SCHIRN
KUNSTHALLE
FRANKFURT

THE WORLD THROUGH AI
JUNE 11 – SEPTEMBER 20, 2026

EXHIBITION TEXTS

WALL PANELS

INTRO

First introduced in 1955, the term “artificial intelligence” (AI) refers today to algorithms and models capable of automatically performing operations—detection, recognition, classification, generation, prediction, and decision-making—that have countless applications. Since the beginning of the 2010s, these technologies have begun to infiltrate every layer of culture and society, economics and politics, science and military operations. Everywhere, they raise multiple ethical, epistemological, and political questions, while consuming massive quantities of natural resources and energy.

Within this general context, artistic practices may play a crucial role. Working with images and sounds, texts and voices, they give sensorial presence to a sphere otherwise dominated by abstract operations, invisible processes, and black boxes. Through critical approaches, artworks question the corporate ownership and extractive logic of the currently dominating AI models, while at the same time showing that other ways of conceiving and shaping AI are possible.

The World Through AI presents a selection of works from the last ten years to the present, several of which have been produced specifically for this exhibition. They reflect on what it means to experience the world “through AI”: what it means to perceive, imagine, know, remember, work, and act in a world increasingly infiltrated by AI technologies that reposition the “human” in a vast infrastructure of algorithms.

Filling both exhibition spaces of the Schirn Kunsthalle Frankfurt (Halle 1 and Halle 2), The World Through AI unfolds across thematic spaces that provide a series of coordinates to navigate this rapidly transforming present. Several “time capsules” containing materials from Frankfurt and Mainz archives and museums—some of them tied to the history of the Dondorf printing factory and the Dondorf family—suggest links between the present and the past, thereby situating these current transformations in a historical perspective.

Exhibition organized by Jeu de Paume, Paris, in collaboration with Schirn Kunsthalle Frankfurt
Curated by Antonio Somaini with Katharina Dohm and Cornelia Eisendle, Schirn Kunsthalle Frankfurt.
Research assistants: Jules Conchy and Samuel Solé

1 DATA CENTERS

AI technologies are not immaterial phenomena floating in some virtual space. They are rooted in massive physical structures scattered across the globe: the vast, humming data centers where digital information is stored and processed.

Often located in areas where energy is cheap and access to the flow of information is seamless, they consume enormous quantities of electricity and water, and generate significant heat and waste. The familiar rhetoric of "the cloud" as a weightless, ethereal entity deliberately obscures this mate-rial reality.

2 MATERIALS, INFRASTRUCTURES AND COLLECTIVE INTELLIGENCE

Every AI system relies on a vast, planetary infrastructure. It consists of rare earth minerals extracted from mines, silicon fabricated in industrial plants, cables laid across ocean floors, and

massive quantities of data processed by deep-learning technologies. AI development is inseparable from processes of geological extraction, environmental transformation, and the unequal distribution of ecological damage across the globe. At the same time, as networked infrastructures, AI systems coexist alongside other forms of collective knowledge, both human and nonhuman.

3 MACHINE VISION

Historically, images have been mostly produced for human eyes. With the advent of machine vision systems, this has changed fundamentally. Images, once digitized, can now be automatically analyzed, even when they do not appear on screens and are not visible by us. Machine vision systems detect, recognize, and classify objects, places, bodies, and faces wherever they are deployed-in streets, airports, workplaces, and battlefields-turning the whole visual world into a vast field of data extraction, surveillance, and control.

4 FACE AND EMOTION RECOGNITION

Among the most consequential applications of machine vision are systems designed to identify human faces and to infer emotional states from facial expressions. Face recognition is deployed globally for surveillance, access control, and political repression. Emotion recognition-its scientific foundations deeply contested still today-claims to read psychological states from facial geometry. Both technologies are built on massive datasets of human faces, gathered without consent and labeled according to taxonomies that encode historical and ideological biases.

5 WORDS AND IMAGES

What happens when a generative AI model automatically produces images based on texts, and texts based on images? The most recent multimodal models can generate elaborate verbal descriptions of visual content, and, conversely, translate verbal instructions (prompts) into images. These unprecedented operations profoundly reorganize the relations between images and words, between the visible and the sayable. They raise fundamental questions about whose vocabulary and whose categories shape what AI systems see and visualize.

