

The implications and consequences
of the rising power of AI, ML and autonomous
digital systems

for culture, creativity and cultural heritage
?

The implications and consequences
of the rising power of AI, ML and autonomous
digital systems

?

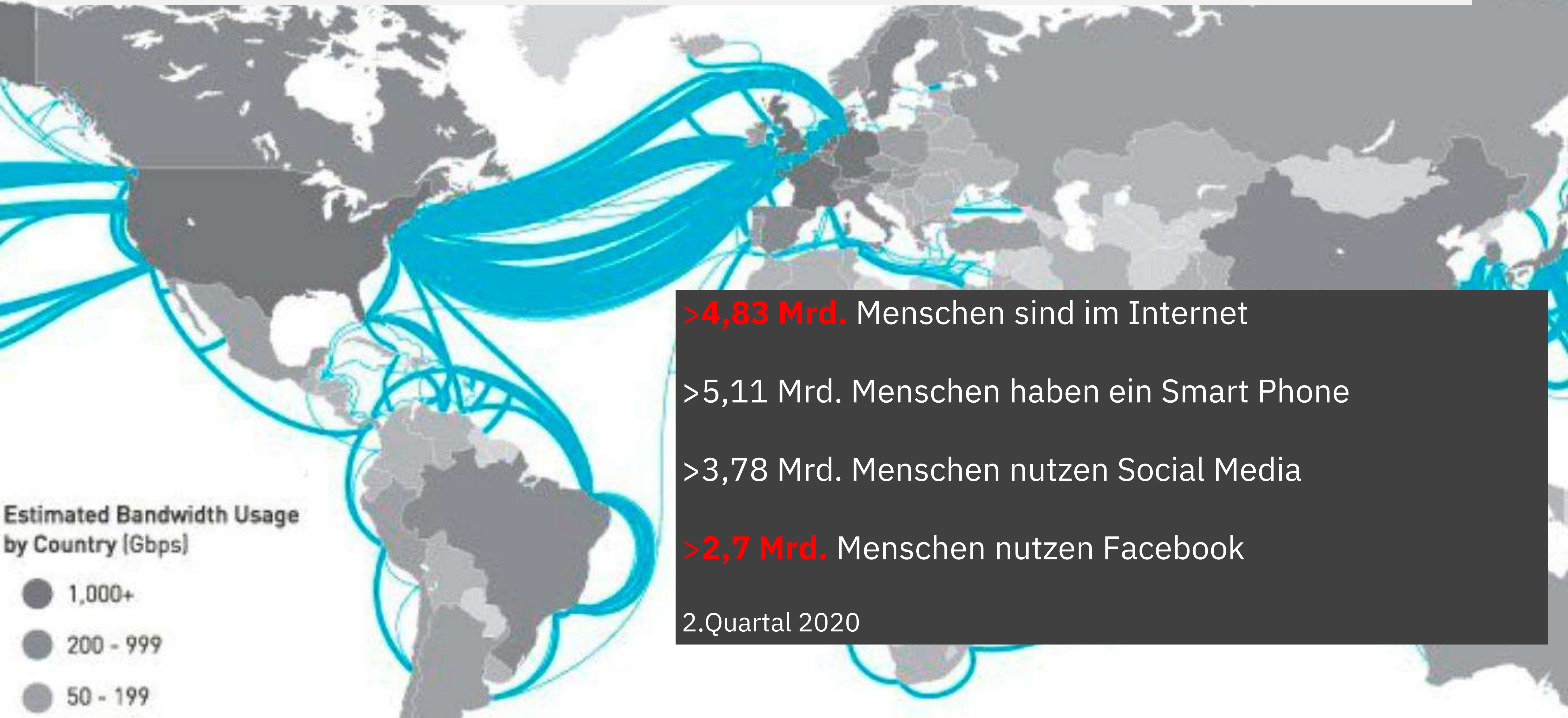
Who owns the Digital World ?

Self-determination - Responsibility - Democracy

in the age of

Social Media and Artificial Intelligence

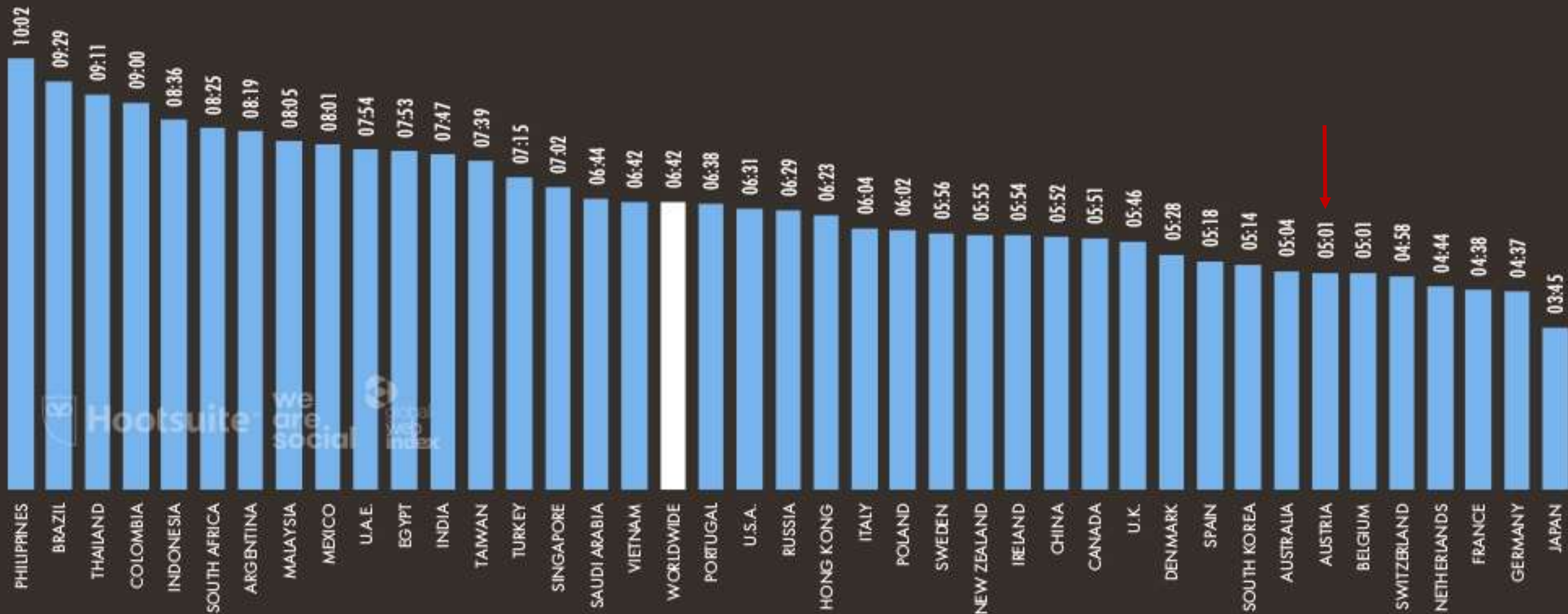
Demography of the digital world



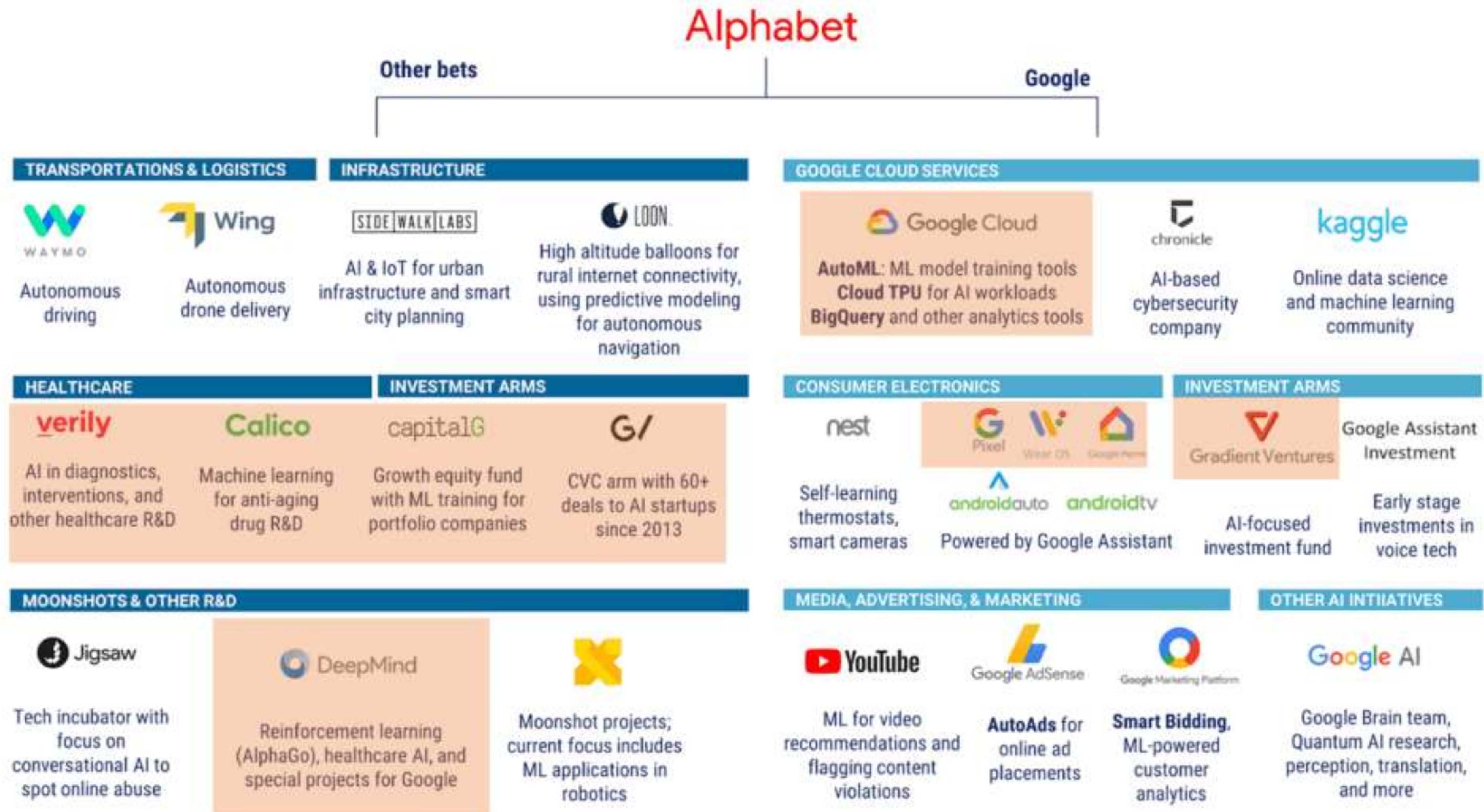
JAN
2019

TIME PER DAY SPENT USING THE INTERNET

AVERAGE AMOUNT OF TIME PER DAY SPENT USING THE INTERNET VIA ANY DEVICE, IN HOURS AND MINUTES [SURVEY BASED]



Alphabet's org structure: **Key AI initiatives**



THE HARDWARE ADVANTAGE

Similar to Apple, and now Amazon, Google could leverage its hardware products as an entry point into consumer healthcare.

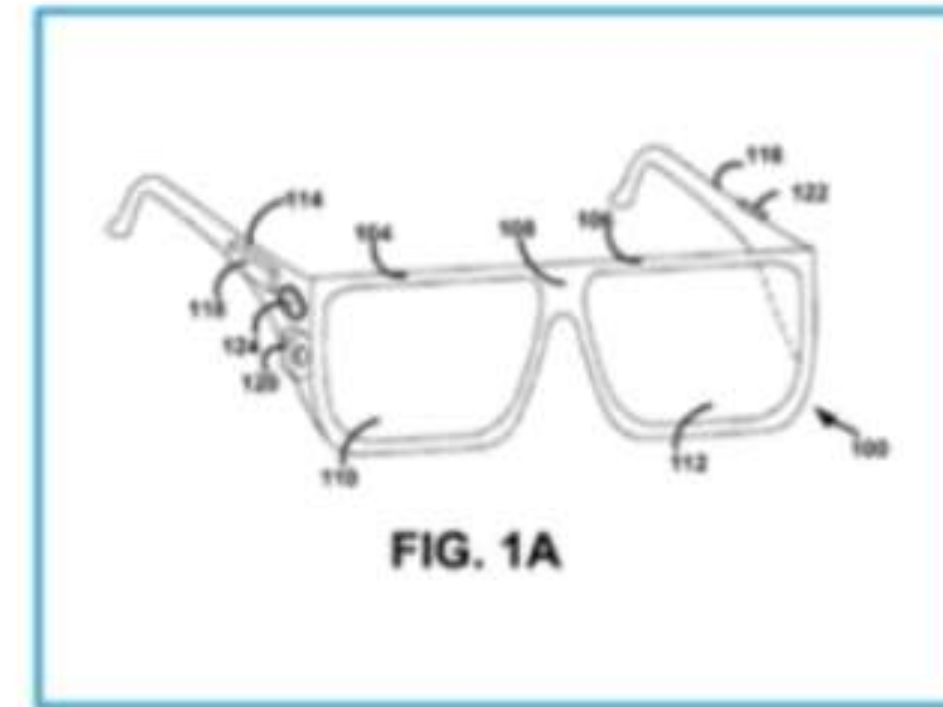
Apple is one step ahead in this regard, with its early start on ResearchKit and CareKit. But Google's consumer electronics products might be its entry point into consumer diagnostics and health management.



