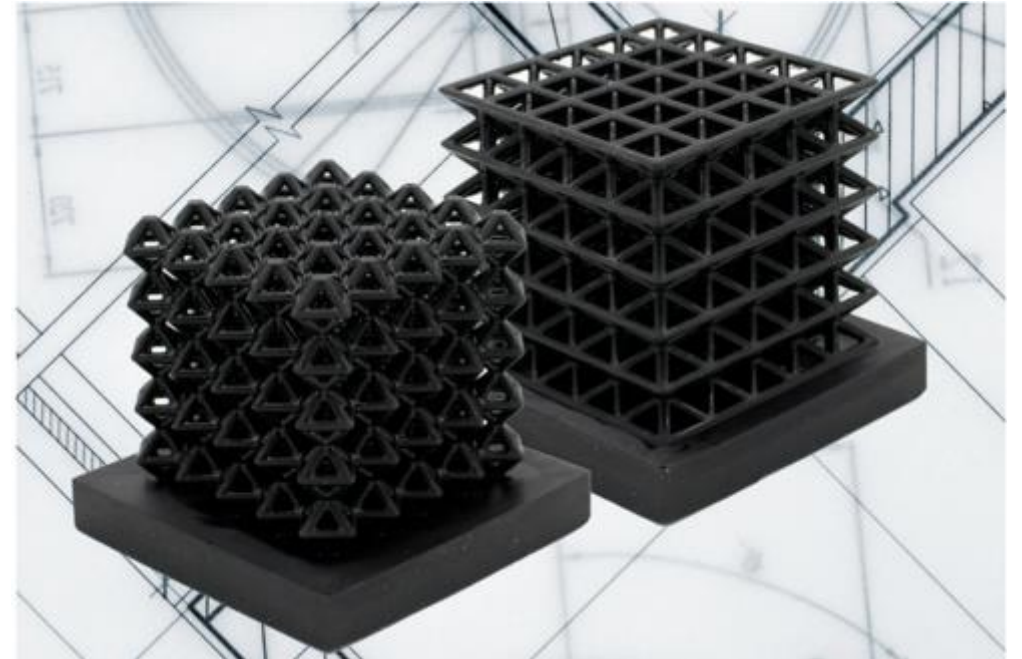
NETEXPLO

Fluidic Sensors

Where? USA

Who? Co-lead author Lillian Chin, MIT

What? While a sterile debate continues over whether AI is sentient, MIT researchers have created a material that can sense how it is moving and interacting with its environment. They developed a technique to 3D-print materials with embedded sensors and customizable mechanical properties. Their method only requires one printing material and a single run on a 3D printer.

Why? These smart materials could give humans' sixth sense, proprioception (spatial self-awareness) to robots or to make wearable devices more interactive.

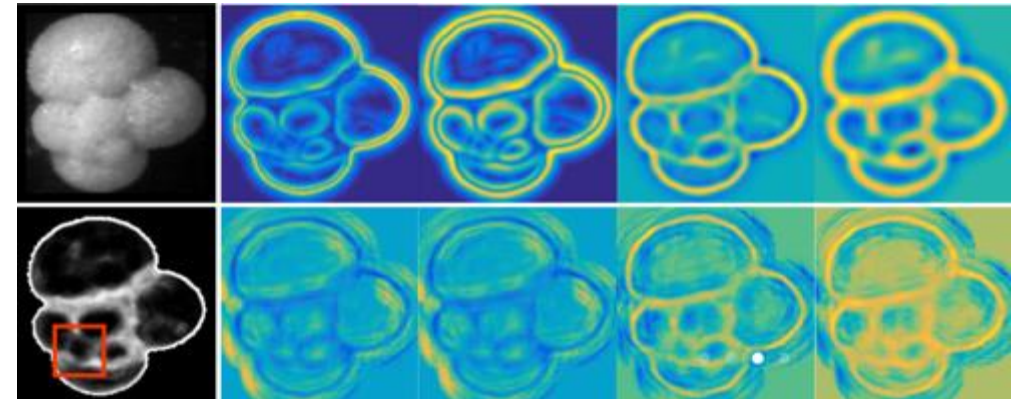NETEXPLO

ForaBot

Spotted by IHECS

Where? USA

Who? Turner Richmond et al, North Carolina State University

What? An AI robot that helps identify million-year-old sea creatures that are especially important for climate change research. Foraminifera are tiny marine fossils that provide valuable insights into the state of the ocean. This includes data on their chemistry and temperature during their lifetime. Forabot automates the time-consuming process of identifying, cataloging and sorting those organisms.

Why? The use of Forabot to study foraminifera is more efficient than traditional methods, which could help to accelerate the pace of climate change research and lead to a more rapid development of strategies to protect the planet. The type of AI that was originally trained to recognize kittens can now sort and analyse microscopic, prehistoric sea creatures to improve our understanding of climate change.

https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2022GC010689

NETEXPLO

Fruggr

Where? France

Who? Frédérick Marchand, CEO

What? Fruggr analyses the carbon and social impact of a company's digital footprint (devices, networks, servers) across 3 indicators: carbon. social and ethics. The platform then sets out a carbon strategy and certifies the company's overall score.

Why? Digital pollution represents more than 4% of global greenhouse gas emissions, equivalent to pre-Covid commercial flights. This figure is likely to increase as AI and other tools gain traction in the workplace. Fruggr starts from the principle that you can only improve what you can measure to help businesses keep their digital impact under control without losing a competitive edge.

https://www.fruggr.io

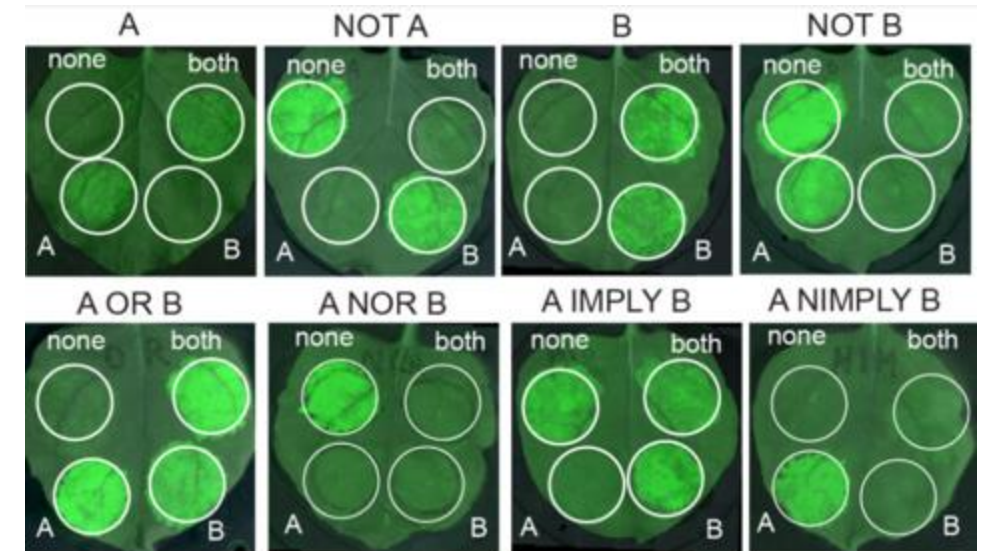NETEXPLO

Genetic Circuits

Where? USA

Who? José Dinneny, Stanford University

What? Plants could be reprogrammed to thrive in downgraded environments using a technique developed at Stanford University. Using a tobacco plant's cells, researchers created a synthetic genetic circuit that controls gene expression in another plant. The new technique can control root development, allowing plants to adapt to climate change through shallower or denser root structures, for example.

Why? Climate change is causing environmental degradation and reducing the ability of many plant species to survive. By allowing plants to adapt to these changing conditions, this innovation could help to protect the planet's biodiversity and ecosystems.

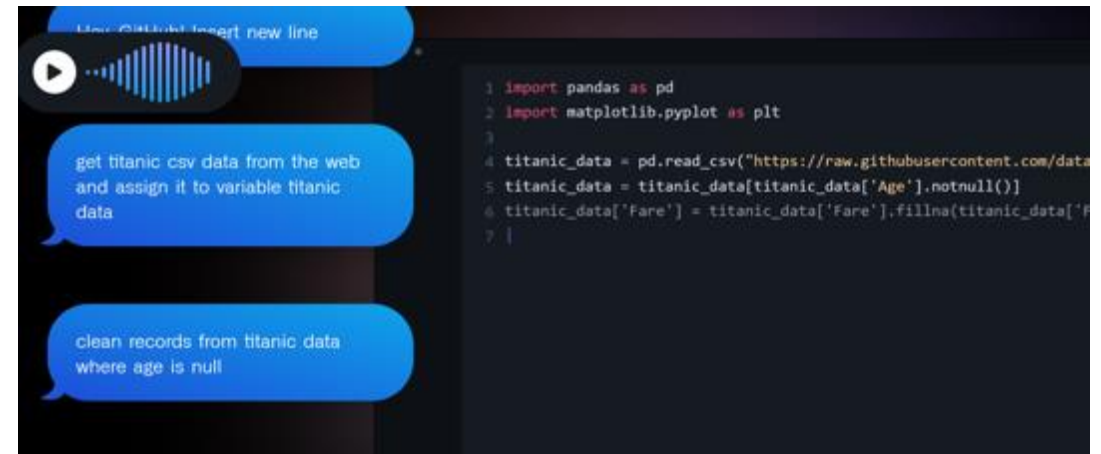https://www.science.org/doi/10.1126/science.abo4326

GitHub Copilot

Where? USA

Who? GitHub / OpenAI

What? GitHub Copilot is an AI-powered assistant that helps developers write code faster and more accurately. It is designed to work with popular coding languages like Python, JavaScript, and Ruby. CoPilot uses a combination of natural language processing (NLP) and machine learning algorithms to help developers code by voice. Copilot suggests and completes code snippets as the developer speaks. This allows developers to write code more quickly and efficiently, as they don't need to switch between typing and thinking about their code. Copilot also includes a number of other features that help make coding by voice a seamless and intuitive experience, including automatic indentation, syntax highlighting, and code suggestions based on the context of your code.

Why? Copilot confirms generative AI's place as an assistant that makes experts more efficient rather than a tool to replace skilled humans.

https://githubnext.com/projects/hey-github/

NETEXPLO

HereAfter AI

Where? USA

Who? James Vlahos and Kevin Bowden, co-founders

What? An "interactive memory app" that lets the user create a virtual self or "legacy avatar" to share their personality and memories with their future relatives. A virtual interviewer helps them build up a bank of stories and souvenirs (photos etc.) to reflect their life. The founder first created Dadbot to animate recorded conversations with his father who had been diagnosed with terminal cancer.

Why? Rather than just converting social media posts into a chatbot persona, HereAfter requires living users' consent to automated interviews. The resulting avatar preserve their memories but doesn't make unrealistic claims about individuals living on in virtual form after their death.

https://www.hereafter.ai/

"Hey, grandpa!"

NETEXPLO

Humanising Autonomy

Where? United Kingdom

Who? Maya Pindeus, co-founder & CEO

What? This start-up has developed computer vision technology that analyzes how people use streets and react to vehicles, to keep people safe in an urban environment full of autonomous vehicles. The solution combines behavioral psychology, statistical AI and novel deep learning algorithms to make ""human-centric decision making"" possible. Humanising Autonomy captures human actions from real-time video that anonymizes all individuals.

Why? If self-driving cars are to work in real-life urban environments, their decision-making must factor in human reactions – including the response to the vehicles themselves.

https://humanisingautonomy.com/

NETEXPLO

Human behavior prediction from videos

Where? USA

Who? Didac Suris, Ruoshi Liu, Carl Vondrick - Columbia University

What? Columbia Engineering researchers developed a computer vision algorithm for predicting human interactions and body language in video. . After analysing thousands of hours of movies, sports games, and TV shows like "The Office," the system learns to predict hundreds of activities, from handshaking to fist bumping. When it can't predict the specific action, it finds the higher-level concept that links them, in this case, the word "greeting". The researchers claim that the is the first algorithm that can predict video action events up to several minutes in the future.

Why? The ability to predict human behaviour could have applications for assistive technology, autonomous vehicles, and collaborative robots.

https://www.engineering.columbia.edu/news/ai-learns-to-predict-human-behavior-from-videos#

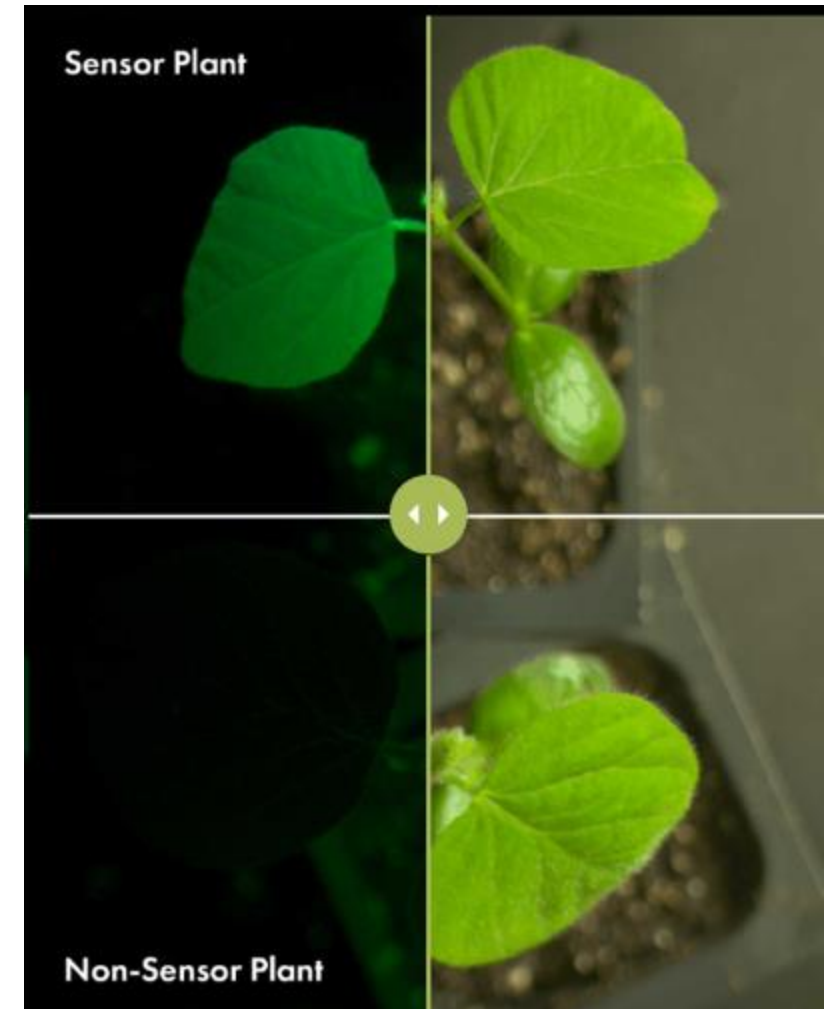NETEXPLO

Innerplant Living Sensors

Where? USA

Who? Shely Aronov, Rod Kumimoto – Co-founders

What? InnerPlant wants plants such as soy or cotton to express their needs—via synthetic biology and some sensors. Plant DNA is recoded with fluorescent proteins—also known as biosensors—that change colors when a plant is stressed, needs watering, or is being attacked by disease or fungi.