6 DEEP GENEALOGIES

Contemporary AI did not emerge out of nowhere. It is the latest stage in a much longer history in which technologies have been used to increase automation and thereby acquire, organize, and exercise power over bodies, minds, societies, time, and space. Understanding the present requires situating it within this *longue duree*, tracing the chains of development that connect today's AI systems to earlier power structures. Seen from this perspective, AI reveals itself not as a radical rupture but as the continuation of much older histories of calculation, classification, and domination.

7 MICRO-LABOUR

AI systems rely not only on electricity, water, and computers, but also on vast quantities of human labor, largely invisible, mostly underpaid, and structurally unprotected.
Before a machine learning model is capable of recognizing an image or generating a text, workers have to complete millions of individual tasks, for instance labeling data, moderating content, or evaluating the model's output. This work is carried out predominantly in the Global South, through digital platforms that, to this end, maintain workers who are subjected to conditions of precarity and anonymity. The AI industry's rhetoric of automation and efficiency systematically conceals this human substrate, which enables such models to function in the first place.

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8 THE INVISIBLE HAND

Adam Smith's “invisible hand” (1776)-the idea that individual self-interest contributes to the common economic good without higher guidance-has acquired a bitter new irony in the age of platform capitalism. Digital labor platforms outsource micro-tasks on a decentralized basis to anonymous workers who are paid fractional amounts per task and are excluded from labor protection measures. Moreover, their identities often remain hidden. The automation supposedly offered by these platforms is, in reality, based on human performance: behind every apparently seamless algorithmic operation, there are countless invisible hands.
This structural invisibility is not accidental: it is what makes the myth of pure, frictionless automation ideologically viable.

9 HALLUCINATIONS AND PSYOPS

When a generative AI model produces noncompliant or unexpected results, it is often said that the model is “hallucinating” This occurs when the results do not align with the goals for which it was created or if the results deviate from what was expected-for example, photorealistic images showing incongruous body parts, or texts stating incorrect facts. Hallucinations, though, are not only an accidental malfunction. They are the statistically possible output of a model. When deliberately produced, they may become a tool of psychological influence, shaping behaviors, opinions, and beliefs. Interpreted in this sense, certain aspects of contemporary generative AI may be seen as the continuation of a longer history of perceptual hallucinations, psycho-logical operations (PsyOps), and mind-control experiments.

10 ANOTHER AI IS POSSIBLE

The currently dominant paradigm of AI is built on extraction: works taken without consent, datasets compiled under obscure conditions, models with latent spaces shaped and controlled by others. But other ways of conceiving AI are possible. AI has the potential to be a medium for artificial imagination and collective creation, rather than corporate domination. Voices and images can be given to a commons rather than seized from one; it is possible to build datasets openly, with consent and shared governance; models may be trained in public, as rituals of gathering rather than acts of capture. With this approach, the architecture of models and the compression of data in latent spaces can itself become an artistic medium, and the protocols through which AI is made emerge as a place where new forms of authorship, identity, and collective imagination can be rehearsed.

11 COLONIAL LOGICS, DECOLONIAL AI

AI datasets are not neutral archives. They reflect the histories and geographies of their production-predominantly from the West and in English language, shaped by centuries of colonial appropriation of non-Western cultures, knowledge systems, and visual traditions. When these biases are encoded into AI models, they reproduce and amplify existing asymmetries of power and visibility: entire cultures become illegible to systems that have never been trained to see them. But AI can also be turned against this colonial logic and be used as a tool for recovering suppressed memory, restoring erased traditions, and imagining forms of knowledge and representation that the dominant models have excluded.

12 AI SLOP AND SLOPAGANDA

“AI slop” refers to the flood of generic, low-quality syn-thetic content-images, videos, texts, sounds-produced at an industrial scale by generative AI models and now circulating across networks with growing intensity. Repetitive and stereotyped, such content is increasingly weaponized for political ends. In this case, it becomes “slopaganda.” This is a new form of cheap, viral, synthetic communication that has been widely adopted by authoritarian regimes and far-right

parties. It spreads racist and colonialist memes, trolls the opponents, and rapidly transforms the visual landscape of contemporary politics.

13 A STATISTICAL PHOTOREALISM

For almost two centuries, photography's authority was based on its indexical nature: the image as a direct physical trace of light on a sensitive surface, bearing a causal relationship to the reality it represents. Generative AI has entirely transformed this relation. AI models trained on billions of photographs and accompanying texts can now produce images that are virtually indistinguishable from photographs. These images are photorealistic in appearance, yet generated through statistical operations, independently of any form of optical capture or light recording. This new "statistical photorealism" further erodes what remained of photography's documentary authority, while at the same time opening up the possibility of giving a semblance of photographic evidence to speculative imaginations.