Google's Pixel phone could be used for new diagnostic and screening capabilities, similar to the iPhone + ResearchKit.



The Google Home could be used to help screen for certain diseases via Q&A, or help with adherence and lifestyle management of disease.



Google has a patent for a concussion test via a type of headset. Google could build new hardware with diagnostic capabilities, including a consumer version of the Study Watch.



 Microsoft Azure

 amazon web services

Atomia

Digital Transmutation – Game Changer AI

Digitalization of the
industrial world



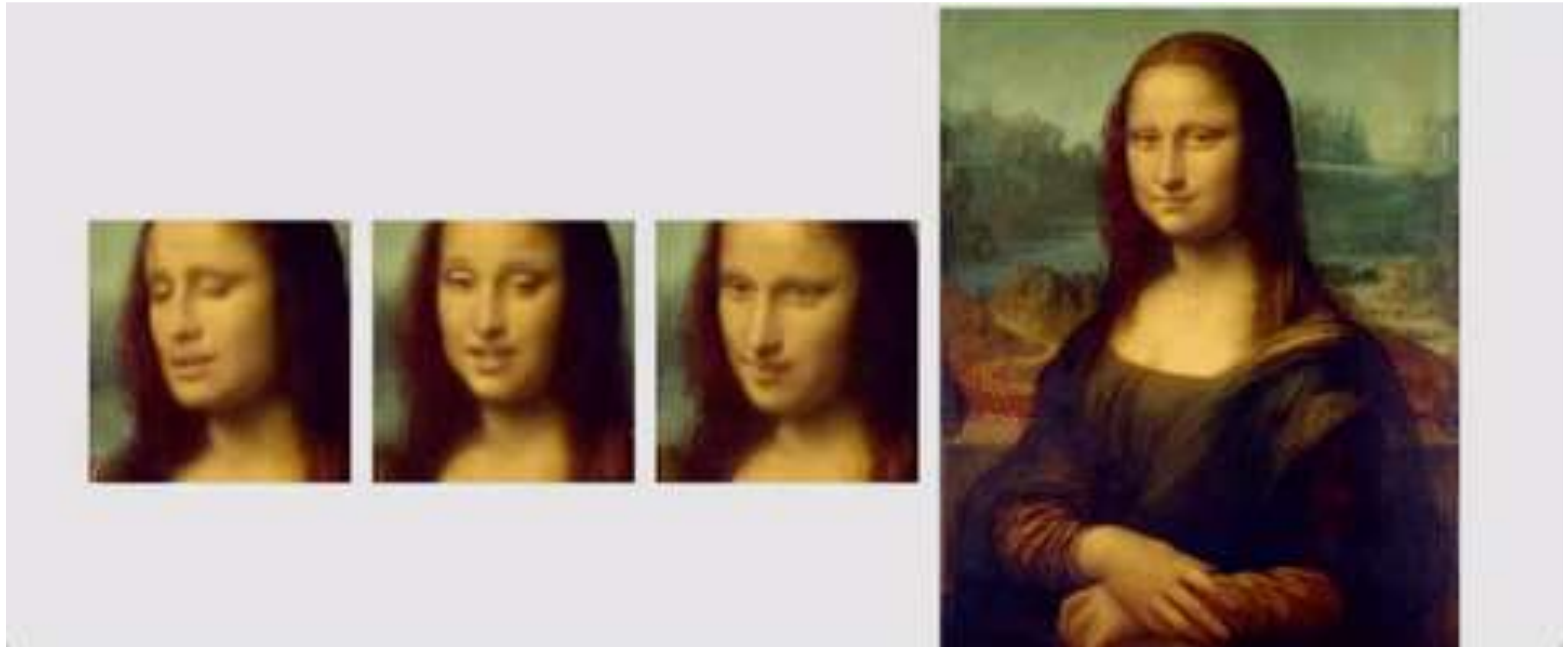
Digitalization of
thinking and
decision making

Automatization



Autonomization

*autonomos,
from αὐτο- auto- "self" and νόμος nomos, "law"*

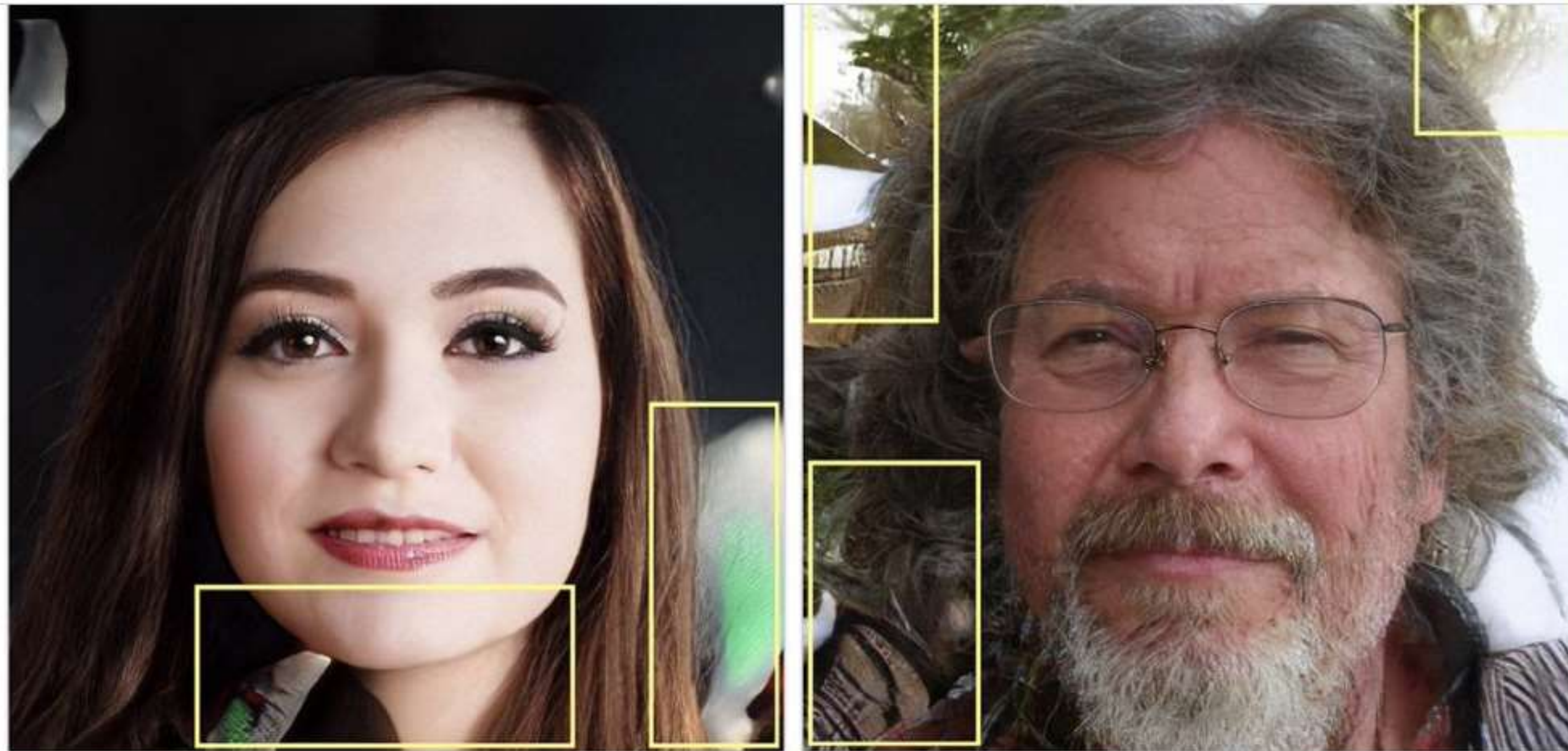


...meanwhile a single image is enough for AI to let Mona Lisa talk



The New York Times  @nytimes · 1h

Facebook says it has removed hundreds of accounts with ties to the Epoch Media Group that featured profile pictures generated with artificial intelligence. Researchers say the profiles show "an eerie, tech-enabled future of disinformation."



Profile pictures for "[Mary Keen](#)"^{#21} and "[Jacobs Guillermo](#)"^{#22} both admins on groups in this cluster. Note the strange dimensions of Mary's neck and the distorted backgrounds. The authors checked these images with experts at the University Federico II of Naples, who assessed that both images were

Facebook Discovers Fakes That Show Evolution of Disinformation
[nytimes.com](https://www.nytimes.com)

With AI-tools advertisements can be individual placed in video streams to roll out this new technology Mirriad partners with Tencent

Mirriad's AI and computer vision technology dynamically inserts products and innovative signage formats after content is produced.





Discovering and enacting the path to safe artificial general intelligence.

Better Language Models and Their Implications

We've trained a large-scale unsupervised language model which generates coherent paragraphs of text, achieves state-of-the-art performance on many language modeling benchmarks, and performs well on many other tasks like text-to-image, machine translation, question answering, and summarization—all without task-specific training.

We created a new dataset which emphasizes diversity of content, by scraping content from the Internet. In order to preserve document quality, we used only pages which have been curated/filtered by humans—specifically, we used outbound links from Reddit which received at least 3 karma. This can be thought of as a heuristic indicator for whether other users found the link interesting (whether educational or funny), leading to higher data quality than other similar datasets, such as CommonCrawl.

GPT is trained with a simple objective: **predict the next word, given all of the previous words within some text.**

GPT-2 (2019) is a large transformer-based language model with **1.5 billion parameters**, trained on a dataset of **8 million web pages (~40GB)**.

GPT-3 (2020) can already handle **175 billion parameters** ...



SYSTEM PROMPT
(HUMAN-WRITTEN)

A train carriage containing controlled nuclear materials was stolen in Cincinnati today. Its whereabouts are unknown.

MODEL
COMPLETION
(MACHINE-
WRITTEN, FIRST
TRY)

The incident occurred on the downtown train line, which runs from Covington and Ashland stations.

In an email to Ohio news outlets, the U.S. Department of Energy said it is working with the Federal Railroad Administration to find the thief.

“The theft of this nuclear material will have significant negative consequences on public and environmental health, our workforce and the economy of our nation,” said Tom Hicks, the U.S. Energy Secretary, in a statement. “Our top priority is to secure the theft and ensure it doesn’t happen again.”

The stolen material was taken from the University of Cincinnati’s Research Triangle Park nuclear research site, according to a news release from Department officials.

The Nuclear Regulatory Commission did not immediately release any information.

According to the release, the U.S. Department of Energy’s Office of Nuclear Material Safety and Security is leading that team’s investigation.

“The safety of people, the environment and the nation’s nuclear stockpile is our

<https://openai.com/blog/better-language-models/#sample1>

Computer Vision Explorer

- Recognition
 - Classification
 - Detection
 - Segmentation
- Vision and Language
 - Image Generation
 - Visual QA
 - Situation Recognition
 - Grounded Situ Recog
 - Image Captioning
- Human Centric Vision
 - Pose Estimation
- Scene Geometry
 - Depths
 - Surface Normals
- About



YoloV3

[YOLOv3: An Incremental Improvement](#) Joseph Redmon Ali Farhadi arXiv2018

As the name “You Only Look Once” suggests, this is a standard single shot model. Only examining the features of the image once allows this model to detect objects incredibly quickly. While this comes at a small cost to accuracy, Yolo is nearly comparable in terms of accuracy to the larger two stage detectors.

Minimum Confidence:

Predicted Classes

Confidence	Class
99.9%	person
76.0%	cup
50.9%	bottle
46.8%	bottle
38.5%	toothbrush
20.1%	cup

1 / 2

AllenNLP

Answer a question

Reading Comprehension

Visual Question Answering

Annotate a sentence

Named Entity Recognition

Open Information Extraction

Sentiment Analysis

Dependency Parsing

Constituency Parsing

Semantic Role Labeling

Annotate a passage

Coreference Resolution

Semantic parsing

WikiTableQuestions Semanti...

Cornell NLVR Semantic Parser

Text to SQL (ATIS)

Image



Question

who is in the image

Run >

Predicted Answers

Score	Answer
68.6%	woman
44.9%	girl
23.4%	man
13.3%	lady
9.2%	female

AllenNLP

Answer a question

Reading Comprehension

Visual Question Answering

Annotate a sentence

Named Entity Recognition

Open Information Extraction

Sentiment Analysis

Dependency Parsing

Constituency Parsing

Semantic Role Labeling

Annotate a passage

Coreference Resolution

Semantic parsing

WikiTableQuestions Semanti...

Cornell NLVR Semantic Parser

Text to SQL (ATIS)

Image



Question

Run >

Predicted Answers

Score	Answer
54.5%	blonde
51.6%	brown
20.7%	black
14.3%	red
0.6%	

AllenNLP

Answer a question

Reading Comprehension

Visual Question Answering

Annotate a sentence

Named Entity Recognition

Open Information Extraction

Sentiment Analysis

Dependency Parsing

Constituency Parsing

Semantic Role Labeling

Annotate a passage

Coreference Resolution

Semantic parsing

WikiTableQuestions Semanti...