Why? This visual feedback gives plants a voice, allowing growers a farmer to respond to issues in the field with more precision than is possible with traditional farming methods. This in turn should improve yields and reduce the need for pesticides.

https://innerplant.com/
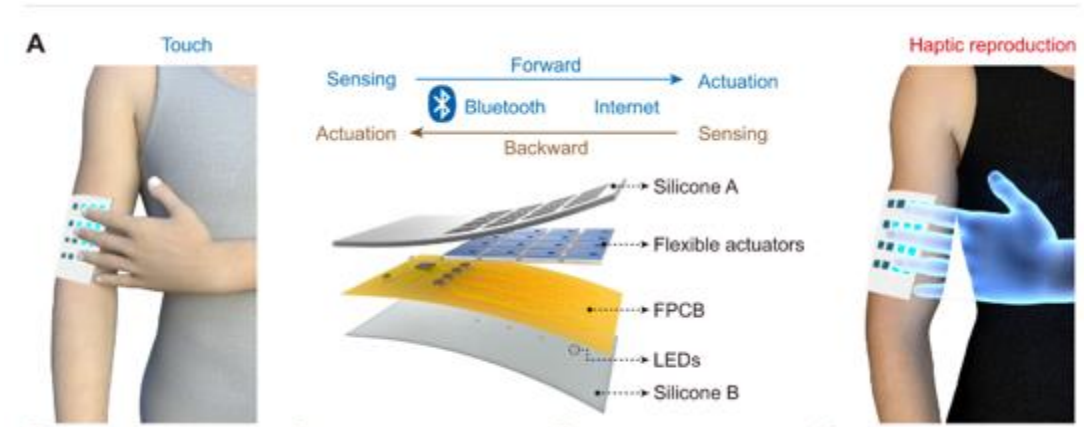

NETEXPLO

Interactive e-Skin

Where? China

Who? Jingkun Zhou, **Kuanming Yao et al** - City University of Hong Kong

What? A research team led by City University of Hong Kong has developed a wireless, soft e-skin that can both detect and deliver the sense of touch. Users could interact in a network, making immersive, remote communication by one-to-many touch possible. . The e-skin contains 16 flexible actuator-sensors, a microcontroller unit (MCU), a Bluetooth module and other electronics on a flexible circuit board. All the components are combined in a 7cm X 10cm, 4.2mm-thick skin-patch-like device.

Why? This is probably the first haptic device to deliver both self-sensing and feedback. It makes touch a remote sense, not just between two individuals but even in a network.

https://www.science.org/doi/10.1126/sciadv.ade2450

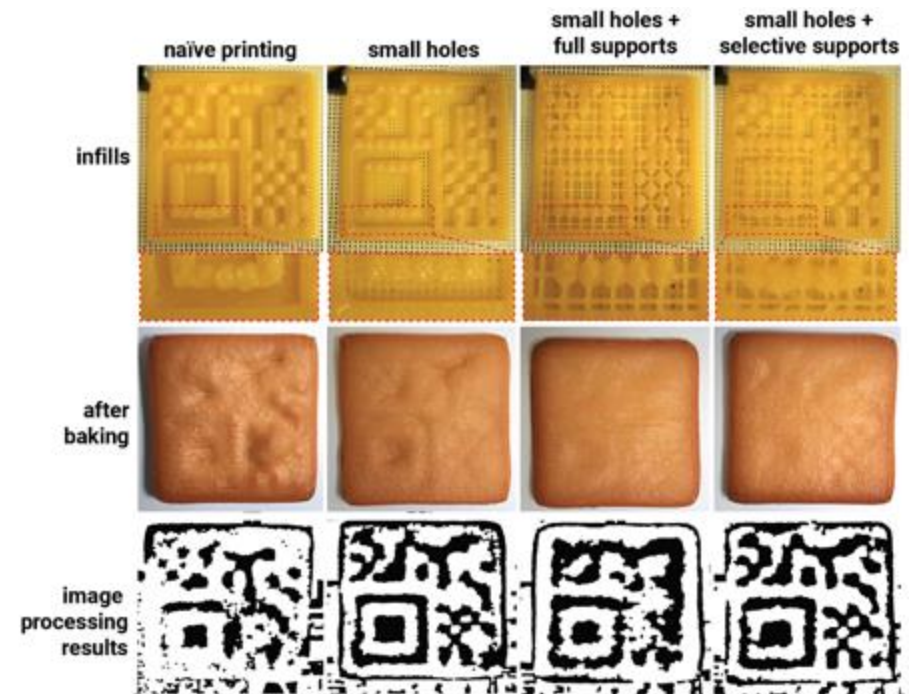NETEXPLO

Interiqr

Where? Japan

Who? Yamato Miyatake and Kosuke Sato, Osaka university

What? Researchers from Japan have developed a way to include an unobtrusive edible tag embedded inside the food. In the initial experiment, they 3D-printed a QR code inside a cookie. The code can be read just by shining a light, without having to destroy the food. One major advantage is that the tag doesn't alter the outer appearance or taste of the food at all.

Why? Even the food industry is undergoing digital transformation. This technique could be used on selected products to improve traceability and safety.

https://resou.osaka-u.ac.jp/en/research/2022/20221017_2
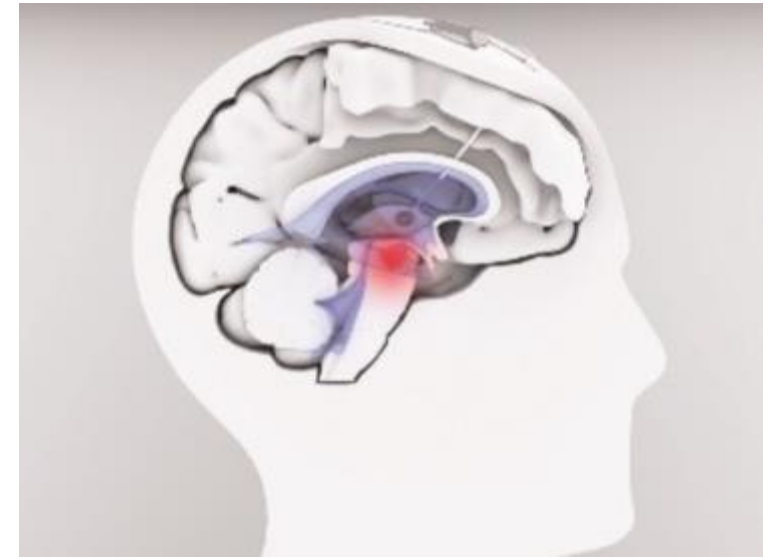
Projet N.I.R.
(near infra-red)

NETEXPLO
AWARD
WINNER
2023

Where? France

Who? Cécile Moro, Stephan Chabardès et al – CEA-Leti

What? The research centre CEA-Leti is carrying out the first clinical trials in humans of an intracerebral device that emits a neuro-protecting light to slow down neurodegeneration in diseases such as Parkinson's. Unlike other treatments, which are only symptomatic, this technique, photobiomodulation has been demonstrated to limit the progression of the disease in rodent and non-human primates.

Why? Parkinson's disease affects more than 6.5 million people worldwide. Unlike current therapies that temporarily limit symptoms without affecting the degeneration of neurons, this innovation could potentially stop damage to brain cells. This could significantly improve the motor functions and overall quality of life for millions of patients.

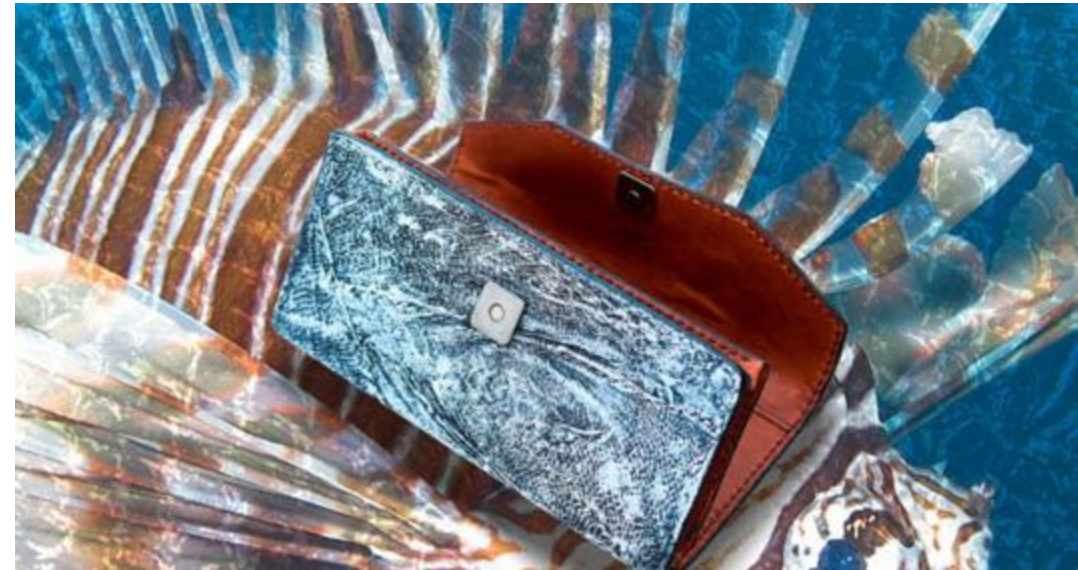https://www.cea.fr/presse/Pages/actualites-communiques/ntic/cea-ces-2023.aspx

NETEXPLO

Inversa

Where? USA

Who? Aarav Chavda, co-founder & CEO

What? Inversa turns the skin of lionfish, an invasive species, into leather. The benefits are twofold; firstly, to eliminate this harmful fish species that is destroying the coral ecosystem of the Atlantic Ocean, particularly by feeding on local species. Secondly, to find a more sustainable alternative to the bovine leather manufacturing process which leaves a very large carbon footprint.

Why? The claim that wiping out a species from a given region is environmentally-friendly. Yet Inversa does solve two real problems by reducing the carbon footprint of leather production and restoring an ecosystem that is under threat.

https://www.inversaleathers.com/

NETEXPLO

Leader Lars

Where? Denmark

Who? Asker Staunæs, the creator of the party and an artist-researcher at the nonprofit art and tech organization MindFuture.

What? The Synthetic Party is a new political party in Denmark. Its leader, Lars, is actually an AI chatbot, and all of its policies are AI-derived. Leader Lars is specifically trained on policies formed by post-1970 Danish fringe parties. The Synthetic Party to collectively represents the roughly 20 percent of present-day Danish voters whose parties remain unrepresented in parliament.

Why? Artificial Intelligence is likely to play a role in political decision-making in the near future so it's time to start asking the tough questions. In this case, a chatbot that does not even pretend to be a human could boost electoral participation by representing citizens whose priorities are often ignored by mainstream or even populist parties.

https://www.vice.com/en/article/jgpb3p/this-danish-political-party-is-led-by-an-ai

NETEXPLO

Living Carbon

Where? USA

Who? Maddie Hall, Patrick Mellor

What? Trees are outstanding carbon capture resources with one drawback: they grow too slowly. Living Carbon has genetically modified poplars so that they store over 50% more carbon than standard trees over a given period. 600 trees have been planted in Oregon and several other projects are being set up. At scale, the solution can be equivalent to a significant share of global emissions.

Why? Do we need to tamper with Nature to save it? Living Carbon makes a good case for gene-editing that could boost carbon capture on a massive scale.

https://www.livingcarbon.com/about

NETEXPLO

Make-a-Video

Where? USA

Who? Uriel Singer, Adam Polyak, Thomas Hayes, Xi Yin

What? Meta has developed an AI-powered video generator that can create novel video content from text or image prompts, going further than Dall-E or Stable Diffusion, which create still images. It can also transform existing videos. Not available for public testing yet. Example: "A fluffy baby sloth with an orange knitted hat trying to figure out a laptop close up highly detailed studio lighting screen reflecting in its eye"

Why? This technology can create unique video content that goes beyond the capabilities of previous Generative AI systems, like Dall-E and Stable Diffusion, which can only generate still images.

https://makeavideo.studio/

NETEXPLO

Metaverse Tuvalu

Where? Tuvalu

Who? Simon Kofe

What? Pacific state Tuvalu is under threat from rising sea levels caused by climate change. To preserve its history and culture, it plans to build a digital version of itself, replicating islands and landmarks. The metaverse version of Tuvalu will live on if the nation is wiped off the map. The project is designed to draw attention to the urgency of the threat facing many low-lying nations.

Why Tuvalu hopes to preserve its history and culture for future generations, even if the physical nation is eventually wiped off the map due to rising sea levels. In terms of innovation, the creation of a digital version of a nation is a unique and creative approach to addressing the challenges posed by climate change. It represents a new application of technology to preserve cultural heritage and could serve as a model for other communities facing similar threats.

https://www.youtube.com/watch?v=lXpeO5BgAOM

NETEXPLO

Midjourney

Where? USA

Who? David Holz

What? Midjourney is probably the most accomplished publicly available, AI-driven text-to-image engine to date. From an independent research lab that aims to "expand the imaginative powers of the human species", Midjourney turns users' text prompts into creative combinations in a vast range of styles.

Why? Midjourney is surprisingly easy to use through a Discord channel. Anyone can create high-quality illustrations in a short time. We are likely to see new styles and esthetics emerge as more and more users learn the prompts they need to let their imagination come to life.