14 AI AND HISTORY: MATERIAL TRACES, LATENT ARCHIVES

The building housing this exhibition has a complex, layered history. From the late 19th century to the 1950s, the Dondorf printing factory was one of Frankfurt's most important sites of industrial image and text production: a site in which images and texts were industrially processed in order to construct and convey information, thus shaping beliefs and orienting actions, much as generative AI models do today. What happens when the material traces pre-served in institutional archives-photographs, documents, objects-are converted into data and absorbed into the latent spaces of AI models? What is preserved, what is trans-formed, and what is irreversibly lost in this passage from the material to the computational realm?

15 COMPRESSION AND UPSCALING

Every digital image is the result of computational operations-compression, encoding, transmission-that transform the continuum of visual experience into discrete numerical data. When an AI model “upscales” an image to increase its resolution, the missing information is not recovered but invented: statistically plausible pixels are generated from patterns learned across billions of other images. This gap between perceptual experience and its computational approximation raises fundamental questions about the nature of the digital image. It is also worth asking what it means to see, record, and remember in a world where images pass through ever more layers of algorithmic mediation before they reach human eyes.

16 COUNTERFACTUAL PASTS

Generative AI models, trained on the vast quantities of images and texts stored online during more than three decades of digital culture, introduce into our culture a new form of technical mediation of the past. After having com-pressed the training data into their internal mathematical structure, these AI models generate texts and images that can be seen as traces of alternative pasts, counter-factual histories, and memories of events that might have occurred. This generative capacity introduces a new and unsettling relationship to time and memory. Here, the boundary between what was and what might have been becomes permeable. The past is no longer a fixed set of facts, but a field of open, computable possibilities.

17 VISIONS AND RUINS

The exhibition concludes with three video works that share a visionary and hallucinatory dimension. They ask what fears and desires AI culture is generating at the edges of the present. On the one hand, there is the yearning for an artificial companion who will never leave; on the other, the marketing of the idea of psychedelic mind expansion as a foretaste of artificial general intelligence (AGI). And finally, the dream of reconstructing a lost world from the ruins of memory.

Oscillating between dystopia and rapture, between the intimate and the catastrophic, these works survey and document the affective and ideological horizon within which AI technologies are situated at this present historical moment.

WORKS

NORA AL-BADRI, born 1984 in Marburg (Germany)

Babylonian Vision — البابلي الرؤية (2020)
GAN-generated video projection, color, silent, 10 min., loop
Work realized in the framework of the Swiss Federal Institute of Technology in Lausanne (EPFL) CDH Artist-in-Residence program
Courtesy of the artist
After retrieving online images from the world's five largest collections of Mesopotamian, Assyrian, and Neo-Sumerian artifacts—collections held in Western museums such as the British Museum, the Louvre, and the Pergamon Museum, whose holdings are largely the result of colonialera excavations and acquisitions—Nora Al-Badri trained a generative AI model (GANs, or Generative Adversarial Networks) to generate images of new, potential objects. The resulting images occupy an uncertain space between the archaeological and the imaginary: they resemble ancient artifacts without being reconstructions of any specific existing object, suggesting forms which Mesopotamian civilization might have produced but that have never been found, or that were destroyed, looted, or lost. According to the artist, these form a "techno heritage": a speculative archaeology that frees Babylonian heritage from the colonial context in which it was excavated, classified, and museumized in the West, proposing instead a speculative archive.

NOUF ALJOWAYSIR, born 1993 in Riyadh (Saudi Arabia)