Cornell NLVR Semantic Parser

Text to SQL (ATIS)

Image



Question

where is the green board

Run >

Predicted Answers

Score	Answer
14.4%	counter
10.7%	on table
9.0%	on counter
7.1%	right
6.5%	left

Many start-ups are now trying to create viable business models with NLP

The image shows a screenshot of the InferKit website homepage. The browser's address bar shows 'inferkit.com'. The navigation menu includes 'InferKit', 'Pricing', 'About', 'Docs', 'Sign In', and a blue 'Sign Up' button. The main heading is 'State-of-the-art text generation'. Below it, a paragraph reads: 'InferKit offers an interface and API for custom AI-based text generators. Whether you're a novelist looking for inspiration, or an app developer, there's something for you.' There are two buttons: 'Get started' and 'Tell me more'. At the bottom, there are two sections: 'User-friendly UI' and 'Developer-friendly API'. The 'Developer-friendly API' section shows a code snippet:

```
{  
  "prompt": {
```

 A chat icon is visible in the bottom right corner.

Pricing

All prices are in USD. Cancel any time. See [uptime notice](#). For custom high-volume pricing, [contact us](#).

Beginner \$ 0	Basic \$ 20 / month	Premium \$ 60 / month	Custom High-volume pricing
Try out the app with 20,000 characters Upgrade to a paid plan to continue using InferKit	600,000 characters per month included* Extra characters for \$0.35 per 10,000** 15 hours of custom generator deployment included per month (see below) Purchase custom generators and extra deployment hours separately	2,500,000 characters per month included* Extra characters for \$0.25 per 10,000** 50 hours of custom generator deployment included per month (see below) Purchase custom generators and extra deployment hours separately	Contact us
Sign Up	Sign Up	Sign Up	

* Each request counts for a minimum of 100 characters. You can keep track of your usage in the [Billing & Usage](#) settings.



Who will be able to use the possibilities arising from the powers of these new technologies?

Economically?



Road to VR

Facebook CEO Mark Zuckerberg: 'In Five to Ten Years AR Will Be ...

Photo courtesy Mark Zuckerberg



Politically?



... and who will be able to control such powers?





**...and
how
are
we
going
to
prepare
our
children
for
this
future?**

Embracing new technology: students at No 1 Primary School, affiliated to Shanghai Normal University, learn about the solar system via VR

What is the world view behind artificial intelligence?

What is the world view of the people who develop AI

What is the world view of the people who are in control of AI

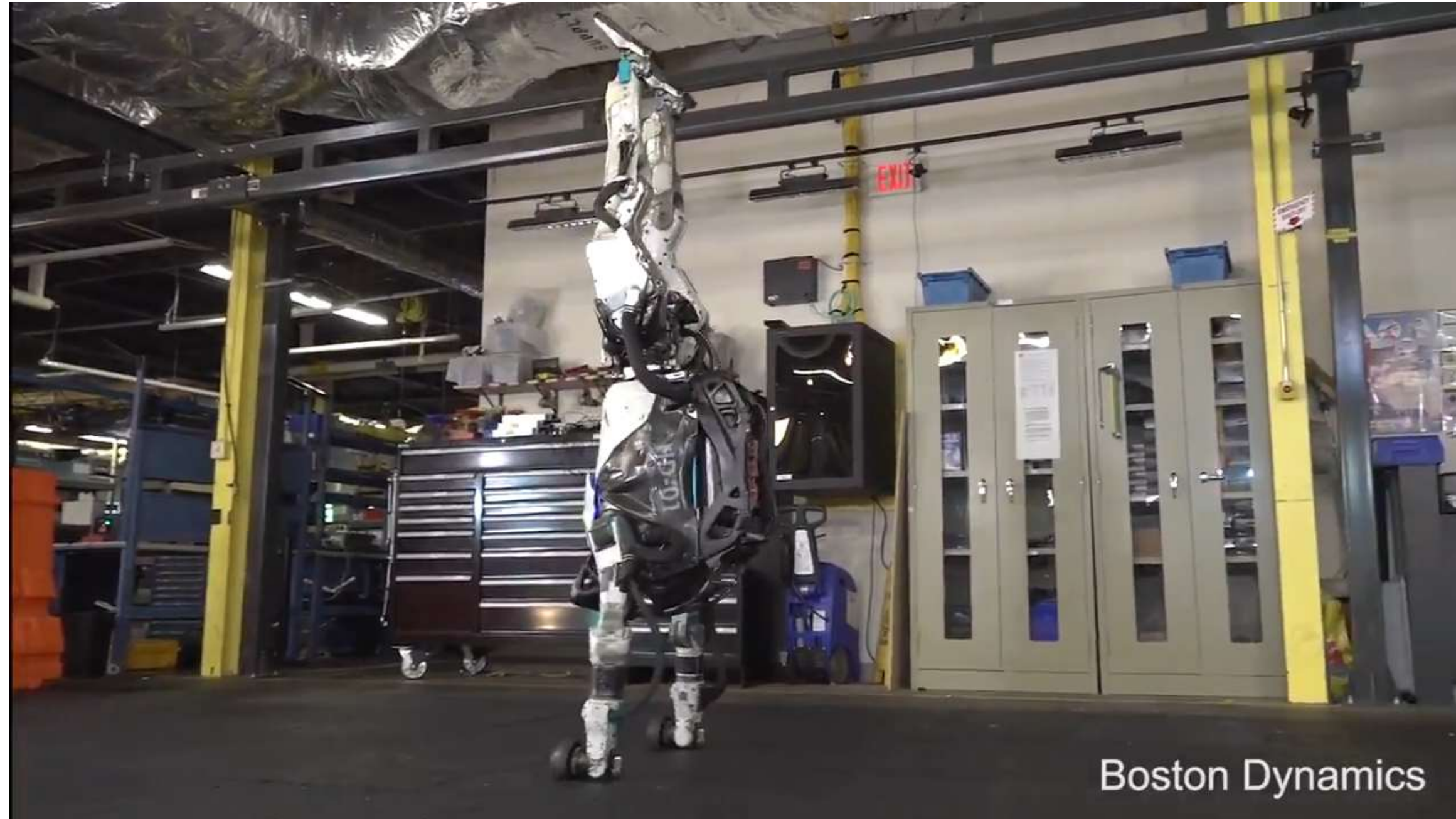
The answers to this questions are of utmost importance to the future relationship between man and machine

So what is the „relationship between wo/man and machine“

And what is the problem with this formulation ?

Its not a match or battle between human and machines.
Machines are products of human ingenuity and creativity.

Its about our responsibilities for what we are using
technology for!



Katelyn Ohashi – 10.0 Floor (1-12-19)



1693 konstruierte Leibnitz seine legendäre Rechenmaschine und begründete dies mit dem Wunsch, den menschlichen Geist von den trivialen Aufgaben des Rechnens zu befreien ...



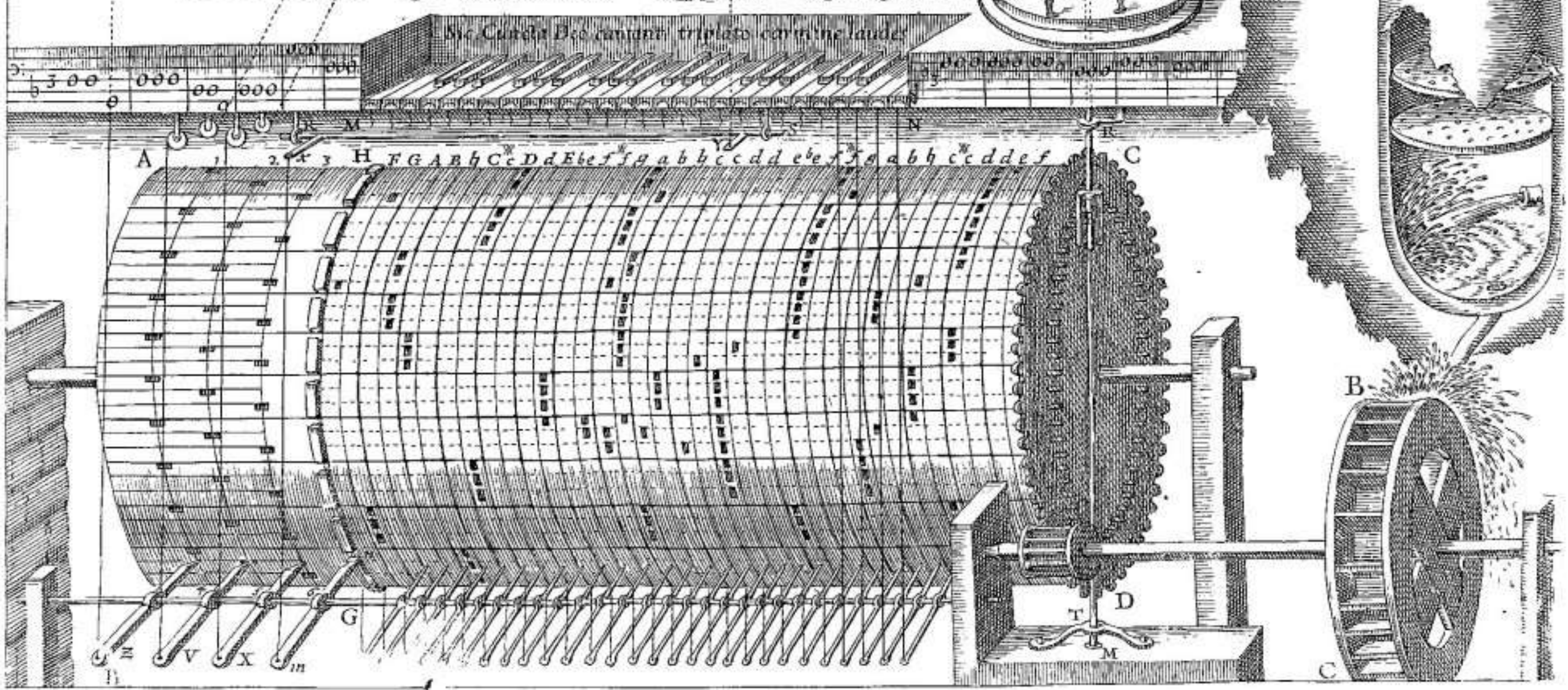
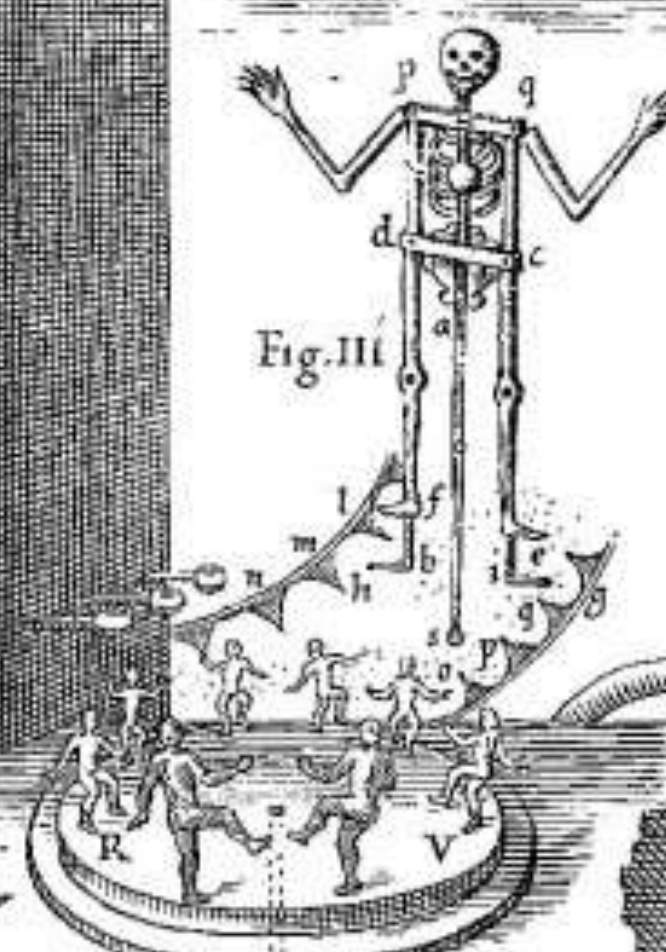
Fig. II.



Numero Deus

impere gaudet.

Fig. III.