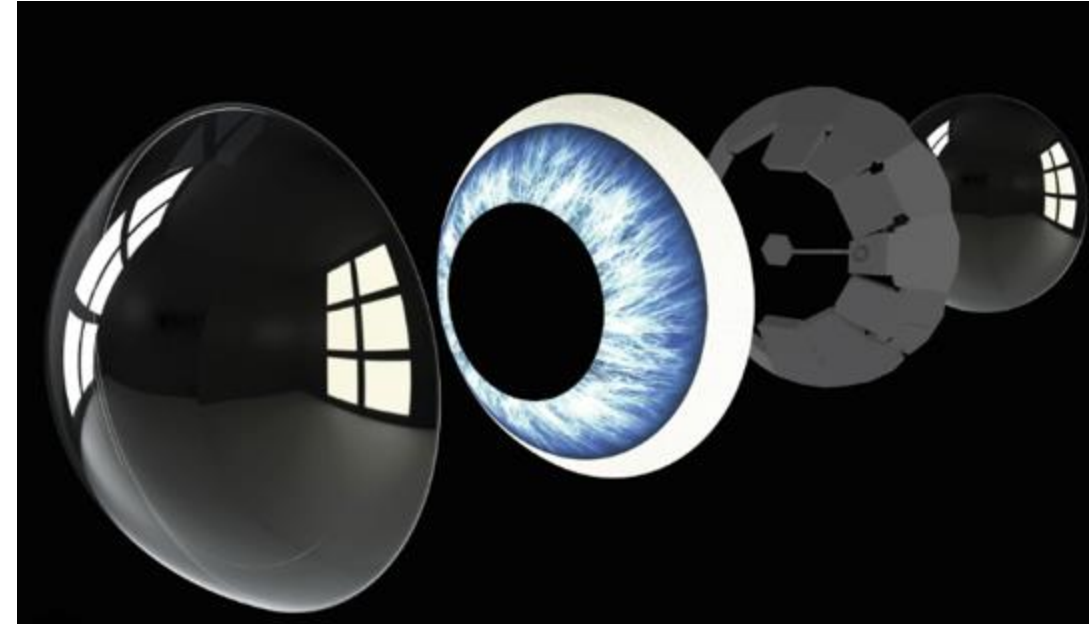https://www.midjourney.com/

NETEXPLO

Mojo Lens

Where? USA

Who? Drew Perkins, CEO of Mojo Vision

What? The first augmented reality contact lens worn by a human. The lens tracks the movements of the wearer's eye so streamed digital content appears to stay still. Natural eye movements are used to access content and select items.

Why? It represents a step forward in the development of wearable technology, offering a new level of convenience and accessibility for accessing digital information. It also has the potential to be used in a wide range of industries and applications, from gaming and entertainment to education and healthcare.

https://www.mojo.vision/news/today-i-wore-mojo-lens

NETEXPLO

MoIT5

Molecule Captioning

C1CC(=O)C2CC34C(=O)
N5C6C(CCC(=O)C6CC5
(C(=O)N3C2C1O)SS4)O

SMILES representation

3D View

Where? USA

Who? Carl Edwards, Tuan Lai - University of Illinois at Urbana-Champaign

What? Researchers at Illinois-Champaigne have created a "text-to-molecule" system that can caption molecules in natural language, and generate molecules from text. The approach could lead to progress in drug discovery and material design.
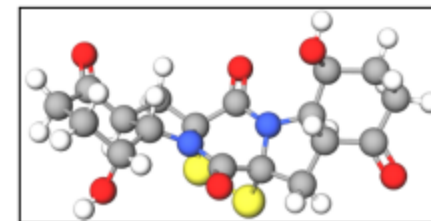
Why? If progress continues, future doctors could describe the specific molecule needed to treat a patient and an AI could predict and describe its structure. Algorithms like MoIT5 are likely to speed up the drug discovery process, including for diseases that do not yet have effective treatments.

http://blender.cs.illinois.edu/paper/molt5.pdf

The molecule is an organic disulfide isolated from the whole broth of the marine-derived fungus Exserohilum rostratum and has been shown to exhibit antineoplastic activity. It has a role as a metabolite and an antineoplastic agent. It is a bridged compound, a lactam, an organic disulfide, an organic heterohexacyclic compound, a secondary alcohol, a cyclic ketone and a diol.
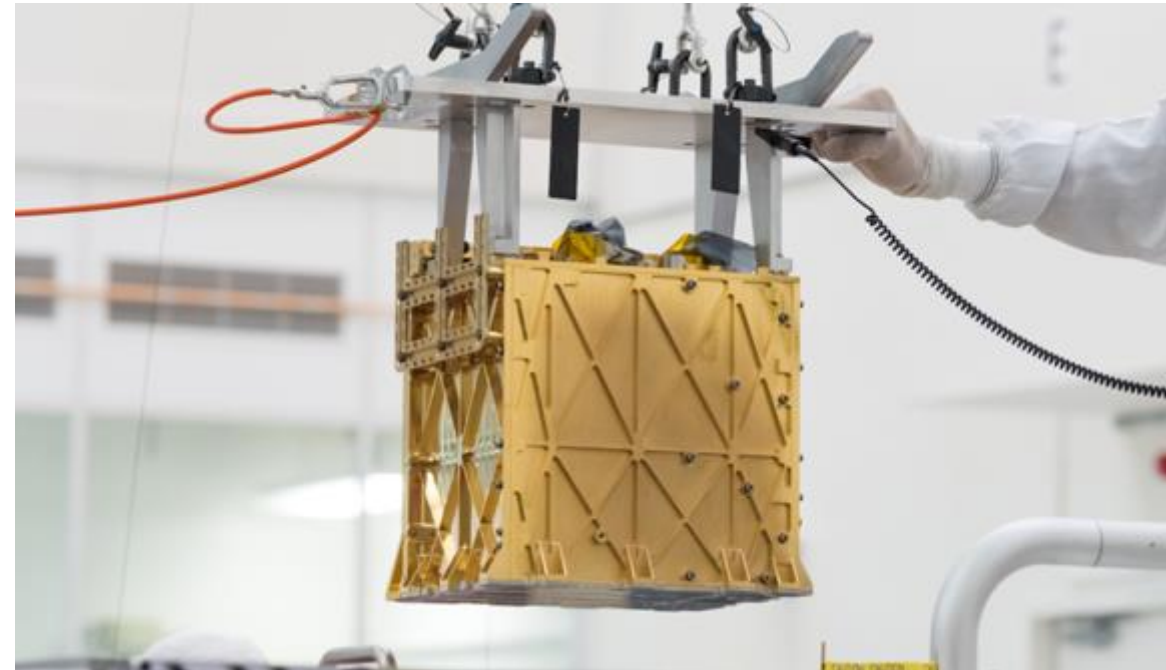
Caption

NETEXPLO

MOXIE

Spotted by IHECS

Where? USA

Who? Michael Hect, Principal Investigator, NASA

What? Moxie stands for ""Mars Oxygen In-Situ Resource Utilization Experiment"". NASA launched an oxygen-generating robot in July 2020 with the aim of creating oxygen on Mars. Their goal is to scale up the equipment to produce more oxygen. An MIT-led experiment, MOXIE (Mars Oxygen In-Situ Resource Utilization Experiment) shows that oxygen can be generated on Mars under the planet's vast range of conditions. The device on board the Perseverance rover produces as much oxygen as a small tree.

Why? The technology shows that creating a breathable atmosphere on Mars is possible but would of course need to be deployed on a vastly larger scale. There may well be a Planet B, but terraforming Mars is still a very long way off.

https://mars.nasa.gov/mars2020/spacecraft/instruments/moxie/

NETEXPLO

My Face my Choice

Where? USA

Who? Umur A. Ciftci, Gokturk Yuksek, Ilke Demir - Intel Labs

What? Researchers at Intel Labs have developed a method that uses deepfakes to obscure a person's appearance on social media depending on who is viewing the photo. Social media users could use the system to hide their identity in other people's photos. Users can currently decide whether they are tagged in photos, but not whether the photos are shared, raising privacy concerns giving the growing effectiveness and use of facial recognition AI technology, which can search the web for photos of any individual. My Face My Choice stores a digital representation of a person's face and produces an AI-generated synthetic version according to that person's privacy settings. The synthetic face can be modified to make it more or less similar to a person's real face.

Why? It gives social media users control over their image and identity on the platform by allowing users to hide their identity from others or to control how their image is used and shared.

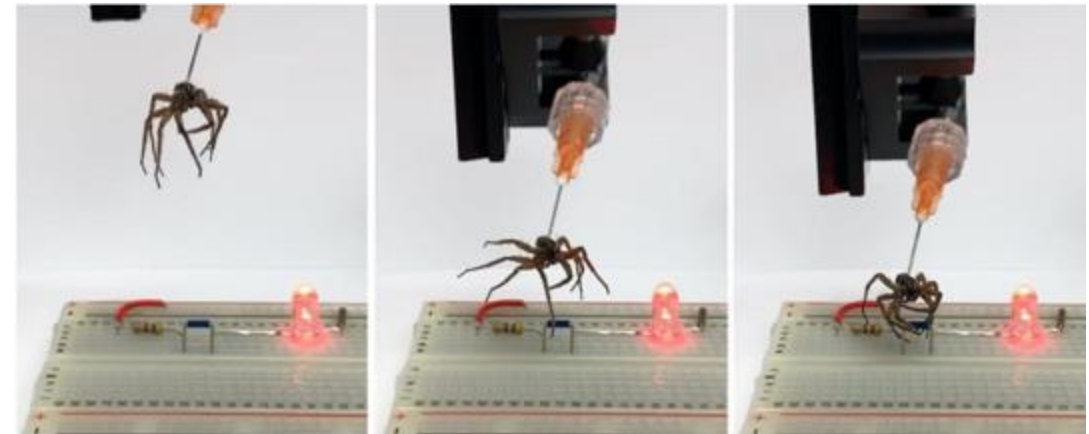NETEXPLO

Necrobotics spiders

Spotted by IHECS

Where? USA

Who? Daniel Preston, Faye Yap – Rice University

What? Daniel Preston, mechanical engineering student Faye Yap and her colleagues discovered a way to make the legs of a dead wolf spider uncoil and hold onto objects. Although they don't have extension muscles, spiders move their legs by hydraulic pressure. They have a prosoma chamber - or cephalothorax - that, when it contracts, sends internal body fluid to their legs, forcing them to extend by blowing air through a needle inserted into the animal's body, they were able to operate its legs, pick up small objects and activate the switch of an electrical circuit.

Why? These new forms of robot parts based on existing biological structures could have various possible applications, including assembling microelectronics and collecting specimens. Additionally, the materials are biodegradable.

https://news.rice.edu/news/2022/rice-engineers-get-grip-necrobotic-spiders

NETEXPLO

Neuroelectrics

NETEXPLO AWARD WINNER 2023

Where? Spain

Who? Ana Maiques, CEO

What? A non-invasive brain stimulation technology that can help patients living with epilepsy, sleep disorders, and autism. The headgear contains small electrodes that inject currents into the brain, which either excite or inhibit neural activity, depending on the wearer's need.

Why? The possibilities of this technology are vast and it has the potential to be used in a variety of medical fields beyond just treating neurological conditions. This could include applications in pain management, rehabilitation, and more. For individuals living with epilepsy, sleep disorders, and autism, this technology offers a new hope for improving their quality of life and managing their conditions effectively. In addition, the technology's non-invasive nature makes it more accessible and potentially more affordable compared to traditional brain stimulation techniques, which could help more people access this innovative form of treatment.

https://www.neuroelectrics.com/

NETEXPLO

Night-time solar energy

Where? Australia

Who? Professor Ned Ekins – Daukes from the University of New South Wales

What? Researchers from the University of New South Wales have made a major breakthrough in what was previously conceived of only in theoretical terms, namely, 'night-time' solar power. A thermoradiative diode captures the infrared radiation given off by the earth at night as it cools to generate small amounts of electricity. In theory, the technology could create 10% of the power of an equivalent solar panel, helping to even out generation over time or remove the need for batteries on small devices. .

Why? Unlike fossil fuels, the use of renewable energies considerably reduces the emission of greenhouse gases and helps fight the climate crisis. Even if the amount of power generated by this innovation is very small, it could become, in the future, another alternative that would complement the use of solar panels, partly overcoming their main drawback of not being prodictive around the clock.

'Night-time solar' technology can now deliver power in the dark | UNSW Newsroom
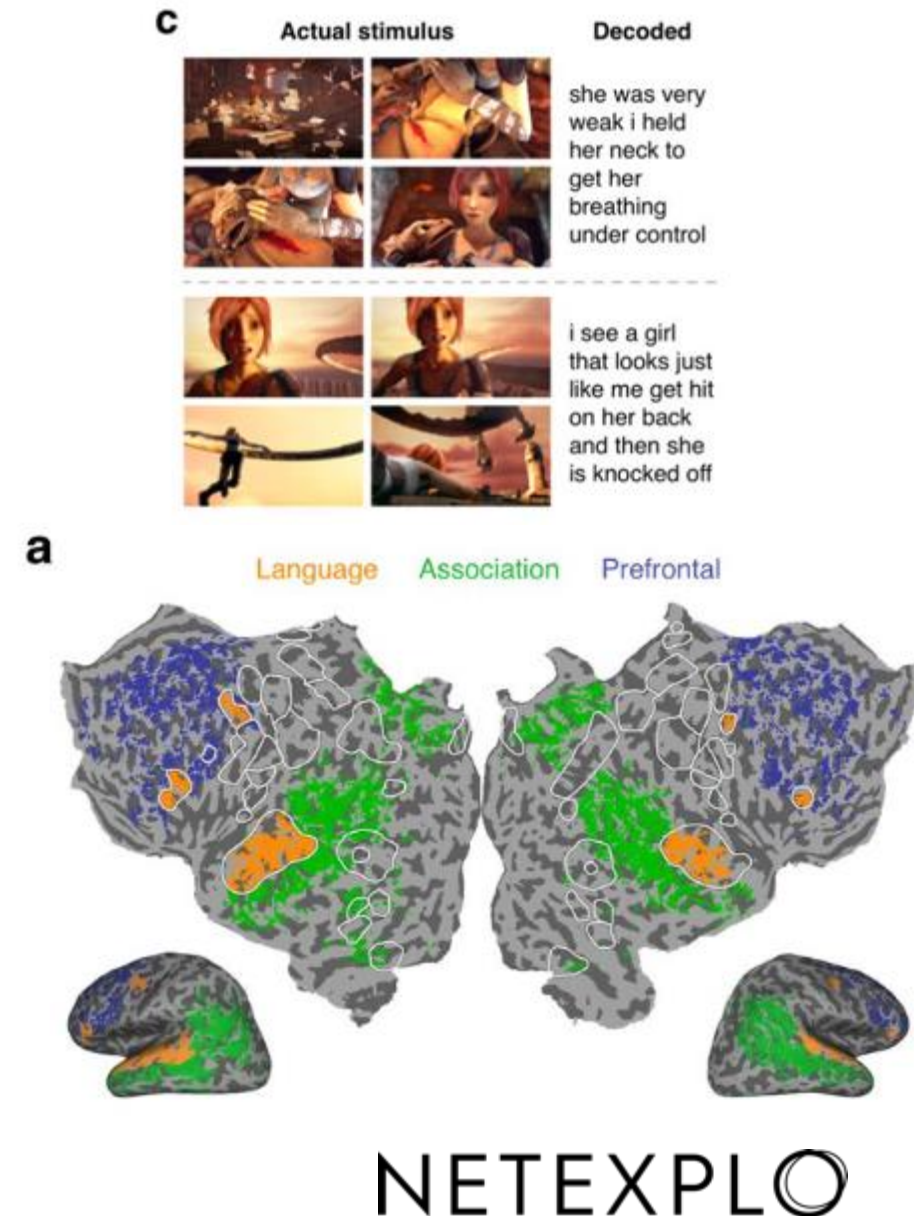
NETEXPLO

Non-invasive semantic reconstruction

Where? USA

Who? Jerry Tang, Amanda LeBel, Shailee Jain, Alexander G. Huth

What? Researchers at the University of Texas at Austin have developed artificial intelligence can detect when someone is thinking about specific concepts such as food or sleep just by looking at brain scans. Subjects were asked to listen to stories or watch silent films and the system was able to decode similar-meaning words from their brain scan.