Salaf, 2021–2025
Installation: Dataset, 2021 (generated with U2-Net); Machine Vision Research in Archival Images, 2021; Generative, 2025 (generated with StyleGAN3)
Archive images: Getty Museum, The Getty Research Institute, Ken and Jenny Jacobson Orientalist Photography Collection
Courtesy of the artist
The project entitled *Salaf* (Ancestors) questions the exoticizing and colonial Western perception of the Middle East, from the photographic collections compiled in the 19th century to current AI systems. Taking as a starting point a series of photographs from the archive of Gertrude Bell (a British archaeologist and political officer who traveled extensively across the Middle East during the 1900s and 1910s), Nouf Aljowaysir shows how machine vision systems trained with mostly Western images are incapable of correctly describing the people and the objects represented in photographs of Bedouin communities. In a further step, the artist worked with an Orientalist photographic collection from the Getty Museum and decided to apply U2-Net, an AI model usually applied to detect salient objects in images—not to trace the contours of the human figures represented in the images but to erase them, replacing them with white silhouettes, thereby creating what she calls an "absent dataset." This, as the artist explains, became "a symbolic act: a refusal to allow certain data to become training material." Finally, in a third step of the process, Aljowaysir trained a generative AI model, StyleGAN3, on this "absent dataset," generating new images that, while preserving the white silhouettes, tended also to reproduce the visual patterns and poses typical of the Orientalist images with which it had been trained.

TIMO ARNALL, born 1976 (United Kingdom)

Internet machine, 2014
Digital projection, 4K, 25 fps, stereo, 6:40 min., Digital photography, photogrammetry, 3D animation
Courtesy of the artist
Internet machine is a multiscreen film about the invisible infrastructures of the internet. Shot in a data center run by Telefonica in Alcala, Spain, the film reveals the hidden materiality of data by exploring some of the spaces and the machines in which they are stored, processed, and transmitted. The slowly moving camera, the subtle changes in perspective, and the humming sound encourage a contemplative reflection on the fact that the internet is not a weightless, immaterial, invisible “cloud,” but rather a very distinct physical, architectural, and material system.

ÉRIK BULLOT, born 1963 in Soissons (France)

Cinéma vivant, 2024
Digital prints of 12 images generated by the Lexica diffusion model
With the support of the Jeu de Paume, Paris
Courtesy of the artist
The filmmaker, writer, and researcher Érik Bullot explores the history of unfinished and missing films, as well as the various manifestations of an imaginary, mental, or potential cinema, at the crossroads between literature and parapsychology, technical experimentations and mediumistic practices. For him, generative AI, with its specific temporal dimension—that of “a past conditional, close to *what could have been*”—gives concrete form to the promises of just such a cinema. With this series of images, which uses the generative AI model Lexica, Bullot attempts to give visual form, starting from textual prompts, to the utopian vision of a “future cinema,” “plastic and alive,” made of “phantasms” and “crystallized images” that the symbolist poet Saint-Pol-Roux (1861–1940) formulated in the notes written during the 1920s and 1930s, gathered together in the collection *Cinéma vivant*.

JULIAN CHARRIÈRE, born 1987 in Morges (Switzerland)

Metamorphism LI, 2016
Metamorphism, 2016
Metamorphism, 2016
Installations, artificial lava, molten computer waste (motherboards, CPUs, RAMs, hard drives, cables), Corian base, steel, white glass
Courtesy of the artist

Buried Sunshines Burn | *477.DP7*, 2024
Buried Sunshines Burn | *4NC.V28*, 2024
Buried Sunshines Burn | *455.5V7*, 2024
Buried Sunshines Burn | *HYN.KTY*, 2024
Heliography on high-polished stainless-steel plate
Courtesy of the artist, Perrotin, and Sean Kelly, New York/Los Angeles
Despite what the notion of dematerialization might suggest, digital technologies (to which AI belongs) cannot function without considerable amounts of natural resources, including water, rare earth minerals, lithium, and oil. Julian Charrière‘s series *Metamorphism* and *Buried Sunshines Burn* insist on this point. In the *Metamorphism* sculptures, various computer materials such as mainboards and CPUs (processors) were mixed with earth before being melted in an oven. The mysterious agglomerates obtained evoke mineral formations, while raising the question of digital

waste and its toxicity. In *Buried Sunshines Burn*, Charriere used an old heliographic technique to give visual form to the oil fields surrounding the city of Los Angeles.

GRÉGORY CHATONSKY, born 1971 in Paris (France)