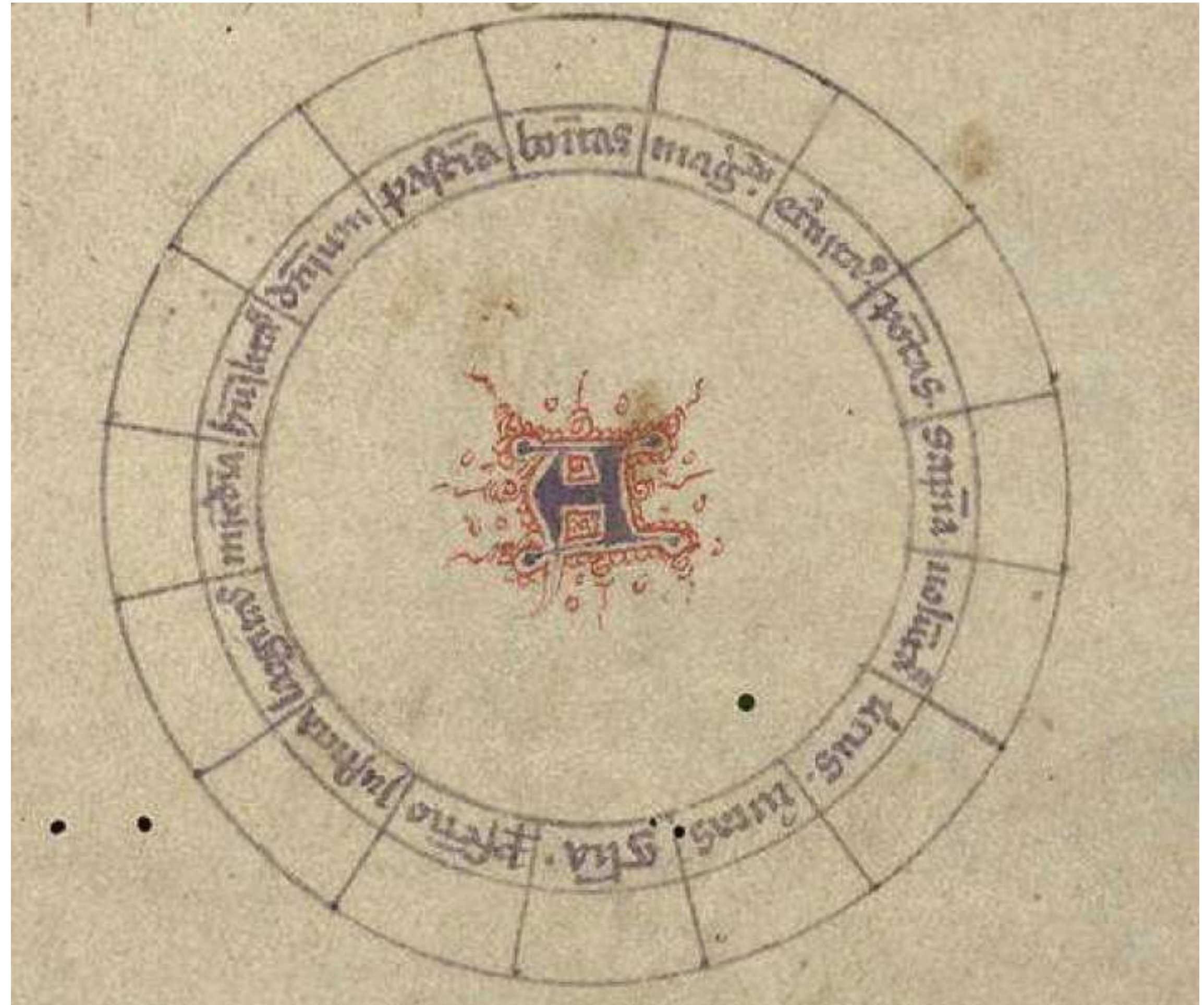
Anastasio Kircher 17th century

Hydraulic organ, *Mechanica Hydraulico-Pneumatica*

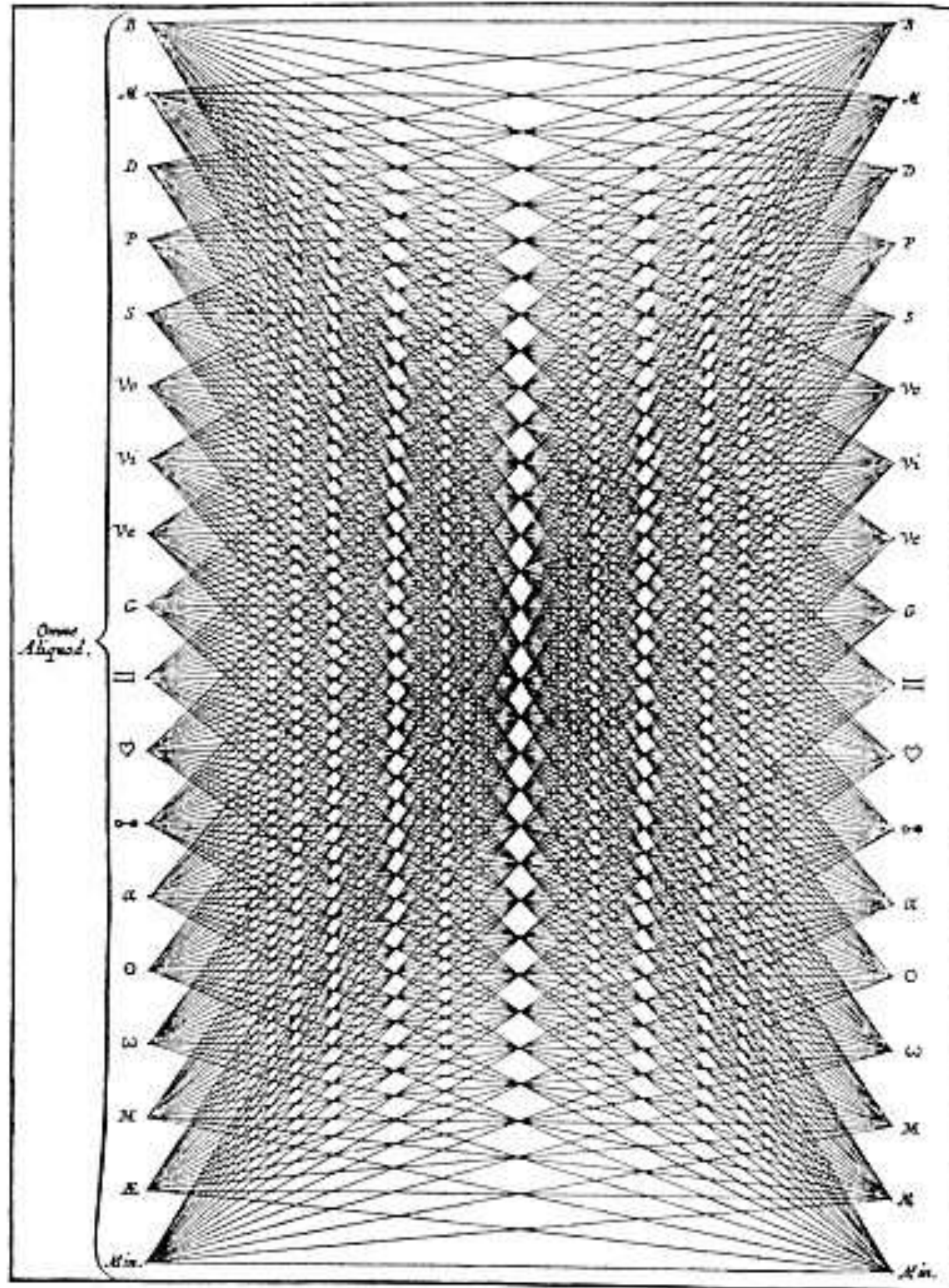
Ramon Llull, c. 1232 – c. 1315



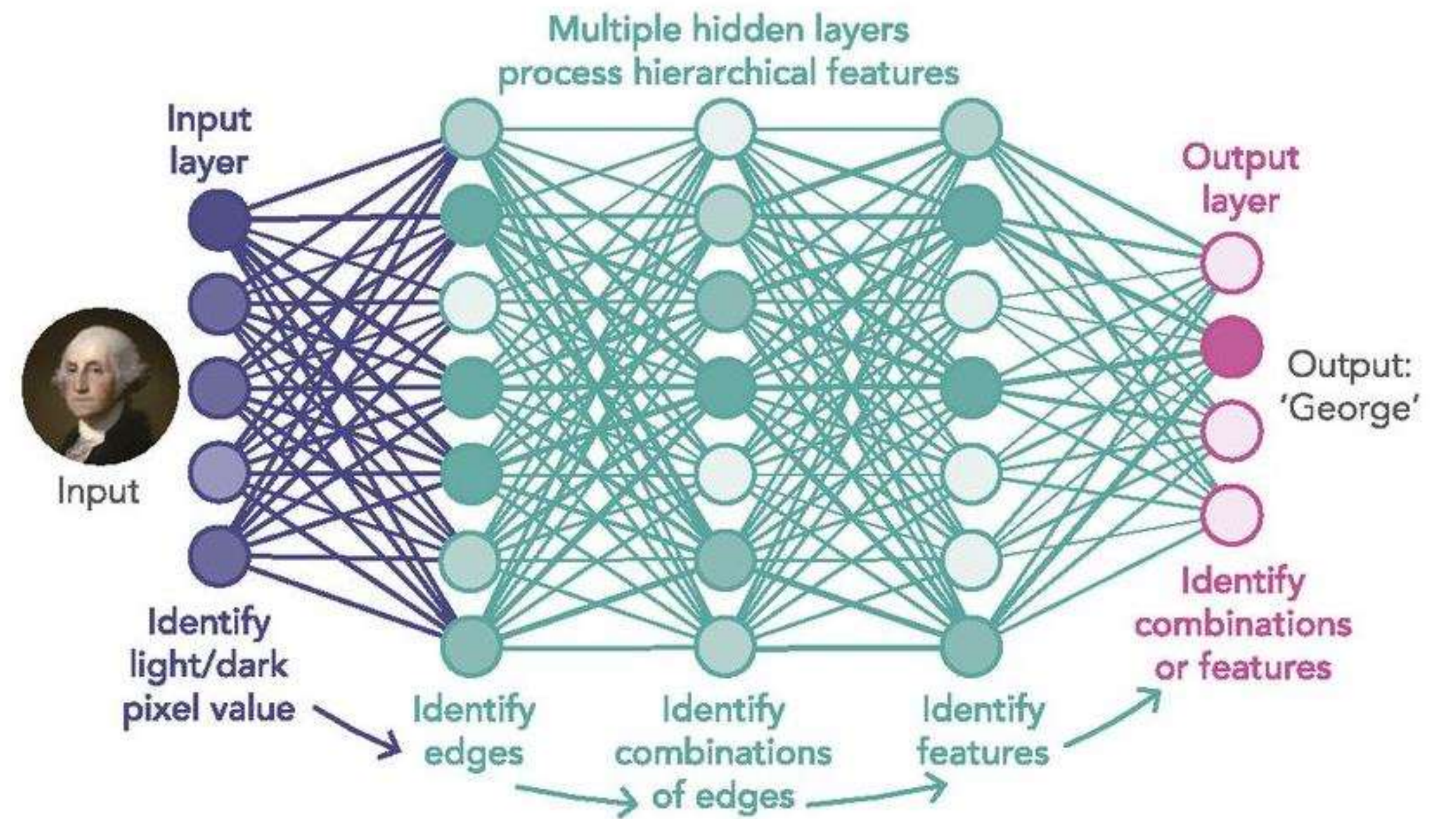
Ars Magna



A. Kircher, Tabula Combinatoria, Rome, 1641



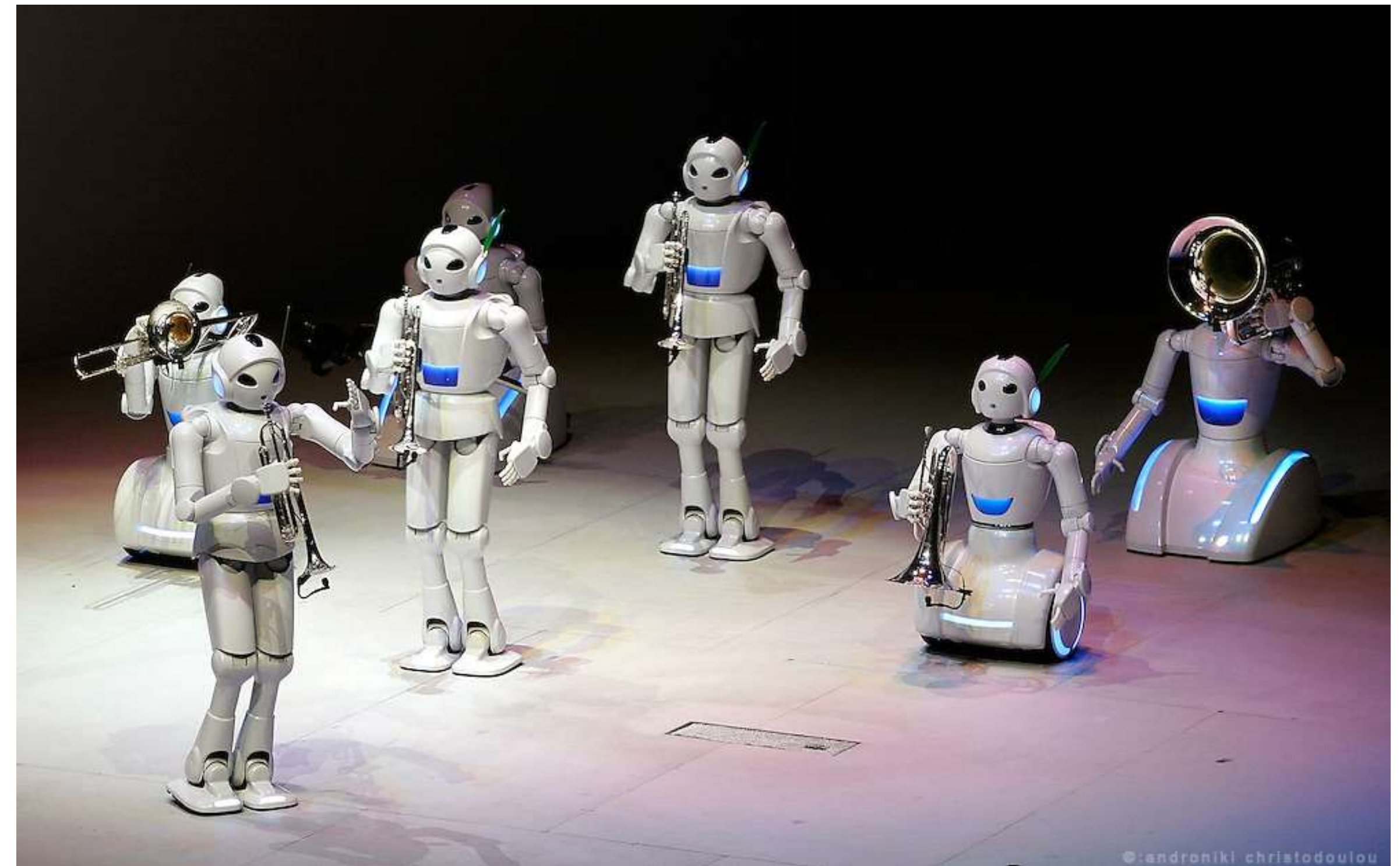
Schematische Darstellung eines Convolutional Neural Networks