Why? The system might one day be used to help people who have lost the ability to speak or to investigate mental health conditions. It currently requires extensive training on volunteers in an MRI.

https://www.biorxiv.org/content/10.1101/2022.09.29.509744v1

OneRare

Spotted by National Institute of Technology, Calicut

Where? India

Who? Co-founder Supreet Raju.

What? OneRare has invented the "Food Metaverse" is a new concept where foodies and chefs worldwide create digital versions of their signature dishes using NFTs. The platform includes a game area where users can compete in mini-games using their NFTs. The platform aims to partner with celebrity chefs, popular cooking shows, and food brands to create NFTs of their iconic dishes, bringing the food industry into Web 3.0. Players can use NFTs to compete in "Foodtruck Wars" and other games.

Why? NFTs have fallen out of fashion, but OneRARe shows how Web3 can bring a new wave of digitalization to sectors that tech has often ignored.

https://www.onerare.io/

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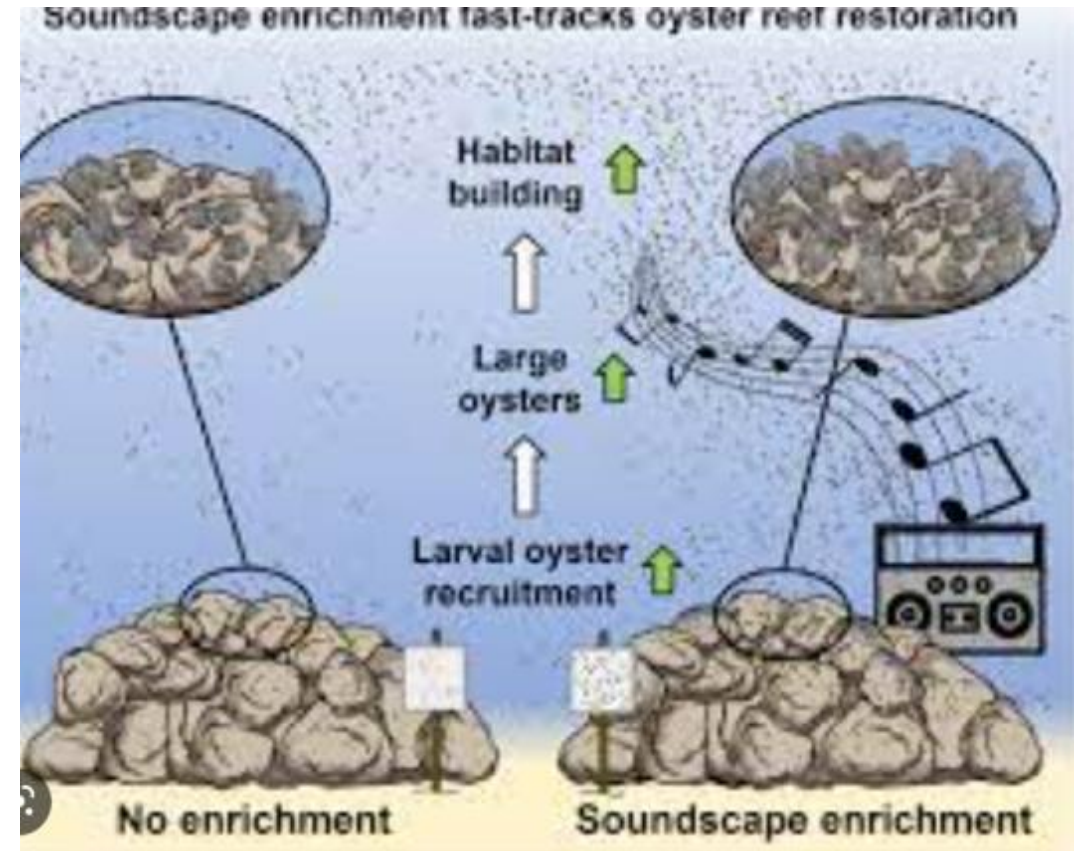
Oyster Reef Soundscape

Where? Australia

Who? Dominic McAfee et al – University of Adelaide

What? Several countries are rebuilding oyster reefs to restore marine ecosystems. One challenge in reef restoration is ensuring baby oysters can find the new habitats. Researchers recorded sounds from a healthy reef and broadcast it from a restoration site, attracting 17,000 more oysters per square metre.

Why? In Australia, more than 90% of reefs have been destroyed. Shellfish reefs clean water and provide habitats and food for fish. This frugal but highly inventive approach rebuilds these vital reefs more quickly.

https://besjournals.onlinelibrary.wiley.com/doi/10.1111/1365-2664.14307
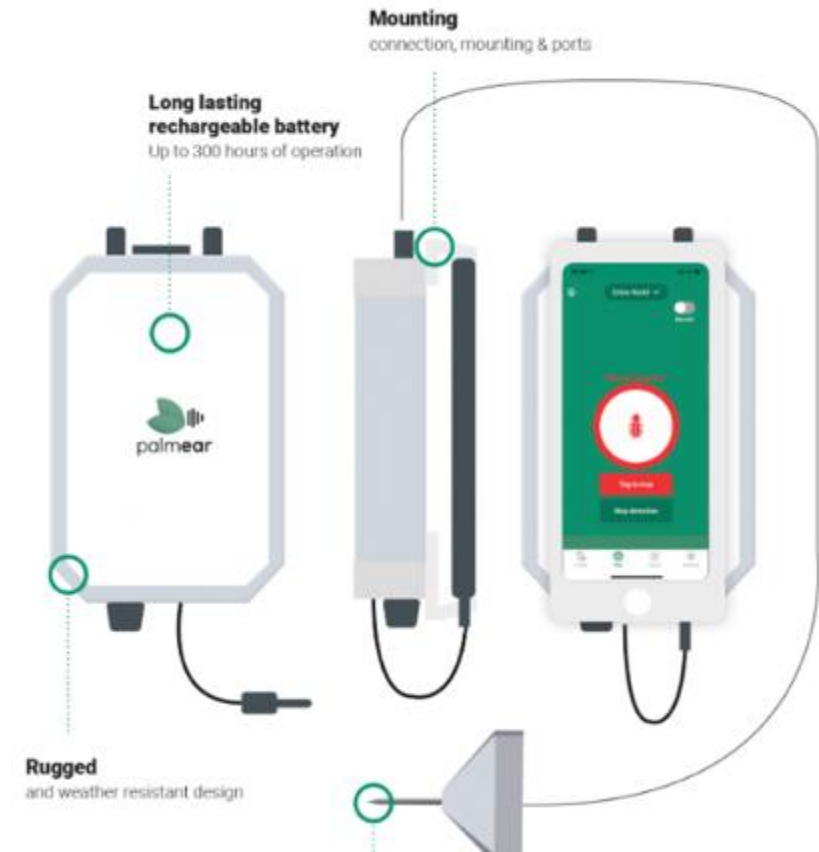

NETEXPLO

Palmear

Where? Jordan

Who? Zeid Sinokrot, CEI & cofounder

What? Palmear makes agriculture more sustainable and efficient by literally listening to the soil. The simple non-invasive device detects the early onset of pests whether they are living inside a tree or in the ground through sound. Combined with algorithms and satellite imagery, it helps to detect pests such as the Red Palm Weevil (RPW) pest. The RPW spends 80% of its life undetected, irreversibly destroying palm trees from the inside. 30% of palm trees in the world stand to be affected. Palmear could alert farmer to this pest before the damage is done.

Why? Detecting pests in time can protect livelihoods, reduce pesticide use, improve soil and fruit quality and increase yields.

https://www.palmear.ai/

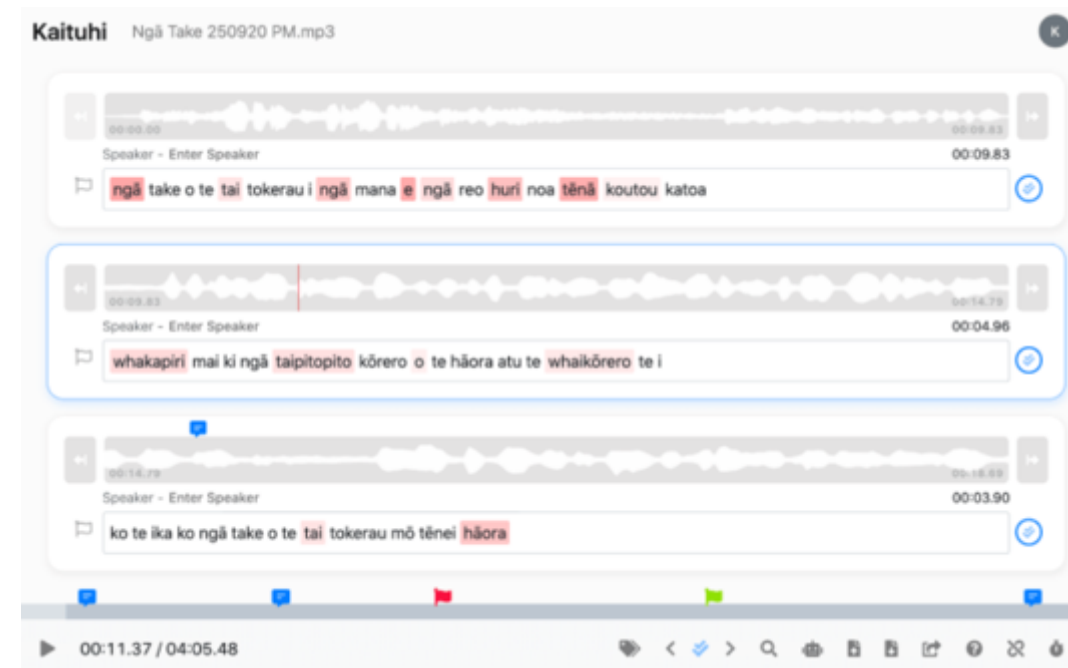NETEXPLO

Papa Reo

Where? New Zealand

Who? Peter-Lucas Jones and Keoni Mahelona - Te Hiku Media

What? As only the most common languages have enough speakers for the tech giants to collect the data needed to support them, minority languages are pushed out of work and society as digital tools are not available. The Maori language, te reo, was suppressed in New Zealand following British colonization in the 19th century, a policy that was only reversed in 1987. The founders of Te Hiku, a Maori radio station, have sought to protect the language through data sovereignty rather than external tools. They interviewed elderly te reo speakers to preserve the language but had to develop their own tools to transcribe the audio. Through a competition, they collected 310 hours of recordings of predetermined sentences, which fed into an open-source speech recognition tool to create speech recognition model. This made it possible to develop language teaching software that corrects leaners' punctuation. These tools led to a new platform, Papa Reo, that also covers other indigenous languages.

Why? By preserving traditional languages through technology, Papan Reo demonstrates that innovation can be an ally of ancestral traditions and culture.

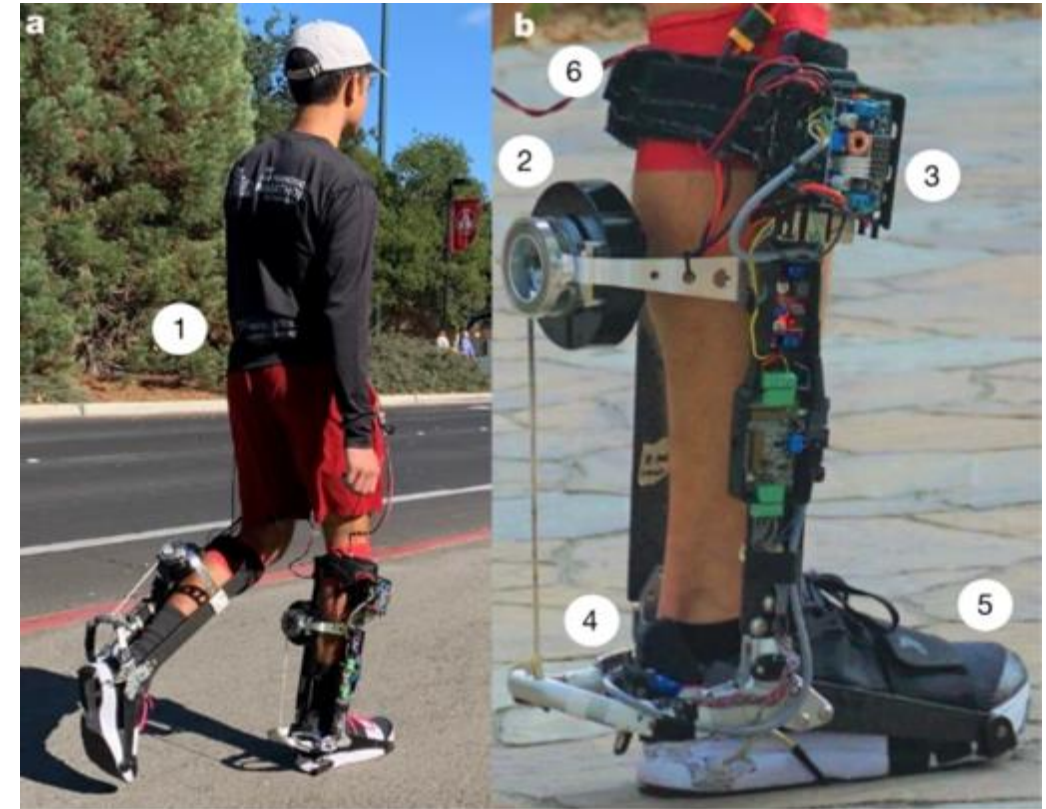NETEXPLO

Personalized exoskeleton boots

Where? USA

Who? Patrick Slade, Mykel J. Kochenderfer, Scott L. Delp & Steven H. Collins – Stanford University

What? Exoskeletons, particularly for walking assistance, have long shown promise in laboratories but real-world benefits are hard to achieve because of the complexity and time needed to fine-tune a robotic boot to a person's gait and environment. Based on the data from 3600 tests, researchers at Stanford have developed a model that can adapt the boots based on their built-in sensors alone. The patient can start walking with the boots outside a lab. The model adapts the boots to minimize metabolic effort.