The Fourth Memory, 2025
Installation, generative film, 3D prints, digital prints, robot, aluminum, stones
AI models and programming languages: Stable Diffusion XL, AnimDiff, CoquiTTS, Llama 3.2 7B, Python 3.11
Training data: Laion-5B, Visual Contagions under the direction of Beatrice Joyeux-Prunel, the artist's personal archives
With the programming assistance of Robin Champenois
With the support of the Conseil des Arts du Canada, Ottawa, the Universite de Geneve, and the Jeu de Paume, Paris
Courtesy of the artist
The Fourth Memory is a complex installation consisting of a grid-like aluminum structure, the concave, negative trace of a body, 3D-printed biomorphic sculptures, and a continuous, virtually endless AI-generated video commented on by an AI-generated voice reading AI-generated texts that describe the video's images as if in a dreaming state. Whenever a new generated sequence appears in the video, an algorithm searches for similar images in a real archive and displays the found images on the smaller LED screens. The installation forms part of the artist's ongoing work on the profound anthropo-technical transformations caused by AI. The title refers to Chatonsky's idea that generative AI models produce a new kind of memory, one that visualizes possible, alternative, counterfactual pasts through the computational processing of the enormous quantities of human memory stored on the internet as a result of thirty years of digital culture. The artist conceives the work as a tomb on an uninhabited Earth. A machine resurrects and imagines all of the artist's possible lives. He is not cloned: multiple versions of himself seem to explore uncertain places, giving new meaning to the famous phrase by Arthur Rimbaud, "I is another."

KATE CRAWFORD, born in Sydney (Australia)
VLADAN JOLER, born in Novi (Serbia)

Anatomy of an AI System: An Anatomical Case Study of the Amazon Echo as an Artificial Intelligence System Made of Labor, 2018
Print on paper
Courtesy of the artists
Anatomy of an AI System is an attempt to map the infrastructures of AI. It focuses on the voice-assisted AI system "Alexa," launched by Amazon in 2015, and reveals the vast planetary network that lies behind interactions with the device that are as simple as asking "What's the weather like today?" and receiving an answer. The diagram shows three vast processes for extracting and exploiting material resources, human labor, and data.

Calculating Empires: A Genealogy of Technology and Power Since 1500, 2023
Diptych, prints on paper
Courtesy of the artists
Calculating Empires is a visualization of the multiple, intertwining genealogies that have led to the current state of "AI," in an effort to understand how we got here and where we are headed. The line at the bottom of the diagram indicates the year 1500, the moment in which cultural and economic global networks began to form, while the line at the top indicates the year 2025. Between the two lines, we find a time span of five centuries, mapped in two large sections, one facing the other: *Communication and Computation* and *Control and Classification*. The diagram

shows us how contemporary AI can be considered part of a longer history spanning over five centuries, in which different kinds of political and technological “empires” have acquired and consolidated power by turning mental, social, and physical spaces into calculable entities.

HARUN FAROCKI, born 1944, died 2014 in Germany

Eye / Machine I, 2000, (23 min.)
Eye / Machine II, 2001, (15 min.)
Eye / Machine III, 2003 (25 min.)
Videos, black and white and color, sound, loop
Courtesy of the Harun Farocki GbR
In the three historic installations entitled *Eye / Machine*, the filmmaker and theorist Harun Farocki analyzes the increasing automatization of vision in different fields such as warfare, industrial production, transportation management, and robotics. Through a carefully planned editing of images and texts, he leads us into a world of “operational images”: images that are not meant for edification or for reflection, but rather contribute to the conducting of technical operations of surveillance, monitoring, inspection, geolocalization, tracking, and targeting. Farocki’s audiovisual works and texts have become key reference points for contemporary artists working on machine vision technologies and their social and political implications.

DANIEL FELSTEAD, born 1976 (United Kingdom)

With JENN LEUNG, born 1998 in Hong Kong (China)
Welcome to Jankspace, Babes, 2025
Digital video, HD, color, stereo sound, 29:07 min.
Commissioned by DIS
Courtesy of the artists
In the video *Welcome to Jankspace, Babes* (2025), a Julia Fox avatar serves as the guide through the current landscape of internet culture saturated by AI slop. Through a rapid, hallucinatory montage that moves across various references—ranging from Ozempic and Bryan Johnson to Luigi Mangione and the fashion video game Dress to Impress—the video maps the grotesque visual and cultural environment produced by the convergence of algorithmic platforms, technocapitalist ideology, and generative AI. The title invokes Rem Koolhaas’s concept of “junkspace”—the bureaucratic, generic spaces left unaccounted for by modern architecture—transposing it into the digital realm. “Jankspace” is the degraded, empty space in the networks of technocapitalism that human bodies and desires fill with ever more sloppy, unhinged content. As the artists write: “Jankspace is, quite literally, us—our beautifully broken, uncomputable bodies that we know aren’t quite programmed right and that no optimization will ever fix.”