Baghdad – 12th century

Japan - 21th century



So maybe we shouldn't just think about the impact of AI on culture,
creativity and cultural heritage

but

What influence can and must we exert on the development of AI

What dangers would arise if we did not make ourselves noticed, if
we did not interfere?

Examples of AI-application in creative industry, cultural production, art and cultural heritage

The following examples are not collected because they are the possible best and elaborated use-case of AI-Systems bur rather to show spectrum and variety.

To inspire to think about applications in your individual fields of research and activity.

To inspire you to challenge the technology and the technologists with interesting and usefull applications from the field of culture, creativity an cultural heritage.

Using AI in Journalism

General Election 2019: How computers wrote BBC election result stories

Chris Fox

Technology reporter

13 Dec 2019 | Technology

For the first time, BBC News published a news story for every constituency that declared election results overnight - all written by a computer.

It was the BBC's biggest test of machine-generated journalism so far.

Each of nearly 700 articles - most in English but 40 of them in Welsh - was checked by a human editor before publication.

The head of the project said the tech was designed to enhance the service provided rather than to replace humans.

"This is about doing journalism that we cannot do with human beings at the moment," said Robert McKenzie, editor of BBC News Labs.

"Using machine assistance, we generated a story for every single constituency that declared last night with the exception of the one that hasn't finished counting yet. That would never have been possible [using humans]."

Several news organisations are testing automated journalism as a way of covering data-driven stories more efficiently.

The technology can quickly produce stories focused on numbers, such as football scores, company financial reports - and general election results.

Machine-based reporting

The method of using automation technology, including that which employs artificial intelligence (specifically Natural Language Processing (NLP)) in online journalism is becoming more common.

The technology can be used to publish intelligible reports concerned with statistical results, such as financial reports or college football games, where the formula for coverage won't necessarily change much between articles.

Associated Press has used AI to produce formulaic corporate earnings reports, allowing the firm to publish more than 4,000 reports per quarter, against the 300 its writing staff could manage previously.



Why AI live fact-checked the 2020 US presidential debates

Many news organisations, **including the BBC**, have dedicated fact-checking services to help audiences make sense of the world and spot lies and misinformation.

Normally this is done manually and may take the humans behind service several hours to confirm the answers.

But one company, which has been monitoring the recent US election debates, has been using an artificial intelligence algorithm to see if it can help speed up the time it takes to verify a claim.

Using AI to create new tools for cultural and artistic production

Film, Video, VFX, Gaming

The enormous development in the field of AI-based image processing will lead not only to new powerful tools for the visual effects production in film, video and TV but could also become a completely new way of teaching history and communicating cultural heritage topics and content. An AI-based edu-tainment, a visual storytelling and role-playing which allows users to impersonate historical figures etc.

In research complex simulations of possible historical scenarios could be played through and evaluated by AI systems.

In combination with other booming technologies like VR and computer gaming we can expect a wide range of possibilities for the creative industries.

OpenAI's fiction-spewing AI is learning to generate images

By training GPT-2 on pixels instead of words, the model can accept half an image and predict how to complete it.

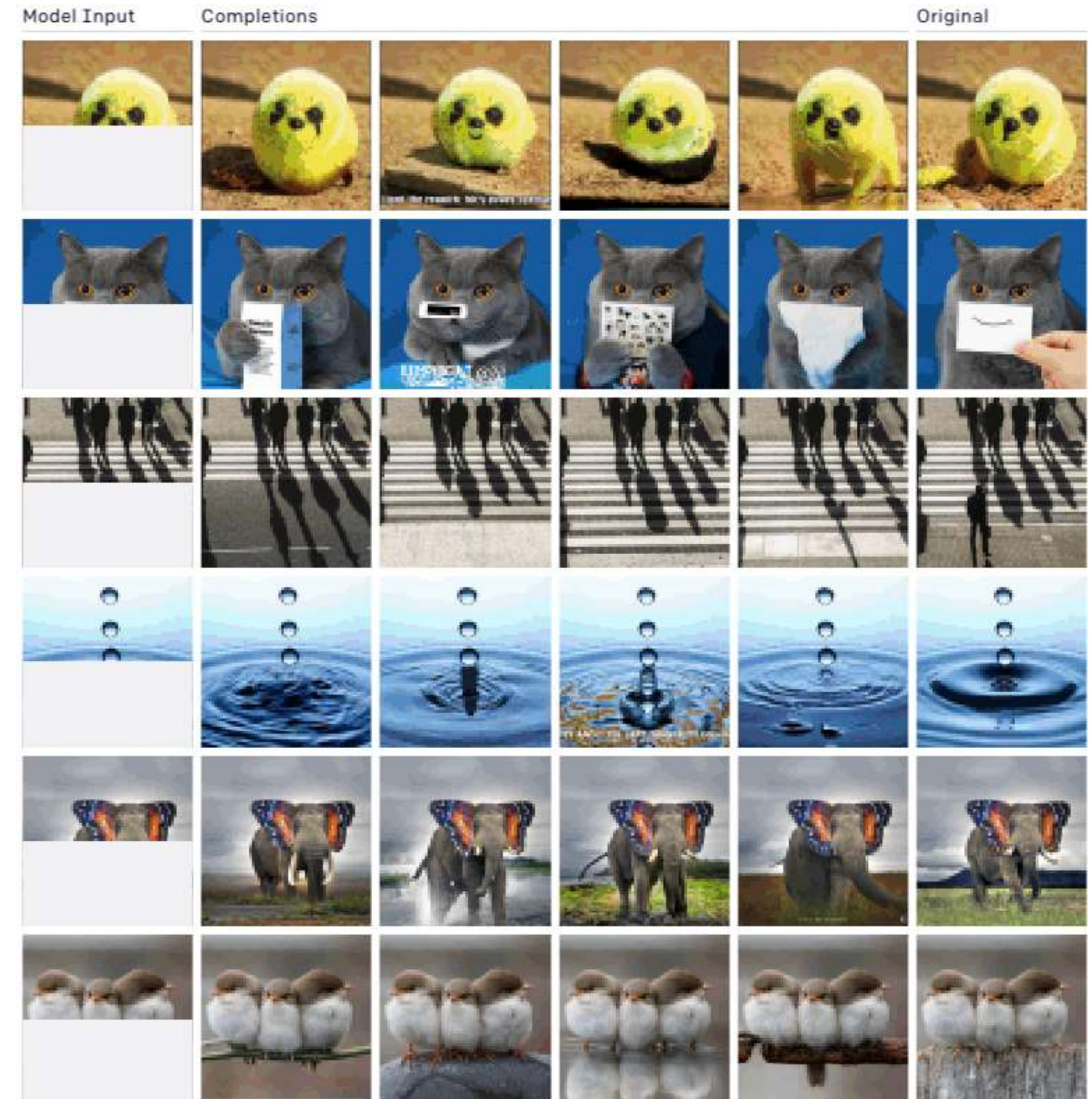
GPT-2 is a powerful prediction engine. It learned to grasp the structure of the English language by looking at billions of examples of words, sentences, and paragraphs, scraped from the corners of the internet. With that structure, it could then manipulate words into new sentences by statistically predicting the order in which they should appear.

So researchers at OpenAI decided to swap the words for pixels and train the same algorithm on images in ImageNet, the most popular image bank for deep learning. Because the algorithm was designed to work with one-dimensional data (i.e., strings of text), they unfurled the images into a single sequence of pixels. They found that the new model, named iGPT, was still able to grasp the two-dimensional structures of the visual world. Given the sequence of pixels for the first half of an image, it could predict the second half in ways that a human would deem sensible.

<https://openai.com/blog/image-gpt/>

<https://www.technologyreview.com/2020/07/16/1005284/openai-ai-gpt-2-generates-images/>

The left-most column is the input, the right-most column is the original, and the middle columns are iGPT's predicted completions.



Disney Studios developed a new System for High-Resolution Neural Face Swapping for Visual Effects, an algorithm for fully automatic neural face swapping in images and videos.



<https://youtu.be/yji0t6KS7Qo>

<https://studios.disneyresearch.com/wp-content/uploads/2020/06/High-Resolution-Neural-Face-Swapping-for-Visual-Effects.pdf>

Using GAN-based tools to help create photorealistic portraits of Roman Emperors from historical references

Project voshart.com/ROMAN-EMPEROR-...

Article medium.com/@voshart/photo...



15

234

801



<https://www.voshart.com/filter/AI/ROMAN-EMPEROR-PROJECT>

ROMAN EMPEROR PROJECT

Using the neural-net tool *Artbreeder*, *Photoshop* and historical references, I have created photoreal portraits of Roman Emperors. For this project, I have transformed, or restored (cracks, noses, ears etc.) almost a thousand images of busts to make the 54 emperors of The Principate (27 BC to 285 AD).

A VR film/game with AI characters can be different every time you watch or play

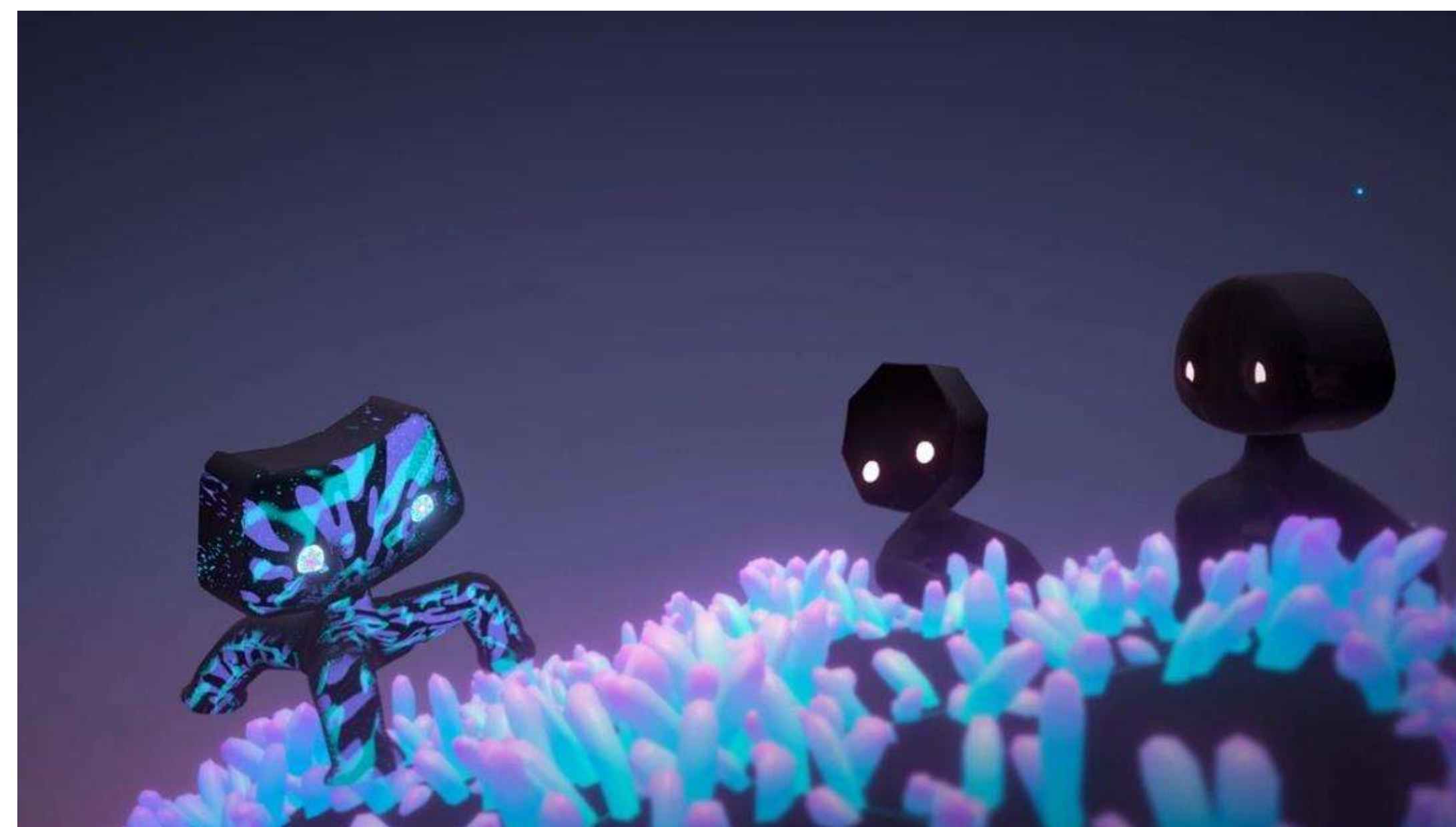
Agence is neither a movie nor a game, which has frustrated some critics, but it gives a taste of what the future of AI filmmaking could be.