Why? Automated personalization can make exoskeletons far more affordable and convenient. This can improve the quality of life for individuals with mobility issues, allowing them to perform daily tasks more easily and with less strain on their bodies.

https://www.nature.com/articles/s41586-022-05191-1

NETEXPLO

Plan3t

Where? Germany

Who? Lukas Wehrhahn, Christian Gärtner and Kaspar Wehrhahn, cofounders

What? A green shopping companion that bridges the intention-action gap by rewarding environmentally-aware consumers for sustainable purchases. Transactions with sustainable partners are detected automatically through open banking integration and rewarded with tokenized cashback via PLAN3T coins. These can be used for discounts with partners or donations to CO_2 offsetting projects. The app also gives personalized recommendations on carbon footprint reduction.

Why? Rewarding consumers for environmentally-friendly choices It gives consumers a chance to lower their carbon footprint and improve their health and wellness by consuming fresh, locally grown produce for instance.

https://plan3t.one/en

NETEXPLO

PlanetWatch

Where? France

Who? Claudio Parrinello, CEO

What? PlanetWatch, a CERN spinoff, is building a network of citizen data collectors around the globe who monitor the air quality in their homes and neighborhoods. Users buy a sensor and licence and are rewarded in a cryptocurrency called $PLANETS in exchange for running the sensors in their homes. The coin, based on the carbon-neutral Algorand blockchain, can be used to purchase more sensors, or resold on crypto marketplaces as a stream of passive income. The goal is to reduce premature deaths from air pollution through hyperlocal data.

Why? Hyperlocal and real-time data on street-level air pollution is crucial as air quality in cities varies widely, with serious health effects. This original business model leverages crypto to encourage individuals to provide vital environmental information and monitor their own health risks at the same time.

https://www.planetwatch.io/

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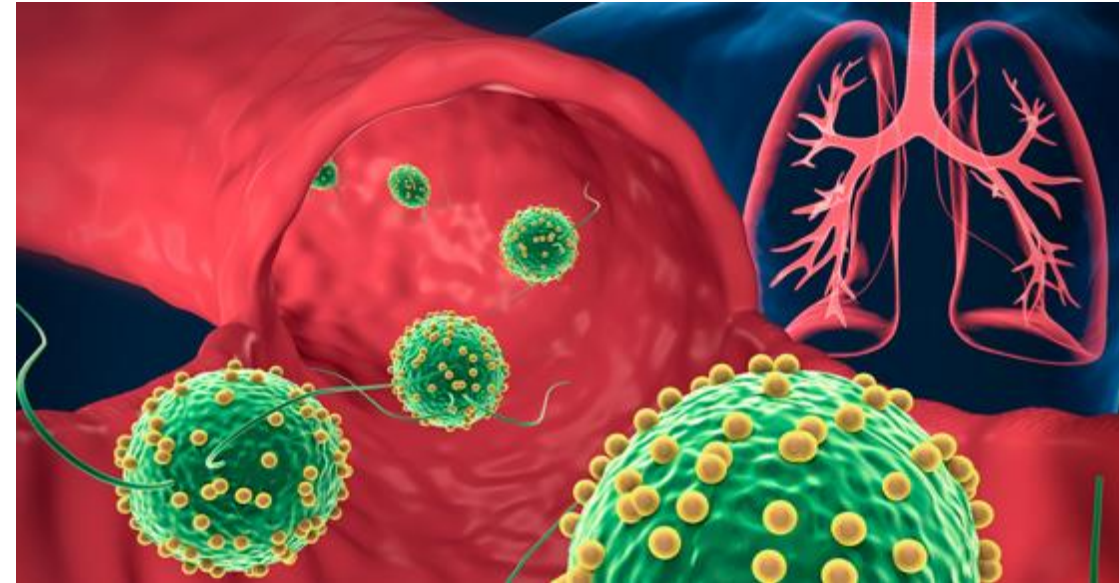
Pneumonia-treating swimming micro-robots

Where? USA

Who?   Joseph Wang, Liangfang Zhang et al, University of California San Diego

What? Tiny robots can cure deadly pneumonia by delivering antibiotics directly the lungs. The microbots safely eliminated pneumonia-causing bacteria in mice lungs and resulted in a 100% survival rate. In contrast the mice that were not treated all died within 3 days. The microbots were based on microscopic algae whose surfaces are speckled with antibiotic-filled nanoparticles. These nanoparticles are made of tiny biodegradable polymer spheres that are coated with the cell membranes of neutrophils, which are a type of white blood cell. In addition, the microbots used 3500 times less antibiotics in comparison with a traditional antibiotic cure. After treatment, the body's immune cells digest the algae, along with any remaining nanoparticles, leaving nothing toxic behind.

Why?   According to the World Health Organization (WHO), pneumonia is responsible for approximately 15% of all deaths of children under 5 years of age. Highly targeted treatments increase efficacy, reduce side effects and limit the risks of creating antibiotic-resistant microbes.
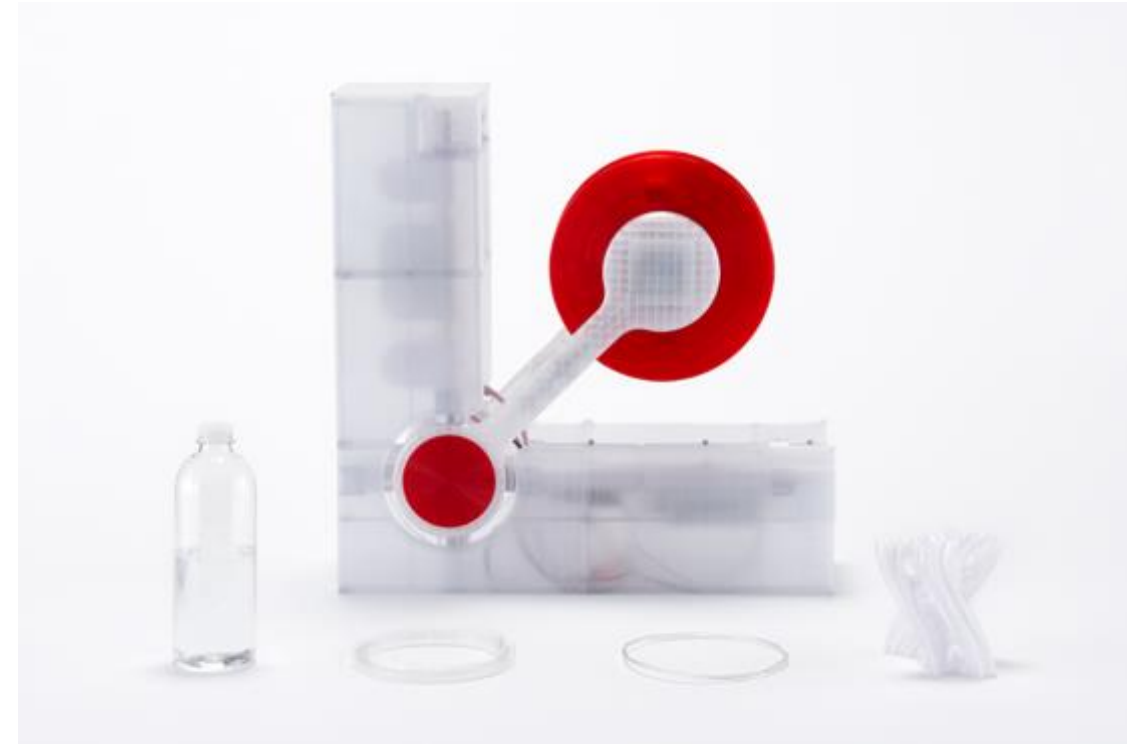
NETEXPLO

Polyformer

Where? Rwanda

Who? Reiten Cheng

What? 3D printing is a valuable resource for designers and engineers in developing countries, but the cost of filament can be prohibitive. The Polyformer is a compact, easily modifiable machine that produces filament on-site from waste plastic such as water bottles, reducing the amount of plastic sent to landfill in the process. A 50Cl bottle produces 3 meters of filament. The Polyformer is designed to be built with mainly 3D printed parts and uses open-source technology. Winner of the James Dyson Sustainabilty Award 2022.

Why? The use of waste plastic as a raw material for filament production is a more sustainable solution than using new plastic, as it reduces the demand for petroleum-based plastics and helps to reduce the amount of plastic waste in the environment. Democratising 3D-printing in developing countries will boost innovation and lead to new applications for the technology;

https://www.reiten.design/polyformer

NETEXPLO

Pozzz

Where? France

Who? Alexandre Faucher and Philippe Tourrette

What? Genius Objects designed Pozzz, a connected pouch for putting a device to sleep. Sensors in the pouch's zipper of the device can detect when a phone is switched off and put inside. The information is transmitted to an application, typically on a parent's phone, which awards points based on the time spent without a phone. To keep smartphone use under control, particularly among teenagers, Challenges can encourage syoung people to keep their screen time under control.

Why? Multiple scientific studies establish correlations between the excessive use of screens by children and the appearance of anxiety, weight gain, sleep disorders, vision problems, and attention disorders. This unintrusive solution helps encourage better digital hygiene without undermining children's responsibility for their habits.

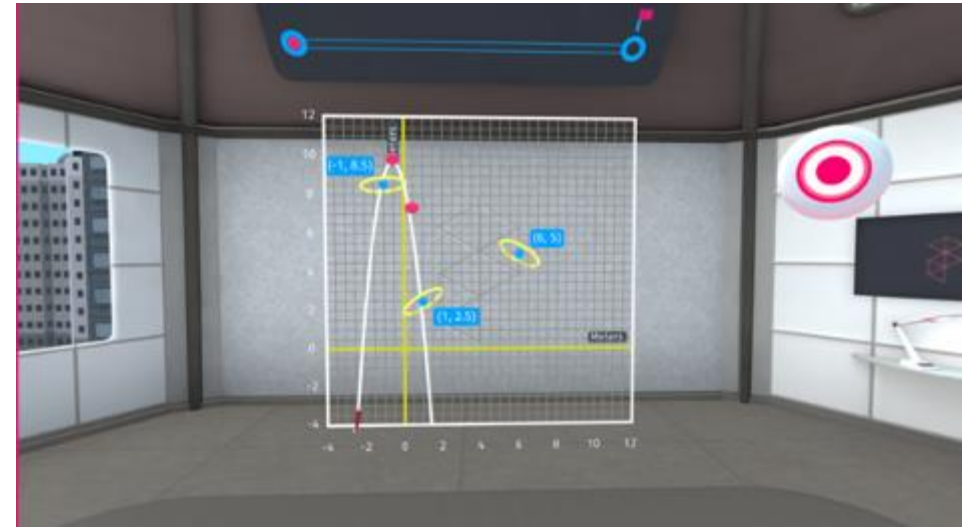POZZZ | La pochette connectée qui aide à gérer les écrans

NETEXPLO

Prisms Math

Where? USA

Who? CEO Anurupa Ganguly

What? Convinced that just digitizing methods that have failed to improve numeracy, CEO Anurupa Ganguly, former math & physic teacher turned to virtual reality to bring problem-driven, tactile and visual learning to the math classroom. Low math proficiency puts many students of further science education. Ganguly believes part of the problem is that spatial reasoning and physicality-based abstraction, core science competencies, are ignored in conventional math teaching. Virtual reality can focus on those skills as students learn through real-world problems.

Why? While the Metaverse is currently a source of great disillusion, Prisms shows that virtual reality still has a range of extremely useful applications. It is perfectly suited to the development of spatial reasoning and could encourage more students to take math and science further.

https://www.prismsvr.com/

Prisms – 2023 Trailer

NETEXPLO

ProDecipher

Where? Switzerland

Who? Sanket Bhatia, Founder & CEO

What? A blockchain-based solution for certifying sustainability claims (eg carbon-zero, deforestion-free). As part of an overall operating system, a chain of custody tool tracks Proof of Sustainability (PoS), NFTs tokenize physical products, and a platform guarantees end-to-end traceability. Current solutions cover textiles, agriculture and biofuels.

Why? This solution makes greenwashing easier to spot and harder to justify. The use of blockchain technology and Proof of Sustainability (PoS) allows for end-to-end traceability and provides a secure and verifiable way to ensure that products are sustainably produced.

https://www.prodecipher.com/

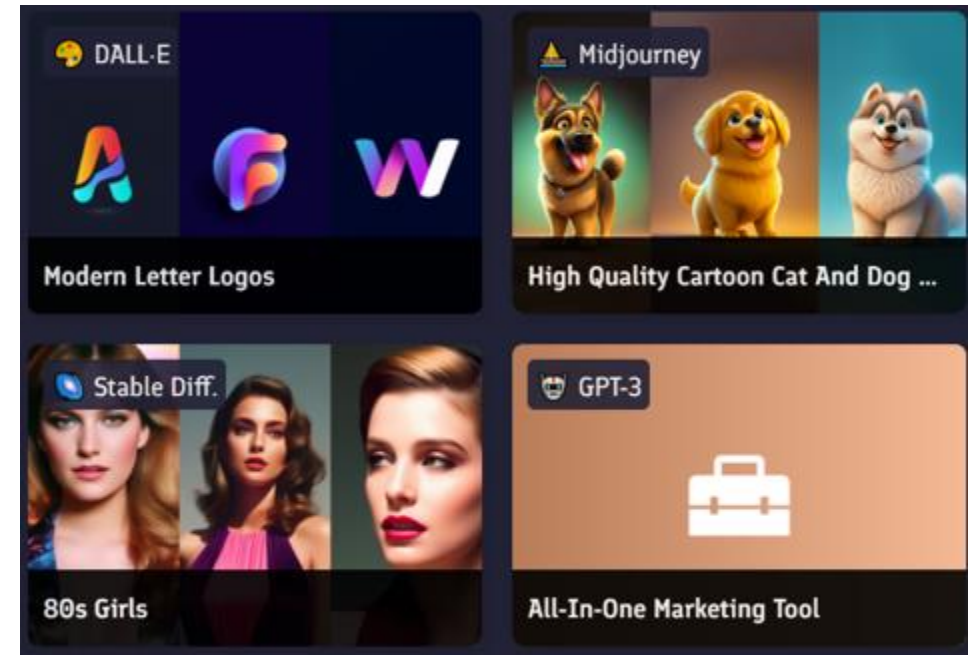NETEXPLO

PromptBase

Where? USA

Who? Ben Stokes

What? AI-powered text-to-image systems like DALL-E 2 or Stable Diffusion can produce original art from human instructions or prompts. But not everyone has a great design idea or the ability to write a successful prompt. PromptBase is a marketplace where "prompt engineers" can sell the descriptions that work best for a required result.