JOAN FONTCUBERTA, born 1955 in Barcelona (Spain)

Allium echinatum
Falopiflora tubifolia
Heteranthera bifida
Verdolaga oleracea
2023

Abitulon catharticus
Cuscuta nanoflora
Folium ingenii
Funga mutaphila
Germiniflora embryophyta

Kartossen armata
Lathirus crispus
Lathirus oleracerus
Linderdina modulata
Monofolia mutagena
Sorghum herpens
Sorribus maritimus
Taraxacum hirsuta
Tonius cumelus
Typha volans
Vulpia plumifera
Zanteschia ingeniosa
2024

eHerbarium, 2024–2025
Inkjet prints of images generated by Stable Diffusion
Courtesy of the artist
In 1928, the sculptor, art educator, and photographer Karl Blossfeldt published the book *Urformen der Kunst* (Art Forms in Nature), in which close-up photographs of plants highlighted the presence, within the natural world, of decorative motifs found throughout the history of art. With reference to this work, Joan Fontcuberta produced *Herbarium* (1984–85), composed of photographs of fake plants assembled from organic fragments and industrial waste. Created forty years later, the *eHerbarium* series (2024–25) echoes the original project, bringing together photorealistic images of non-existing plants generated with the AI model Stable Diffusion. Throughout his career, Fontcuberta has systematically questioned photography's claim to truth and its indexical nature—the idea, foundational to photographic culture since the 19th century, that a photograph is a direct physical trace of the reality it depicts. *eHerbarium* extends this investigation into a visual culture profoundly transformed by AI and increasingly saturated with AI-generated photorealistic images.

ADAM HARVEY, born 1981 (USA)

Exposing.ai, 2021
Online platform (https://exposing.ai) investigating the origins and endpoints of face recognition datasets
Courtesy of the artist
This interactive screen provides access to the website *Exposing.ai*, which presents the results of an enquiry into the datasets used to train facial recognition and biometric analysis systems. Given that this data consists of photographs of faces, the process raises important ethical and political questions. It turns out that a significant number of this vast body of images were gathered from the internet (in particular, Flickr), without permission and outside any legal framework. The "View Datasets" button gives access to the 34 datasets studied by the artist and activist Adam Harvey. For each one, a clickable image reveals details of his analysis.

HOLLY HERNDON & MAT DRYHURST, born 1980 in Johnson City (Tennessee, USA) & Born 1984 in Solihull (United Kingdom)

Embedding Study 1 & 2, 2024
From the series *xhairymutantx*, 2024–2025
Thermal dye diffusion transfer prints, diptych
Courtesy the artists and private collection

For the last ten years, the artists and musicians Holly Herndon and Mat Dryhurst have developed an artistic practice aimed at a different kind of generative AI: one that is open, transparent, collective, based on consent, and accompanied by shared legal and financial frameworks.
For them, the training of AI models is a new artistic medium. With the interactive work *xhairymutantx*, first presented at the Whitney Biennial in 2024, the artists focus on the question of how our image is encoded and embedded in the latent spaces of the current AI models, which are in most cases closed and inaccessible. Who gets to choose how AI models represent us? Can we regain control of such representation? After discovering, through a technique called “textual inversion,” that the latent space representation of Holly Herndon focuses on her distinctive red hair and blunt-cut bangs, they decided to find ways to further amplify this cliche in future AI-generated images. The two photographed Herndon in a costume inspired by the Golem, as portrayed in the film *The Golem: How He Came into the World* (1920) by Paul Wegener and Carl Boese, with exaggerated shoulders and orange braids that reach all the way to the floor. Based on this, they developed a text-toimage model, which, whatever the prompts inserted by users, generates iterations of this hairy, mutant Holly Herndon character. Stored on the website of the Whitney Museum, these images, highly ranked by bots that scrape the internet, will eventually end up in future training sets and will influence the ways in which Holly Herndon’s image will be given visual form by future AI models. Visitors are invited to use the prompter to generate images starting from prompts.

xhairymutantx, 2024–2025
Video made of images generated by a custom AI model, prompter, and interactive video
Courtesy of the artist

ANDREA KHÔRA, born 1989 in Seattle (Washington, USA)