Agence, a short interactive VR film from Toronto-based studio Transitional Forms and the National Film Board of Canada, won't be breaking any box office records. Falling somewhere in the no-man's-land between movies and video games, it may struggle to find an audience at all. But as the first example of a film that uses reinforcement learning to control its animated characters, it could be a glimpse into the future of filmmaking.

"I am super passionate about artificial intelligence because I believe that AI and movies belong together," says the film's director, Pietro Gagliano.

Gagliano previously won the first-ever Emmy for a VR experience in 2015. Now he and producer David Oppenheim at the National Film Board of Canada are experimenting with a kind of storytelling they call dynamic film. "We see Agence as a sort of silent-era dynamic film," says Oppenheim. "It's a beginning, not a blockbuster."

Agence was debuted at the [Venice International Film Festival](https://www.venicefilmfestival.org/) last month and was released this week to watch/play via [Steam](https://store.steampowered.com/), an online video-game platform.



<https://www.technologyreview.com/2020/10/02/1009254/vr-film-movie-game-ai-reinforcement-learning-venice/>

New developments of AI-based image processing hold promising possibilities for the work with old photo and film material from historical archives:

- Upscaling old media with AI
- Higher Resolution
- Frame Interpolation
- Realistic Coloring
- Getting Rid of artefacts, scratches etc in old films



4k, 60fps, restoration upgrade of a 1896 Lumière film

Examples like the works from Denis Shiryayev:

Arrival of a Train at La Ciotat (The Lumière Brothers, 1896):
<https://www.youtube.com/watch?v=3RYNThid23g>

New York 1911:
https://www.youtube.com/watch?v=hZ1OgQL9_Cw

Apollo 16 Lunar Rover "Grand Prix" (1972 April 21, Moon):
<https://www.youtube.com/watch?v=az9nFrnCK60>

already provide a good idea of the potential of this techs.



4k, 60fps, enhancement and coloring of original Apollo program footage

4k, 60fps, restauration upgrade of a 1896 Lumière film



SCIENCE \ TECH \ ARTIFICIAL INTELLIGENCE

AI helps discover new geoglyph in the Nazca Lines

One of 143 new geoglyphs revealed by a new study

By James Vincent | Nov 19, 2019, 12:22pm EST



Scientists from Japan have used machine learning for the first time to identify a new figure among the ancient motifs of Peru's Nazca Lines.

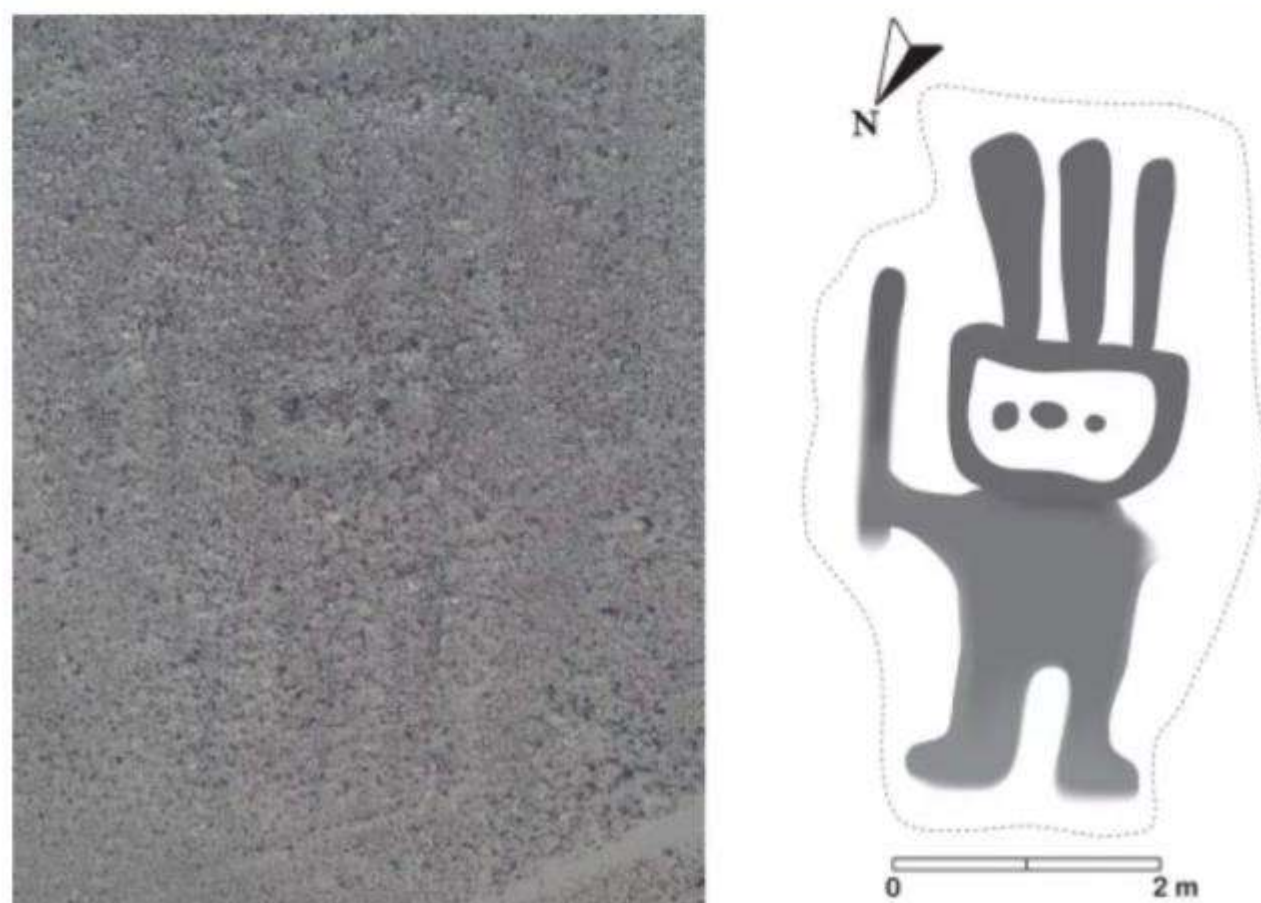
The illustration, known as a geoglyph, is thought to date to between 100 BC and 500 AD, and was made by removing the dark stones of the Nazca Desert to reveal the white sand beneath. It's small, just five meters in height, and it shows a humanoid figure grasping a cane or club.

The geoglyph was discovered during a larger research project by Yamagata University. Over a decade, using a combination of on-site surveying and aerial imagery, archeologists from the university manually identified 142 new designs in the desert. Then, working with researchers from IBM Japan, they used machine learning to scan the data for designs missed in earlier studies. This revealed geoglyph number 143, our fellow with the cane. It's the first design in the Nazca Lines to be discovered with the help of artificial intelligence.

These finds are another example of how machine learning can help scientists, especially when faced with tasks involving large datasets. Algorithms can be trained to search through certain sorts of information just like humans, looking for patterns and anomalies. Building these tools can be tricky, but once trained, such algorithms are tireless and consistent. They have been used to track down everything from gravitational lenses to earthquakes.

"We specifically built techniques in the deep learning framework to learn and distinguish between these different patterns and sizes of the geoglyphs," said Sakurai. He explained that even then, the technique was not perfect; the algorithm found "several hundred" candidates for new geoglyphs, which then had to be checked by hand.

Their next step is to aggregate 10 years' worth of aerial imagery and data to create a new, comprehensive picture of the Nazca Lines.

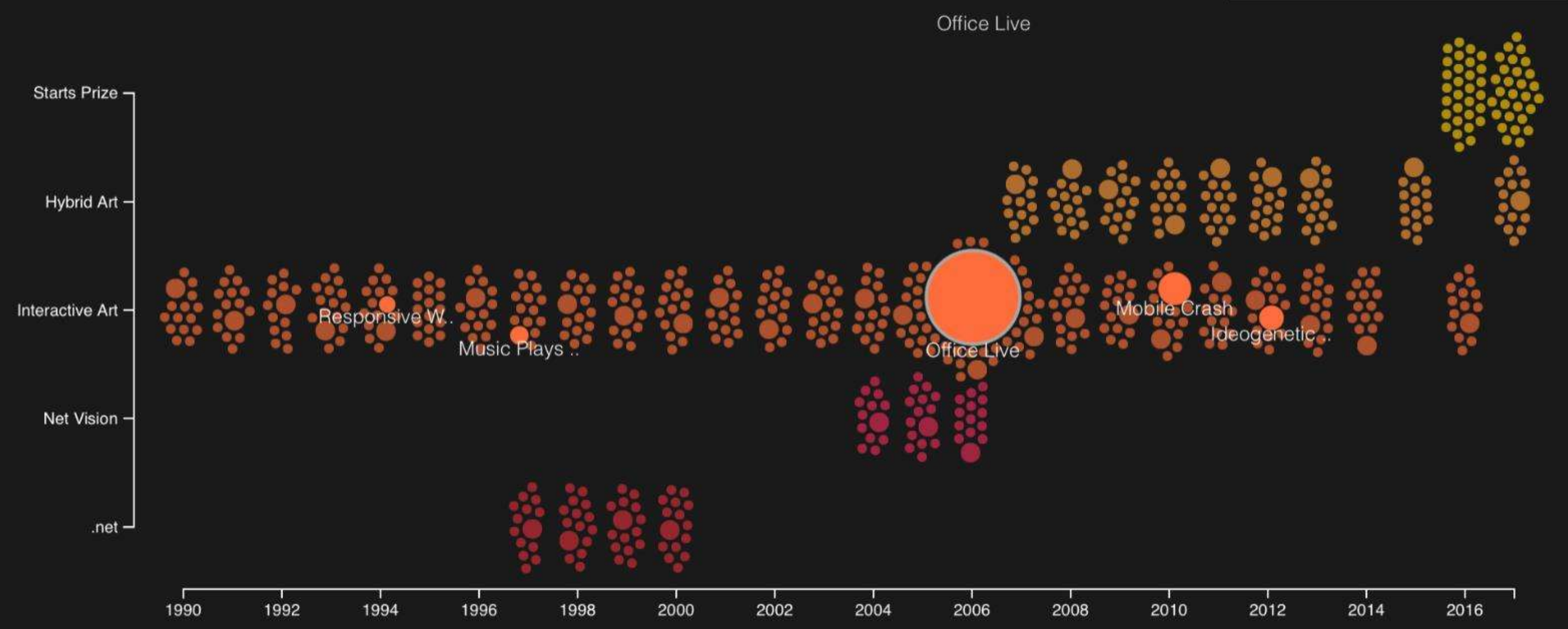


The geoglyph spotted by AI tools is a human figure about five meters (16 feet) tall.

Ars Explorer



A machine learning powered experiment that finds 'connections' between artworks from the Ars Electronica Archive. Each circle is an artwork that took part in the ars electronica festival, the slightly bigger ones won the Golden Nica. When clicking on an artwork the most similar artworks will be highlighted.



Office Live Honorary Mention 2006

Techart Group's Office Live is an interactive chain-reaction installation that consists of a series of four interconnected units. Office Live is an attempt to use the concept of kinetic art to represent the characteristics of modern office automation as well as the working life of the human involved. The core concept is that the modern office, under a standard management procedure and automated office network and system management, has become a self-organizing and self-generating organism. The theme of Office Live is represented via the working environment of such an office and its essential elements. The four units are personified as fish manager, creative concept staff, work executor, and a...