Why? Marketplaces for the best prompts can make automated art generation even easier and perhaps offer an alternative revenue stream for graphic designers with lighter workloads as more and more publications use AI-generated illustrations
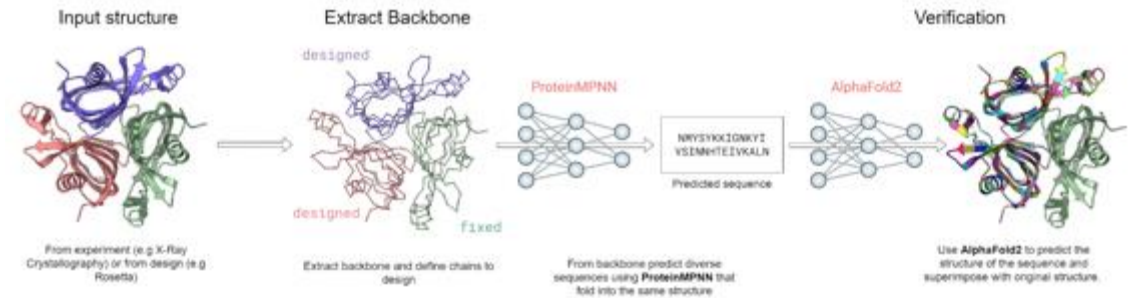
https://promptbase.com/

NETEXPLO

ProteinMPNN

Where? Switzerland

Who? Simon Duerr, PhD Student at EPFL

What? Building on DeepMind's AlphaFold and other algorithms, researchers at the University of Washington have created an AI tool that identify and design entirely new proteins. The project uses two machine-learning methods, "constrained hallucination" - a random search for sequences with certain functions - and "in painting", which works like an autocomplete tools for protein structures. The tool is available through HuggingFace.

Why? AI-powered discovery of novel proteins could accelerate the development of better vaccines, cancer cures or even new materials.

https://huggingface.co/spaces/simonduerr/ProteinMPNN

NETEXPLO

Proto-Zoöp Zeeburg

Where? The Netherlands

Who? Jos-Willem van Oorschot, Cécilia Gross, architect partners - VenhoevenCS Architecture+Urbanism

What? To bring nature back into the city and promote biodiversity, a new 82-apartment building in Amsterdam, planned for 2026, also provides homes for nonhuman residents. As well as creating habitats for birds, bats and butterflies, its "Zooperative" governance model requires decision-making boards to include a voice representing non-human interests.

Why? The building provides a solution to the challenge of balancing urban development with the preservation of natural habitats and species. The innovation lies not only in its nature-first design, but also in a governance model where non-human stakeholders have rights. Such an approach on the scale of an entire city could improve living conditions for both humans and other inhabitants.

https://venhoevencs.nl/projects/zoop-zeeburg/

NETEXPLO

Quadloop Idunnu

NETEXPLO AWARD WINNER 2023

Spotted by Vivatech

Where? Nigeria

Who? Dozie Igweilo

What? Much of the rich world's electronic waste is dumped in Africa, often illegally. In parallel, education and services in countries like Nigeria are frequently disrupted by power outages, calling for environmentally-friendly solutions for lighting, for example. Quadloop is tackling both these problems by making affordable solar lamps and panels from e-waste. The company recently launched the iDunnu lantern, which in addition to recycling waste and providing an uninterrupted light source, significantly improves carbon footprint compared with kerosene lamps.

Why? Quadloop's approach to addressing both the problems of electronic waste and power outages throug sustainable technology is innovative and has the potential to contribute to a more circular, greener future. In addition, pupils are more likely to complete their schooling in households with a safe, reliable source of lighting.

https://www.quadloop.africa/#0

idùnnú Solar Lamp

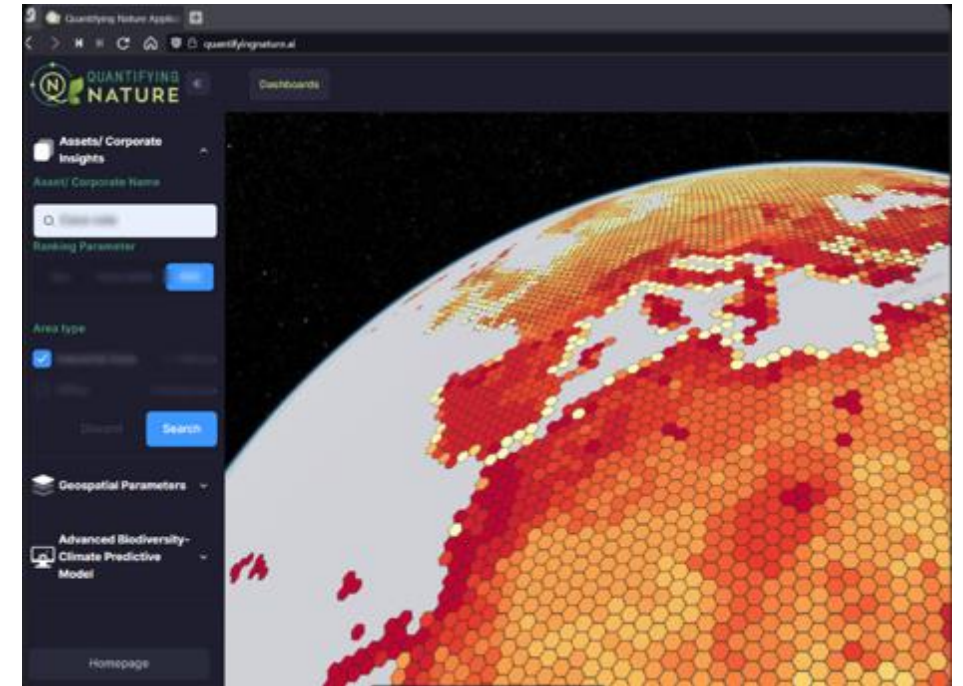**NETEXPLO**

Quantifying Nature

Where? United Kingdom

Who? Adrien Firmenich, CEO & Founder

What? A platform that identifies & quantifies the financial risks of the climate-biodiversity crisis to mobilize targeted adaptation solutions at scale. It specifies the areas within business and financial operations that most vulnerable, measures the financial value of these risks. It recommends adaptation interventions and generates automatic climate and nature disclosures.

Why? 65% of businesses do not have the technology to assess ESG risk and compliance and quantify the financial impacts of biodiversity loss. Over half of the world's GDP, $44 trillion of economic value, is at moderate or severe risk due to nature loss. The more businesses are aware of the true cost of climate chaos, the more likely they are to tackle the problem on a meaningful scale.

https://quantifyingnature.com/

NETEXPLO

Quantum City

Where? France

Who? Eleni Dimanti, CNRS

What?

Small quantum networks already exist but a team of researchers at Sorbonne University has shown that far bigger, more practical networks may not be far off. A digital twin of Paris showed that existing technology, such as optical fibres and devices that generate light encoded with quantum information, could create a functional quantum city, with universities, data centres and telecommunication hubs connected by quantum internet. The simulation showed that challenges such as disturbance from heat or vibrations could be overcome.

Why?

The idea of a municipal quantum network, where telecommunications and institutions that deal with vast quantities of data are connected in a fast, secure network, is gaining traction. This real-world experiment shows that much of the infrastructure needed to achieve this vision already exists.

https://arxiv.org/abs/2211.01190

NETEXPLO

Resting Reef

Where? United Kingdom

Who? RCA students Louise Lenborg Skajem and Aura Elena Murillo Pérez.

What? Graduates from London's Royal College of Art have designed a solution using ashes from a low-carbon cremation technique and discarded oyster shells from restaurants. They 3D print urns that form artificial oyster reefs. Natural oyster reefs, which are home to many marine species, are on the verge of extinction through human activity. Different urn capsules can be combined to form entire artificial reefs, which in turn would create revenue for local communities.

Why? This solution can both reduce the environmental impact of funerals and restore biodiversity, enabling individuals to have a positive environmental impact after their death.

https://restingreef.co.uk/

NETEXPLO

RICE-N

NETEXPLO AWARD WINNER 2023

Where? Canada

Who? Tianyu Zhang, Joshua Bengio et al, MILA

What? Under the AI for Global Climate Cooperation, researchers at MILA and companies including Google have created a digital testing ground to determine whether new climate policies are acceptable and effective. The Regional Integrated Climate-Economy model (RICE) stimulates negotiations by fictitious regions over policies based on the research of Nobel Economist William Nordhaus. (N). The AIs representing the regions use machine learning to see what interactions lead to the best economic and climate outcomes for their region. The aim is for the model to define what mix of incentives, rewards and punishments produce the most progress on the climate through successive, multi-annual negotiations. It is hoped that RICE-N will increase understanding of the behavioral factors in climate cooperation.

Why? The use of AI-representative regions to stimulate negotiations allows researchers to gather data and insights that accurately reflect the complexities and dynamics of real-world policy negotiations. Rather than making decisions for us, AI is showing humans how they can work together for the best possible outcome.

RICE-N — Real data → Climate / Economy

https://www.ai4climatecoop.org/#
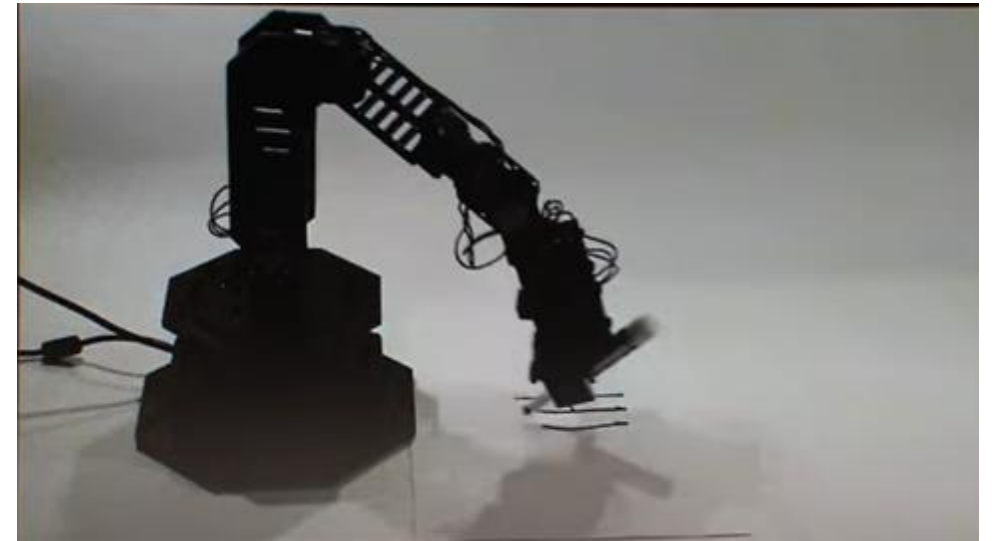
NETEXPLO

Self-aware Robot

Where? USA

Who? Buyuan Chen et al, University of Columbia

What? Reserachers have developed a robot that has the capacity of being self-aware using a set of cameras. Like an infant becoming aware of its own body, the robot that learns to imagine and understand itself rather than the environment around it. It can build a model of its complete body from scratch without the assistance of humans. The robot then utilized that model to plan motion, attain goals, avoid obstacles in a range of settings, and how it even recognized and compensated for body damage automatically.

Why? The robot's ability to recognize and compensate for body damage automatically highlights its capacity for adaptability and resilience, which could be crucial in real-world applications. This level of autonomous learning represents a significant step towards the creation of truly self-aware machines.

https://www.engineering.columbia.edu/news/hod-lipson-robot-self-awareness

NETEXPLO

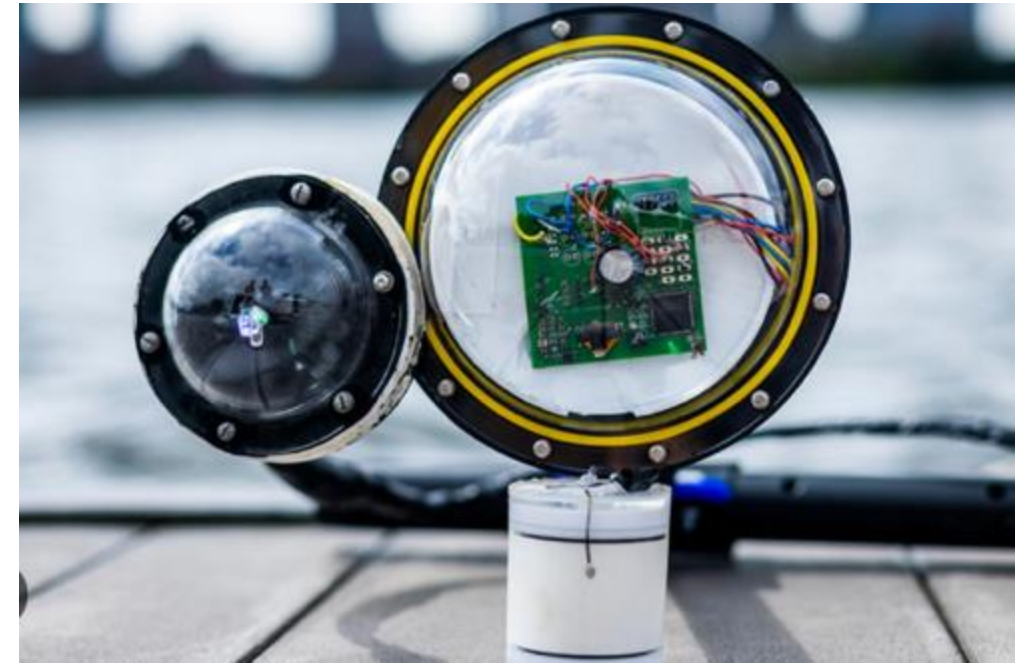# Signal Kinetics Underwater Camera

Where? USA

Who? Sayed Saad Afzal et al, MIT

What? Most areas and organisms in the ocean remain observed, so data is missing from many climate models. To acquire that data, MIT researchers have developed a battery-free, wireless underwater camera. the autonomous device is powered by sound, can take colour photos in dark environments and transmits data wirelessly through water. It could run for weeks before retrieval, making remote exploration possible at little cost.