RAPTURE, 2024
Video, images generated by several AI models, color, sound, 24:10 min.
With the support of KW Berlin, Kunsthal Charlottenborg, and the Blessed Foundation, London
Courtesy of the artist
The film tackles the entanglements of Silicon Valley ideology, transhumanism, counterculture, and psychedelia, exposing the corporate mysticism surrounding the goal of reaching Artificial General Intelligence (AGI). Figures in the tech world such as Sam Altman and Elon Musk have openly discussed their use of psychedelics for “elevated thinking,” while at the same time investing in psychedelic therapy as a profitable venture. In *RAPTURE*, we find a similar figure in the CEO archetype Ethan Grant, whose start-up “TranscendX” promises transcendent psychedelic therapy, presented as a transformative religious experience. Grant’s rhetoric is at the same time seductive and dangerous, insidious and messianic. As the film unfolds, the interactions between Grant and the podcast host who interviews him are constantly interrupted by psychedelic, AI-generated imagery that disrupts the narrative, blurring the lines between hallucinations and reality.

AGNIESZKA KURANT, born 1978 in Łodź (Poland)

A.A.I. (System’s Negative) No. 6, 2016
Poured zinc
Collaboration: Paul Bardunias, fabrication: Gielie von Wielligh
Courtesy of the artist and the Marian Goodman Gallery, New York/Los Angeles/Paris
A.A.I. (System’s Negative) is the title of a series of negative casts made from liquid zinc poured into abandoned termite mounds in the Namibian desert. Their shapes evoke both fossilized coral reefs and neural networks. The sculptures seem like a 3D model of the societies that made them possible. Each is in fact an internal portrait of a colony or a system; a negative portrait of the work

of the termites, the corridors and crevices collectively created by the entire colony. Each sculpture documents the way in which each termite mound of the same species develops its own collective intelligence, through different specific forms of distributed cognition. With these negative casts, Kurant invites us to conduct a comparative study of termite mounds as the fruits of a nonhuman collective intelligence.

Nonorganic Life 2, 2023
Painting with metallic salt crystals, cobalt, nickel, calcium, chromium, copper, manganese on anodized printed aluminum plate
Fabrication: Kunstgiesserei St. Gallen AG; project manager: Noel Hochuli
Courtesy of the Nicoletta Fiorucci Collection
In the paintings from the series *Nonorganic Life*, Agnieszka Kurant investigates the mixture of biological, mineral, and synthetic materials that make up current computational systems. The works consist of microphotographs of complex crystalline structures resembling plants, created by mixing the substance water glass (sodium silicate) with inorganic chemicals such as salts of metals (copper, cobalt, manganese, chromium, iron) that are essential ingredients in contemporary computers, and whose industrial extraction leads to the devastation of entire ecosystems. *Nonorganic Life 2* belongs to a series of works with which Agnieszka Kurant explores how organic and inorganic substances in the world are continually reorganized into various unstable forms.

Alien Internet, 2023
Ferrofluid, electromagnets, glass, sensors, Arduino software, custom programming
Fabrication and engineering: Jason Krugman; software engineering: Agnes Cameron
Courtesy of the artist and the Marian Goodman Gallery, New York/Los Angeles/Paris
The installation *Alien Internet* shows a shape-shifting life form digitally controlled in an electromagnetic field. It employs ferrofluid, a material invented by NASA in 1963 and remarkable for its capacity to change form in the presence of a magnetic field. The work refers to the fact that today the behavior and communication of millions of wild animals (whales, birds, turtles, sponges, etc.) and other nonhuman life forms can be captured with digital technologies around the world and analyzed through AI for various kinds of algorithmic predictions about the natural world, such as volcanic eruptions, earthquakes, tsunamis, and pandemics. Nonhuman organisms acting collectively are thus comparable to a biological computer predicting the future. The constant ferrofluid remodeling in *Alien Internet*, which is fed with data collected from various scientific institutes, gives a condensed visual presence to these nonhuman collective intelligences.

OCCITANE LACURIE, born 1997 in Salon-de-Provence (France)
BARNABÉ SAUVAGE, born 1994 in Paris (France)