AP

Machine learning has revealed exactly how much of a Shakespeare play was written by someone else

Literary analysts have long noticed the hand of another author in Shakespeare's *Henry VIII*. Now a neural network has identified the specific scenes in question—and who actually wrote them.

by Emerging Technology from the arXiv November 22, 2019

For much of his life, William Shakespeare was the house playwright for an acting company called the King's Men that performed his plays on the banks of the River Thames in London. When Shakespeare died in 1616, the company needed a replacement and turned to one of the most prolific and famous playwrights of the time, a man named John Fletcher.

And by the way, we have to stop to talk about „the“ technology, „the“ machines, the „AI“ as if it would be something completely out of the realm of us humans. That's not true, technology is culture and it has always been an important part of human creation and expression.

And in particular with AI we must be very careful not to mix up subject and object in the so called „relationship between man and machine“.

It is not AI or ML that achieves something, it is us humans who achieve something with the support of a technology that we humans developed.

Using AI to protect endangered species

Examples from an article in the NYT:

<https://www.nytimes.com/2020/04/08/science/ai-ocean-whales-study.html>

In January 2018, Ann Allen, a research ecologist at the National Oceanic and Atmospheric Administration, approached Google and asked if they might be able to help her find the signal of humpback whale songs amid all the other ocean noise, like dolphin calls or ship engines.

Using 10 hours of annotated data, in which the whale songs and other noises were identified, [Google engineers trained a neural network](#) to detect the songs, based on a model for recognizing sounds in YouTube videos, said Julie Cattiau, a product manager at Google.

—
Google used similar algorithms [to help Canada's Department of Fisheries and Oceans](#) monitor in real time the population of the endangered Southern Resident Orca, which is down to around 70 animals.



India- Google is using AI to save killer whales: Here's how

Date
1/30/2020 2:41:58 AM

Share on Facebook

Tweet on Twitter

G+

in

(MENAFN - NewsBytes) Google is using the power of artificial intelligence to save orcas, an endangered species of killer whales, from going extinct.

The company has developed an AI model that tracks the health of the whales and alerts marine life experts as and when they fall sick or are in need of medical attention.

Here's how it works.

Situation Only 73 Southern Resident orcas left globally
According to the figures from the Center of Whale Research, only 73 Southern Resident orcas, often seen in the protected inshore waters of the Salish Sea, are left all over the world.

Scientists count whales from space

Jonathan Amos

BBC Science Correspondent

1 Nov 2018 | Science & Environment

UK scientists have demonstrated the practicality of counting whales from space.

The researchers, from the British Antarctic Survey (BAS), have been using the highest resolution satellite pictures available.

Even when taken from 620km up, this imagery is sharp enough to capture the distinctive shapes of different species.

The team will soon conduct an audit of fin whales in the Mediterranean.

The first-of-its-kind assessment will be partly automated by employing a computer program to search through the satellite data.



At a resolution of 31cm, species identification becomes much easier

What have the scientists done?

Ms Cubaynes' team examined WorldView-3 photos in different parts of the globe, looking for fin whales in the northern Mediterranean, the North Atlantic, the Pacific, the Indian, and the Arctic.

To protect the whales, scientists need to know where they are, which is what the Charles Stark Draper Laboratory and the New England Aquarium are doing in what they call "[counting whales from space](#)." Taking data from satellites, sonar, radar, human sightings, ocean currents and more, they are training a machine-learning algorithm to create a probability model of where the whales might be. With such information, the federal, state and local authorities could make decisions about shipping lanes and speeds and fishing more quickly, helping them to better protect the whales, according to Sheila Hemami, director of global challenges at Draper.

Many fish populations are moving, too, or are overfished or nearing it, and [much of that fishing is done illegally](#). In an effort to clamp down on illegal activity and keep populations at healthy levels in the ocean, Google also helped start [Global Fishing Watch](#), an organization that monitors fishing around the world by collecting and making vessels' positions and activities public.

Kakani Katija, a principal engineer at the Monterey Bay Research Aquarium Institute, has been **using machine learning to [track the lives of these zooplankton](#)**, which build themselves elaborate houses out of mucus, and model their behavior. In their snot-bubble homes (which can exceed three feet), the tiny animals (about half the length of a new pencil) filter water, in the process capturing particles and detritus sinking from the surface of the ocean to eat.

Once the structure is clogged with this ocean dust, much of which is made up of photosynthesizing organisms that have pulled down atmospheric carbon dioxide in the process, the animals abandon their homes, which sink to the ocean floor and feed bottom dwellers. But they have another crucial function: In trapping all of that debris, the mucus houses are sequestering carbon dioxide, sending it to the bottom of the ocean.

https://jeb.biologists.org/content/222/16/jeb207654?utm_source=TrendMD&utm_medium=cpc&utm_campaign=J_Exp_Biol_TrendMD_1

The screenshot shows the homepage of the Journal of Experimental Biology. At the top, there is a search bar and a navigation menu with links for Home, Articles, About us, For authors, Journal info, and Contacts. The main content area features the article title "Augmenting biologging with supervised machine learning to study *in situ* behavior of the medusa *Chrysaora fuscescens*" by Clara Fannjiang, T. Aran Mooney, Seth Cones, David Mann, K. Alex Shorter, and Kakani Katija. The article is published in the Journal of Experimental Biology, 2019, 222: jeb207654. The page includes a navigation bar for the article with options for Article, Figures & tables, Supp info, Info & metrics, and PDF + SI. The abstract is visible, starting with "Zooplankton play critical roles in marine ecosystems, yet their fine-scale behavior remains poorly understood because of the difficulty in studying individuals *in situ*." On the right side, there are buttons for "Previous Article", "This Issue", "Open Access", "Keywords" (listing Invertebrate, Acceleration, Zooplankton, Jellyfish), "Download PDF", and "Email".

Alexandra Daisy Ginsberg - The Substitute, 2019

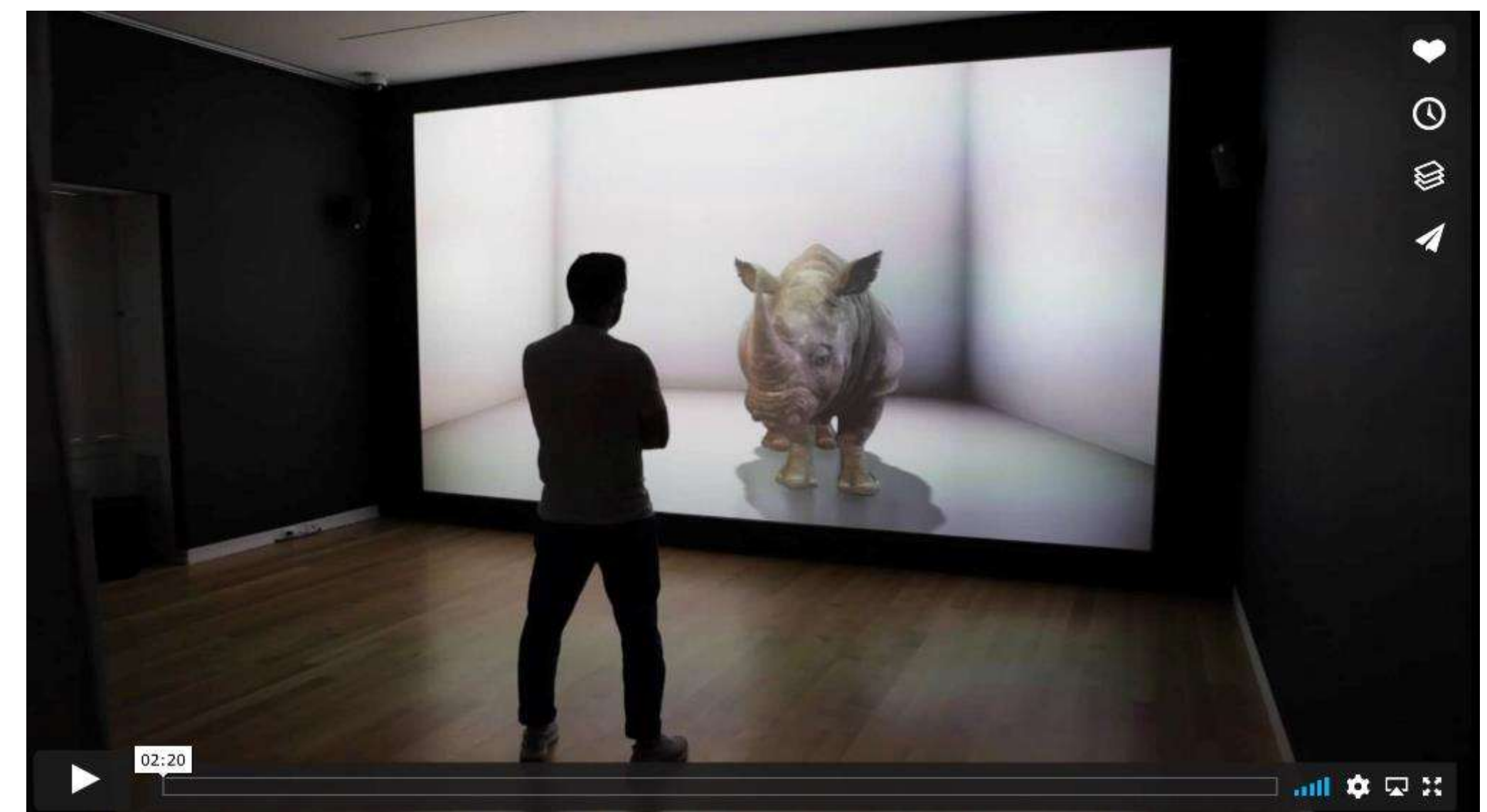
On March 20 2018, headlines announced the death of Sudan, the last male northern white rhinoceros (*Ceratotherium simum cottoni*). We briefly mourned a subspecies lost to human desire for the imagined life-enhancing properties of its horn, comforted that it might be brought back using biotechnology, albeit gestated by a different subspecies.

But would humans protect a resurrected rhino, having decimated an entire species? And would this new rhino be real?

The Substitute explores a paradox: our preoccupation with creating new life forms, while neglecting existing ones. A northern white rhino is digitally brought back to life, informed by developments in the human creation of artificial intelligence (AI). Based on research from AI lab DeepMind, the rhino performs as an artificial agent, an autonomous entity that learns from its environment. A life-size projection (almost 5m wide) shows the artificial rhino roaming in a virtual world, becoming more “real” as it comprehends the limits of the space. As the artificial rhino habituates to its space, its form and sound toggle from pixilation to lifelike—reminding the viewer that this living, breathing rhino, coming to life without its natural context, is entirely artificial.

The experimental data is played on a second screen, showing the path and development of grid cells. The rhino’s behaviours and sounds are adapted from rare research footage of the last herd, provided by Dr Richard Policht. Is this rhino, coming to life divorced from its natural context, a better substitute for the real?

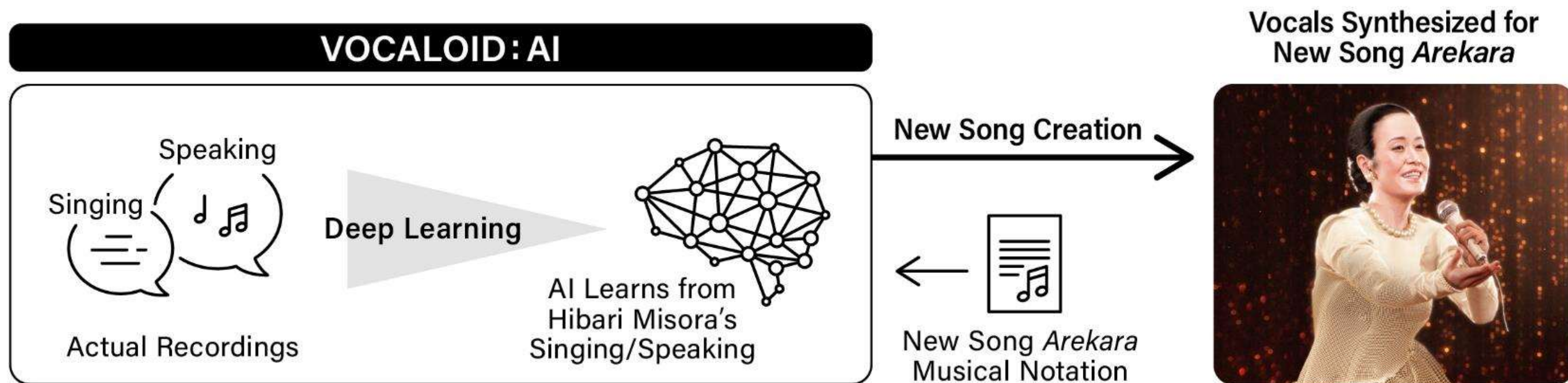
Dr. Alexandra Daisy Ginsberg (Contributing Team: Johanna Just, Ness Lafoy, Ioana Man, Ana Maria Nicolaescu). The Mill (Contributing Team: Art Director: Adam Parry; Executive Producer: Jarrad Vladich; Senior Producer: Kelly Woodward; Animation Supervisor: Paul Tempelman; Animators: Kieran Jordan, Maxime Cronier, Kevin O’Sullivan, and James Hickey; Unreal Developers: Roberto Costas, Mark Dooney, Haydn Roff, and Ed Thomas; Model and Rig: Andreas Graiche and Daniel Weiss). Sound: Chris Timpson, Aurelia Soundworks.