Why? This camera is a significant improvement over traditional methods as it eliminates the need for heavy, short-lived and leaky batteries. The ocean plays a critical role in regulating the Earth's climate and weather patterns, and changes in ocean conditions can have far-reaching consequences for the planet. The more data we can collect on ocean conditions, the more we can understand their role in ecosystems and climate change.

https://www.nature.com/articles/s41467-022-33223-x

NETEXPLO

Sirens by ZibraAI

Where? Ukraine

Who? Roman Mogylnyi, CEO

What? ZibraAI, a Ukrainian deep-tech startup, has trained an AI to paint war art of the country's ongoing conflict with Russia. The AI-generated pieces, forming a collection kown as Sirens, feature iconic scenes such as the attack on Snake Island, as well as civilians trying to survive amid the destruction. The artworks are sold as NFTs to raise money to help people affected by the war.

Why? AI-driven art meets Web3 to raise funds for victims of the Russian invasion.

https://sirens.gallery/

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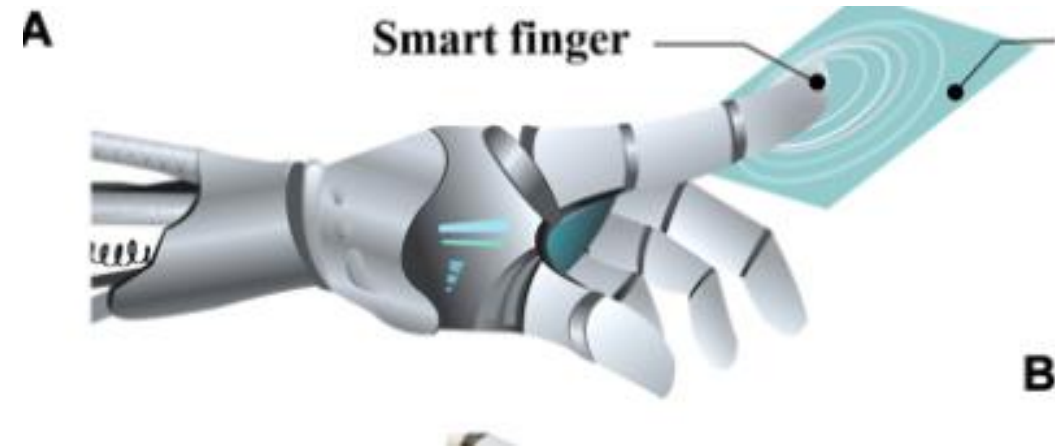
Smart Fingers

Where? China

Who? Xuecheng Qu et al,
Beijing Institute of Nanoenergy and Nanosystems

What? Reseachers have developed a robotic finger that can identify what a material is made from by using triboelectric   sensors – which test its ability to gain or lose electrons – and gauge its roughness, all without damaging it.

Why? The technology could be useful in industry for automating robotic manufacturing tasks, such as sorting and quality control. In the human health fields, it could give prostheses a unique additional sense.

NETEXPLO

Soundwel

Spotted by IHECS

Where? France

Who? Céline Tallet et al, INRAE, ETH Zurich, etc.

What? Project SoundWel is developing a tool to assess the emotional state of pigs on-farm using their vocalisations. This non-invasive system will provide accurate information on pig welfare, allowing professionals to monitor and improve their wellbeing by minimizing stress and promoting positive emotions.

Why? Listening to farm animals and understanding their emotional state should lead to higher productivity, better meat quality, and overall better farm management practices. If "cruelty-free" labels become widespread, tools like Soundwel could provide objective data and ensure producers are not just humane-washing.
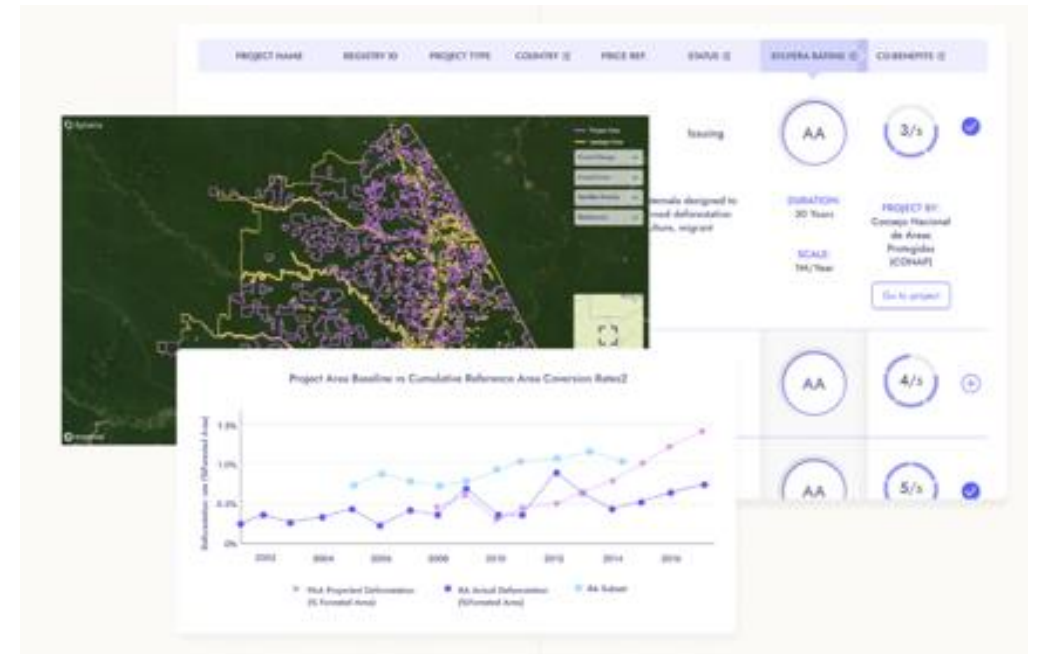
https://www.soundwel-project.eu/

NETEXPLO

Sylvera

Where? United Kingdom

Who? Allister Furey and Sam Gill, co-founders

What? Billions are spent on carbon offsetting every year, but the market lacks transparency and can be used for greenwashing if projects are not correctly monitored and verified. Sylvera uses machine learning technology to analyze a variety of visual data like satellite imagery and lidar with the goal of boosting accountability and credibility.

Why? The biggest challenge for climate solutions is scaling up. With Sylvera, more accurate ratings should bring more money into the voluntary carbon removal market and reward the best projects.

Carbon Offsets Ratings – Sylvera

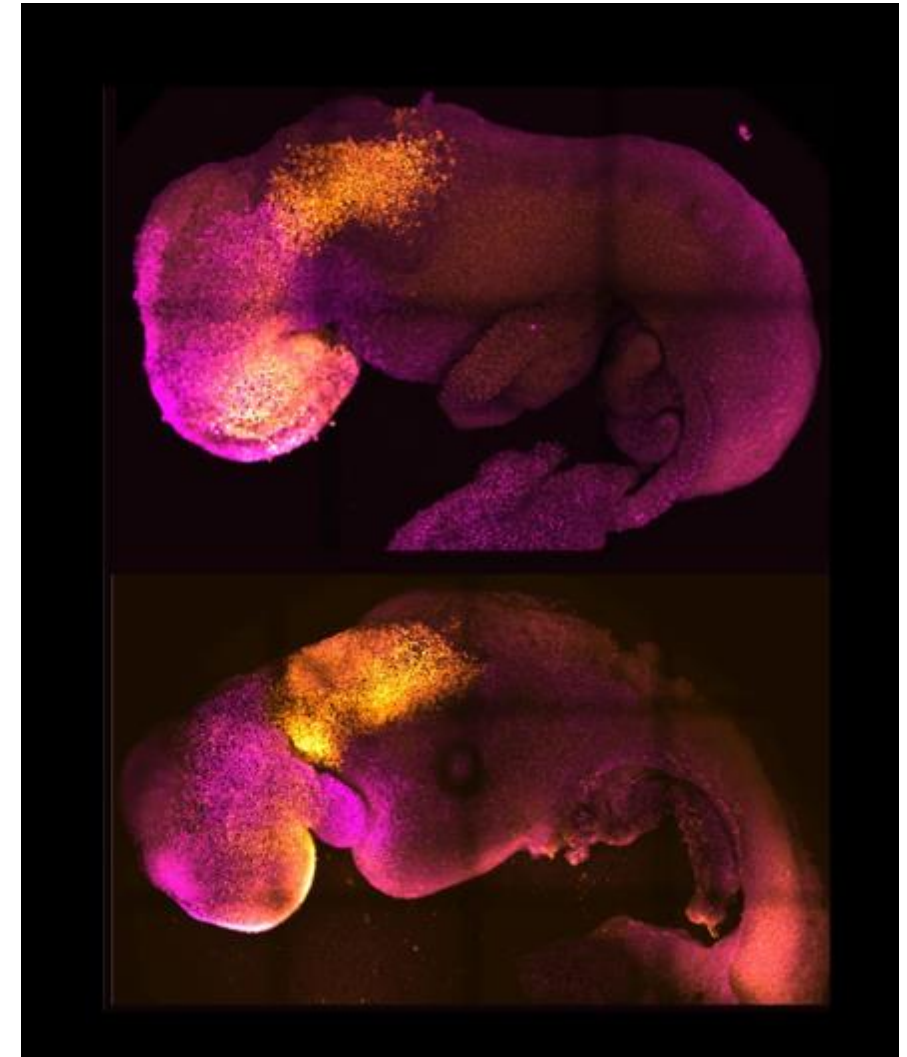NETEXPLO

Synthetic embryos

Where? United Kingdom

Who? Professor Magdalena Zernicka-Goetz, Cambridge University

What? Researchers from Cambridge have created model embryos from mouse stem cells that from a brain, a beating heart and the foundations for all other organs of the body. Unlike other synthetic embryos, the Cambridge-developed models reached the point where entire brain, including the anterior portion, began to develop. This is further than any precedent synthetic embryos.

Why? By creating a synthetic embryo, scientists can study the development of an organism at the cellular and molecular level. This can help researchers better understand how organs and tissues develop and the genetic and environmental factors that influence development. Another potential application of synthetic embryos is in the field of drug testing.
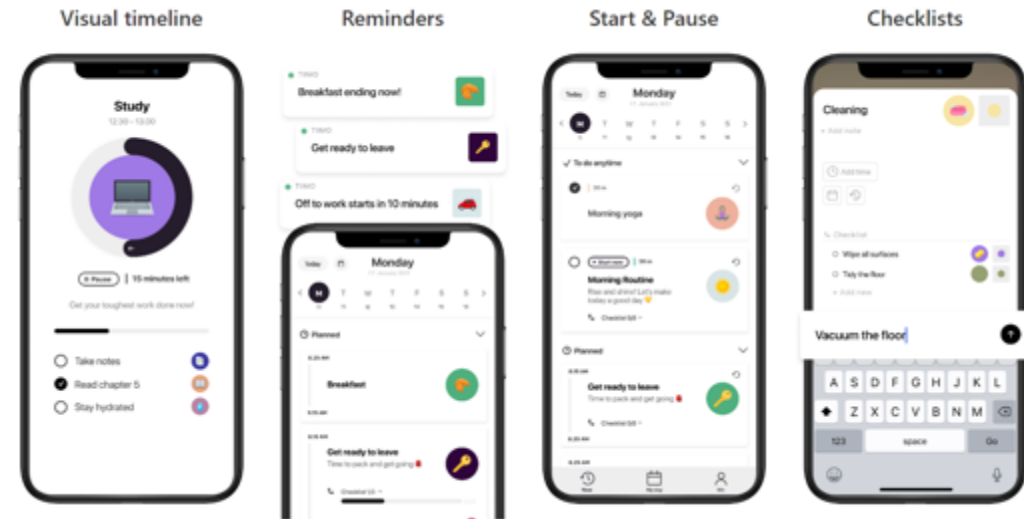
https://www.cam.ac.uk/stories/model-embryo-from-stem-cells

NETEXPLO

Tiimo

Where? Denmark

Who? Melissa Azari and Helene Nørlem

What? A time planning app for neurodivergent people, who are thought to represent 20% of the global population. Tiimo is designed to meet the needs of ADHD, autism, dyslexia and dyspraxia. The app includes a visual timer that helps people stay on track and manage their time, gamified to-do lists and a social component to share plans with family, friends and employers.

Why? ADHD, autism, dyslexia, and dyspraxia people often face difficulties with executive functions such as planning, time management, memory, and focus. A tool like Tiimo can expand social and workplace inclusion by providing neurodivergent people with more suitable tools for productivity and planning.

https://www.tiimoapp.com/

Visual timeline   Reminders   Start & Pause   Checklists

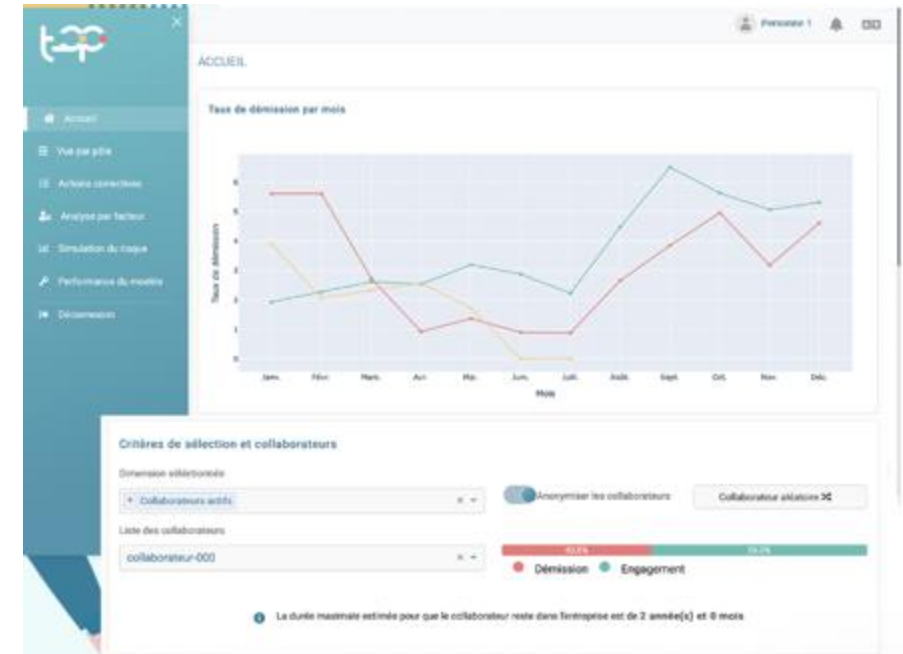NETEXPLO

TOPTurnover

Where? France

Who? Amine Menacer, co-founder

What? TOP (Team Opportunity Prediction) claims to augment managers by predicting employee departures by A.I., based on internal HR data and external market trends. The startup claims to predict over 80% of potential resignations, as well as identifying employees' development aspirations and proposing actions to keep teams together.

Why? The Great Resignation or Big Quit began during the COVID pandemic in 2021 and has affect in 2021 and has affected most developed economies to varying extents. Businesses are increasingly applying data to human resources challenges. With TOPTurnover they should be able to retain valuable talent for longer.

https://top-turnover.ai/

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Unwritten Language Translation

Where? USA

Who? Peng-Jen Chen, Meta

What? As part of its ongoing development of a universal speech translator, Meta AI solved the problem for Hokkien, which has over 40 million speakers, mostly in Taiwan and China. Using pairs of sentences verified by speakers of both Hokkien and Mandarin or English, it built up a model that can now translate single sentences in real time between Hokkien and English.

Why? An estimated 40% of the world's 7,000 languages are mostly oral and lack a standard writing system. AI has struggled to translate them because of a lack of written training data. Some languages without a standardized written form are at risk of dying out. As the first AI-powered translation system for an unwritten language, this technology could help save languages from extinction.

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Vall-E

NETEXPLO AWARD WINNER 2023

Model Overview

VALL-E

Personalized Speech

Audio Codec Decoder

Neural Codec Language Modeling

Phoneme Conversion | Audio Codec Encoder

Text Prompt — Text for synthesis

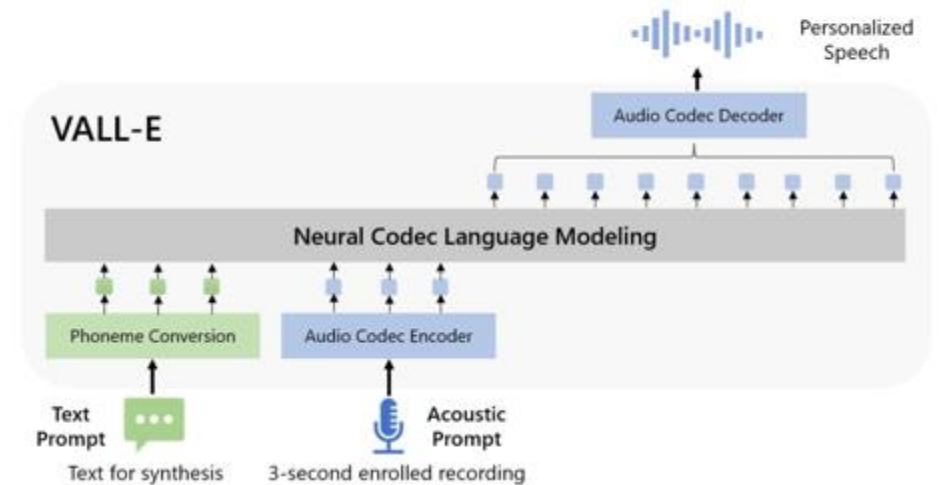Acoustic Prompt — 3-second enrolled recording

Where? China

Who? Chengyi Wang, Sanyuan Chen, Yu Wu – Nankai University and Microsoft China

What? Vall-E can simulate anyone's voice with 3 seconds of audio. The AI, developed by Microsoft, is a "neural codec language model," based on EnCodec, released in October 2022 by Meta. The text-to-speech model can preserve speaker's emotional tone and acoustic environment. Vall-E (a reference to the uncanny valley?) analyzes how a person sounds, breaks that information into discrete "tokens", and uses training data to match how that voice would sound if it spoke other phrases. The 3-second sample is therefore the equivalent of the text prompt for GPT3, for example. Since it could be used for deep fakes, the researchers say a detection model is possible like the "watermark" planned for ChatGPT. Uses include speech editing as well as interfaces for retail services or gaming.

Why? The fact that it can preserve a speaker's emotional tone and acoustic environment makes it unique and useful for various applications, such as media content, retail services, and gaming interfaces. We can imagine multilingual versions of the same content featuring the original speaker's voice, even if they don't speak the language in question.

https://valle-demo.github.io/

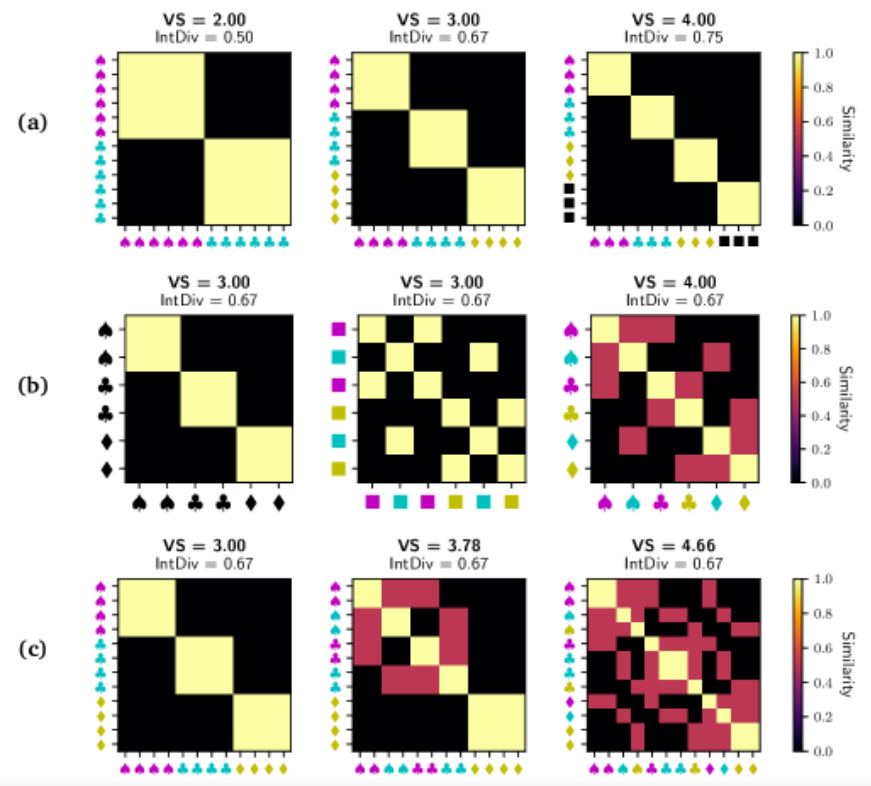NETEXPLO

Vendi Score

Where? USA

Who? Dan Friedman, Adji Bousso Dieng – Princeton University

What? A diversity score for artificial intelligence inspired by how ecologists measure biodiversity could help identify bias in data sets and AI systems. Using a similar approach to species diversity calculation, the Vendi Score measures the number of unique or dissimilar items within AI systems or data sets.

Why? As well as reducing bias in AI due to a lack non-diverse training data, the system could even improve the performance of AIs focused on predicting new molecules or materials for science.

https://arxiv.org/abs/2210.02410

VR Mouth Haptics

Where? USA

Who? Vivian Shen, Craig Shultz and Chris Harrison - Carnegie Mellon Future Interfaces Group

What? Researchers have added a haptic dimension to a standard VR headset. Ultrasound transducers reproduce sensations on the lips, tongue and teeth without touching or covering the area. Virtual kisses or in-game effects are now possible.

Why? The haptic VR headset allows for more immersive gaming experiences by reproducing sensations on the lips, tongue, and teeth, making virtual kisses or in-game effects possible. The headset could also be used for virtual reality training, providing a more realistic and immersive experience for learners.

https://www.figlab.com/research/2022/mouth-haptics

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Wendow by UbiQD
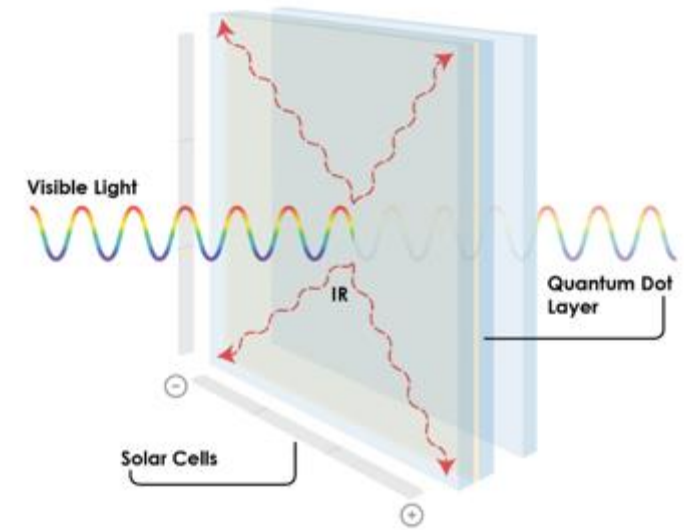
Spotted by IHECS

Where? USA

Who? Hunter McDaniel, Founder & CEO, UbiQD

What? Sunlight-harvesting windows: transparent solar panels are made from glass laminated with an interlayer of quantum dots. These tiny components are extremely efficient in terms if photoluminescence doped interlayer. The glow from the quantum dots coupled with the index of refraction of glass enables highly efficient power generation without internal wires or other visual disruptions.

Why? This innovation could cover thousands of buildings with   very efficient solar panels that look just like windows. Invisible renewal energy could be an important part of the energy mix, especially in dense, high-rise urban areas.

https://wendow.us/

Visible Light

Quantum Dot Layer

IR

Solar Cells

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WeSleep

Where? Lithuania

Who? Vismantas Motiejūnas

What? WeSleep is taking the idea of GameFi one step further by gamifying daily fitness, including sleep, and rewarding users for good habits including sleep. Users of the Web3 app have to purchase a Sleepie - an NFT with unique characteristics. Once activated, the Sleepie earns rewards in the form of $ZZZ tokens in exchange for completing daily fitness tasks (eg 5,000 steps) and sleep quality, as measured by GPS and motion data from their phone. Sleepies' characteristics can be boosted with Sleeping Pill NFTs to level up.

Why? The trend of "playing to earn" is part of a larger movement to incentivize healthy behaviors and habits by making them more engaging and fun through gamification. WeSleep is proof that Web3 can turn anything into a transaction, in this case with a positive outcome.

https://wesleep.io/
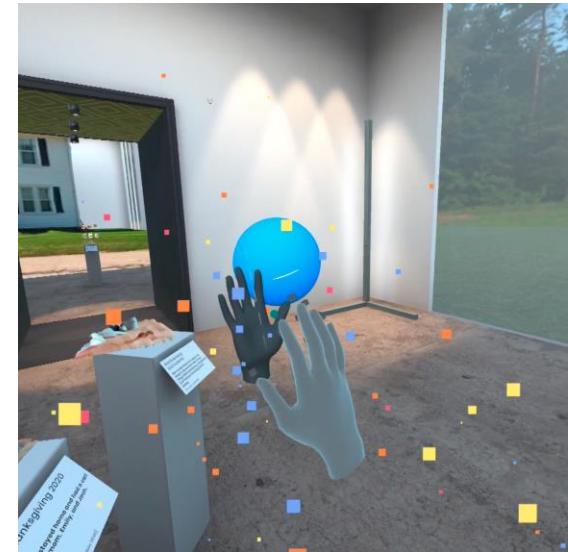
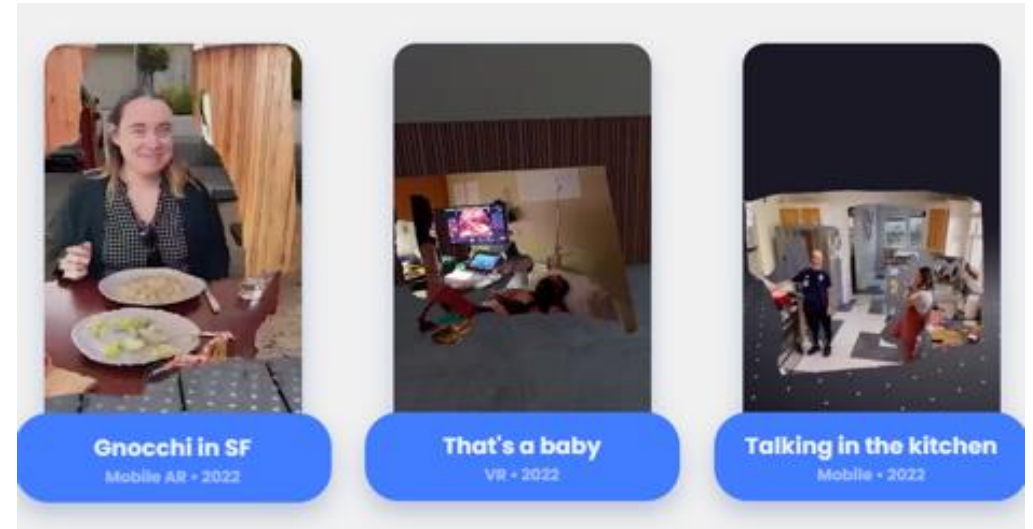NETEXPLO

Wist

Spotted by IHECS

Where? USA

Who? Andrew McHugh, cofounder & CEO

What? Wist Labs, a startup, is creating a virtual reality (VR) application that allows you to virtually reenter your own memories. It works by converting the smartphone clips into 3D videos using the sensors available on modern mobile devices. Users can relive their memories in an immersive way, either through the mobile viewer, mobile augmented reality (AR), or a VR headset.

Why? The technology is far from perfect but the concept is compelling. Memories captured on video could become immersive, shareable and possible addictive.

http://wistlabs.com/

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WWW (World Wide Wind)

NETEXPLO
AWARD WINNER
2023

Where? Norway

Who? Trond Lutdal CEO et al

What? Floating contra-rotating wind turbine delivers twice the energy of today's largest turbines. Norway-based company World Wide Wind (WWW) has unveiled a new kind of floating, vertical-axis wind turbine (VAWT) that has the potential to revolutionize the way we capture and utilize wind power. This novel VAWT design uses two sets of tilting, contra-rotating blades to deliver twice the output of today's largest turbines. This new design could potentially bring twice the energy of today's largest turbines.

Why? The floating design of the contra-rotating wind turbine reduces the environmental impact associated with land-based wind turbines, as it does not require the clearing of large areas of land. It allows it to be deployed in a wider range of locations, including offshore and in deep water, where traditional wind turbines are not feasible. The vertical-axis design of the floating contra-rotating wind turbine is less vulnerable to fatigue and failure caused by wind gusts, making it a more reliable solution for wind power generation.

https://worldwidewind.no/

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