Using AI to preserve cultural heritage



Hibari Misora, famous singer and cultural icon of Japan has been virtually recreated and revived. With AI based software new songs in her style have been composed and recorded with the also AI-based Vocaloid system. (Vocaloid is also used to create the voice of Hatsune Miku)



Yamaha Corporation announces that it has succeeded in reproducing the singing of the late Hibari Misora, a legendary Japanese vocalist, using its own VOCALOID:AI singing synthesis technology in technical cooperation with an NHK (Japan Broadcasting Corporation) television program*1 broadcast in Japan on September 29, serving as both the public debut and first real-world implementation of VOCALOID:AI.


The NHK-led project, which Yamaha assisted with, set out to use modern AI (artificial intelligence) technology to present a live performance of a new song by Hibari Misora—an illustrious entertainer who long stood at the forefront of popular music in Japan—to commemorate the 30th anniversary of her passing. Using cutting-edge 4K 3D video to reproduce her likeness, Hibari Misora took the stage and dazzled viewers with her rendition of the new song.

Until her passing in 1989, Hibari Misora recorded over 1500 songs, leaving behind a series of hits in her more than 40 year long career as Japan's top singer. She posthumously became the first female recipient of the People's Honor Award, one of the highest honors in Japan.

Artists use AI to create stunning new works

Daito Manabe's latest Squarepusher video hacks all the ad space in Tokyo's Shibuya. The video for Terminal Slam uses an AI to automatically recognise people and adverts in live action footage, and delete and replace them with glitches and 3D textures.

https://www.youtube.com/watch?v=GIhV-OKHecl&feature=emb_logo



Squarepusher - Terminal Slam (Official Video)

679.503 Aufrufe • 29.01.2020

28.170 452 TEILEN SPEICHERN

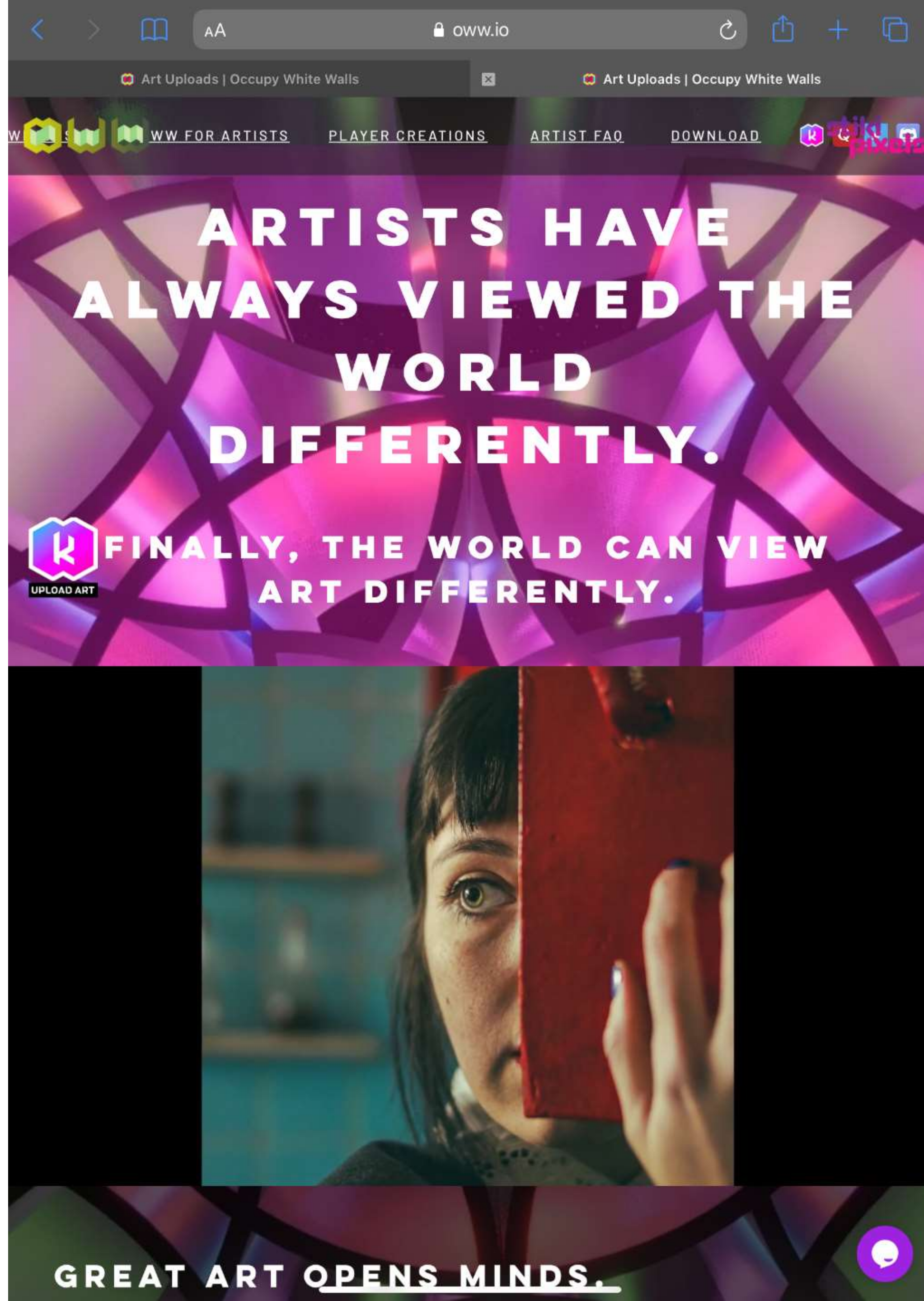
**AI
meets
Music
meets
Cultural
Diversity**



An Ars Electronica research project supported by the European Commission

Ali Nkrang – composer and AI researcher at the Ars Electronica Futurelab – will present his AIxMusic project. He has developed an advanced AI composition software and invited musicians from the international network of festival partners to create their individual musical response, interpretation or improvisation. This evolved into a major network project within the framework of the Ars Electronica Festival 2020, resulting in nine musicians performing their contributions live.

Ali Nkrang, Yishu Jiang, Daniela Müllleder, Josef Klammer, Rupert Huber, Roberto Paci Daló, Abu Gabi, Ars Electronica Futurelab



AI-based recommendation and marketing tools bring up new business models for the creative industry and also potentially bring new dynamics in online-galleries and the art-market

Just as one example of the many start-ups trying to set foot in this area:

Art Uploads
Occupy White Walls

The many initiatives that have been launched in this area so far are very diverse depending on the target group they have in their focus. Ranging from design or game oriented to fancy art-artmarket attitudes. But of course it still needs time to see if such ideas will be able to establish itself successfully. Yet they all have to figure out how to make money with such services.

GREAT ART OPENS MINDS.

Trouble is, so much of it is behind closed doors. Or in the wrong place, at the wrong time. Never connecting with its true audience. OWW has the power to place your art in front of the right eyes - better than any website or art platform ever could.

HOW?

On a basic level, [OWW](#) is a game. Tens of thousands of players create galleries and display art they like. (We say galleries, we mean incredibly imaginative, surreal art spaces that could never exist in the real world.) Which is pretty amazing in itself.

But here's the really clever bit. Once players begin to choose art, our AI (DAISY) works her magic and guides them to the art that they are most likely to love (kinda like how Spotify recommends music).

Once they've chosen art they like, other players are invited to come and view it. Which means more of the right kind of eyes on the right kind of art. A bit like a dating site where you never swipe left.



UPLOAD ART

IN SHORT.

OWW enables a world of artists to connect with a world of audiences which they could never have reached before, allowing artists to sell their artworks both in-game and in real life.

THE 'M' WORD.

Artists pay \$9 USD per artwork uploaded to the [OWW/KULTURA](#). It's a one-off payment, no monthly fees. Once your artwork is in, it's in. The price means we're able to continually update the game and AI engine, ensuring the best possible experience for both artists and players. While we would never censor any artwork in the game (OWW is 18+ rated), the price also deters those that are well, let's say, less well-intended. The internet doesn't need any more dic-pics.

YOUR TRUE AUDIENCE IS WAITING.

So, what are you waiting for? Head over to [KULTURA](#), upload some amazing art and unlock your potential to connect with people who will appreciate your art.

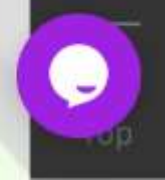
You deserve it. They deserve it!

But here's the really clever bit. Once players begin to choose art, **our AI (DAISY) works her magic and guides them to the art that they are most likely to love** (kinda like how Spotify recommends music). Once they've chosen art they like, other players are invited to come and view it. Which means more of the right kind of eyes on the right kind of art. A bit like a dating site where you never swipe left.

In short.

OWW enables a world of artists to connect with a world of audiences which they could never have reached before, allowing artists to sell their artworks both in-game and in real life.

UPLOAD YOUR ART IN 3 EASY STEPS



Auction houses are venturing into the market of AI-generated art

TECH

Monday, 22 Apr 2019 11:00 PM MYT



The AI-generated sculpture Dio by Ben Snell. — AFP Relaxnews

Phillips is the latest auction house to feature an artwork generated by artificial intelligence, as part of its online-only "Unbound" sale.

The sculpture *Dio* was created by New York artist Ben Snell, whose work investigates materialities and ecologies of computation.

He trained his computer – named *Dio* after the Greek god Dionysos – to become a sculptor, using an algorithm to scan and process more than a thousand sculpture references. The resulting form – which resembles a humanoid figure – became the basis for the final sculpture, which was then created by grounding the computer Dio to dust and utilising it as physical medium.

Dio was the first sculpture developed by a computer to ever go under the hammer. Estimated between US\$3,000 (RM12,402) and US\$5,000 (RM20,667), the artwork reached US\$6,875 (RM28,424) at the end of the auction on April 18.

The Phillips sale is far from being an isolated event. Over the past few months, prominent auction houses have shown a growing interest in AI-generated art. In October, Christie's caused a stir when the algorithm-created painting *Portrait Of Edmond De Belamy* fetched US\$432,500 (RM1.79mil) – more than 40 times its high estimate.



Sotheby's also ventured into this new market in March, when it sold Mario Klingemann's AI-generated *Memories Of Passersby I* for £40,000 (RM214,972).

Although the AI art market still seems volatile, international art galleries and museums are following suit. Last February, New York's HG Contemporary held *Faceless Portraits Transcending Time*, an exhibition of AI-created prints developed by AICAN + Ahmed Elgammal. – AFP Relaxnews

<https://www.thestar.com.my/tech/tech-news/2019/04/23/auction-houses-are-venturing-into-the-market-of-ai-generated-art>

Recreations in Randomness

2.2

Published on Apr 30, 2020

DOI 10.1162/99608f92.7f90ce96

SHOW DETAILS

Can Machine Learning Predict the Price of Art at Auction?

by Jason Bailey

Published on Apr 30, 2020

 last released
6 months ago

CITE [#]

SOCIAL

DOWNLOAD

CONTENTS

Column Editor's note: It has been said that beauty is in the eye of the beholder. But how well can beauty be valued by the eye of machine learning? Jason Bailey, art analytics expert, explores in this issue's Recreations in Randomness the capabilities of machine learning to provide reliable valuations of artwork that can be used by buyers and auction houses, and how these valuations might even shape the art

Expanding the Art Market Through Automated Valuation

Manual appraisal of art is slow, expensive, and limited by the number of human experts available. While not as accurate, machine learning can dramatically increase the volume, speed, and frequency of appraisals. Instead of only estimating prices for art headed to auction, all artworks, on and off the market, could regularly undergo automated valuation using machine learning. This approach is already in use in the real estate market with companies like Zillow, Redfin, and Trulia.

<https://hdsr.mitpress.mit.edu/pub/1vdc2z91/release/1>

Conclusion

Many researchers have expressed beliefs that prices for art are perhaps unpredictable. Yet, there is a practical need to create presale estimates for all work sold at auction. Humans are currently more accurate than machines in crafting these estimates. However, machine learning models can potentially scale to appraise all art, not just the work going to auction at any given time. Automated pricing of all artworks on and off the market could drive up liquidity by providing additional information to buyers. To this end, Sotheby's has been exploring machine learning to price all past lots and to develop an automated end-to-end sales process.

Although economists might have advised against it, purchasing the duct tape banana may have been a good investment. The research suggests that extrinsic features like artists' reputation and the number of bidders are more important than features unique to the artwork. Cattelan's stunt has no doubt increased his global reputation, which should drive up the value of the work. And if the current owners wait just a few more years before selling, Sotheby's automated sales process might even trigger a bananas bidding war to assure the best possible return.

Copyright Notice

The documents contained in these REPORT are included by the contributing authors as a means to ensure timely dissemination of scholarly and technical work on a non-commercial basis.

Copyright and all rights therein are maintained by the authors or by other copyright holders, notwithstanding that they have offered their works here electronically. It is understood that all persons copying this information will adhere to the terms and constraints invoked by each author's copyright. These works may not be reposted without the explicit permission of the copyright holder.