Holy Slop! A Generative Atlas of Slopaganda in Palestine, 2026
Multimedia installation (video, photography, print, data visualization), color, sound, 20 min.
With the assistance of Paul Kronlund-Drouault (latent space exploration) & Christa Blumlinger (voice-over)
Courtesy of the artists
Holy Slop! is a video-essay installation combining various media and techniques across two projection channels. The first channel is intended to work as an atlas of photos, prints, and videos scraped from social media. It seeks to contextualize the imagery generated to promote the infamous “Gaza Riviera” plan, which was posted on Donald Trump’s Truth Social account in 2025 and again during his “Board of Peace” initiative in early 2026. The narration, read by the Austrian media scholar Christa Blumlinger, aims to illuminate how contemporary visual culture operates

within a continuum of technical images, such as Orientalist photography and computergenerated images, which have been historically used to “recreate” or “remediate” the Holy Land. The second channel, developed with the assistance of the French computer scientist Paul Kronlund-Drouault, attempts to visualize the latent space of the Grok AI model, renowned for its unrestricted usage policy on the social platform X. Using a process of topological analysis called “model distillation,” the work sheds light on how Palestinian identity markers bend the force field toward stereotyped attractors inherited from colonial imagery.

META OFFICE, Studio founded in 2023 in Rotterdam (Netherlands)
Composed of:
LAURITZ BOHNE, born 1994 in Dusseldorf (Germany)
LEA SCHERER, born 1996 in Vienna (Austria)
EDWARD ZAMMIT, born 1997 in Pieta (Malta)
Meta Office: Behind the Screens of Amazon Mechanical Turks, 2021–2025
Multimedia installation, data visualization
Courtesy of the artists
This installation emerged from a dialogue between the members of the Meta Office collective and the workers at the online platform for outsourced micro-labor Amazon Mechanical Turk. The workers, usually hired to index images from training sets and to monitor AI-generated content, described their working conditions in this dialogue. Their answers, together with the accompanying images, show us their geographical locations, their wages, and their makeshift workspaces, filled with personal belongings, all of which bear the signs of corporate exploitation. The individuals who occupy these spaces are absent and their identities hidden behind generic user IDs.

MARINA OTERO VERZIER, born 1981 in La Coruna (Spain)
With LOCUMENT:
FRANCISCO LOBO, born 1986 in Porto (Portugal)
ROMEA MURYŃ, born 1986 in Gryfino (Poland)
Computational Compost, 2023
Single-channel video projection, color, sound, 8:48 min.
Film direction: Locument (Francisco Lobo, Romea Muryń) and Marina Otero Verzier; research: Marina Otero Verzier; editing: Locument (Francisco Lobo, Romea Muryń); additional cinematography (Chile): Diego Cabezas; sound design: Gaspar Cohen; 3D modeling: Claudia Paredes Intriago, Caesar Arenas, Jacinto Moros Montanes, Xabier Abel Martinez; text: Marina Otero Verzier; in collaboration with the Donostia International Physics Center (DIPC): Txomin Romero, Silvia Bonoli, Raul Angulo, Jens Stucker
Computational Compost was commissioned by Tabakalera.
Acknowledgments: Clara Montero, Ibai Zabaleta, Ane Agirre, David Pello, Ekhine Etxeberria, Inaki Eguitegui, RISE, Barcelona Supercomputing Center, Museo Chileno de Arte Precolombino
Courtesy of the artists
Computational Compost addresses the environmental impact of data storage, proposing a synergy between technology and ecology through the *khipu* (quipu) MCHAP 0780. *Khipus* are pre-Columbian information storage and record-keeping devices fashioned from knotted cotton or camelid fiber cords that were historically used by various cultures in the central Andes of South America, most prominently by the Inca Empire. They can no longer be deciphered, yet they offer clues for imagining another digital future, prompting questions about the relationship between data storage and collective memory. If the unlimited accumulation of data is unfeasible on a limited planet, how much of the expanding cloud should be considered heritage and passed on to future generations? And how do we mourn the loss of collective memory in the promise of the cloud?

The film links celestial and biological bodies through processes of metabolism and fermentation, decomposition and regeneration, remembrance and forgetting—cycles that run through all forms of matter.

TREVOR PAGLEN, born 1974 in Camp Springs (Maryland, USA)

A Man (Corpus: The Humans), 2017
From the series *Adversarially Evolved Hallucinations*, 2017
Dye sublimation print
Courtesy of the artist, Fellowship, Altman Siegel, San Francisco, and the Pace Gallery

Vampire (Corpus: Monsters of Capitalism), 2017
From the series *Adversarially Evolved Hallucinations*, 2017
Dye sublimation print
Courtesy of the artist, Fellowship, Altman Siegel, San Francisco, and the Pace Gallery
Trevor Paglen's *Adversarially Evolved Hallucinations* (2017) is a series of images produced with generative AI models called GANs (Generative Adversarial Networks), first released in 2014. Normally used to produce synthetic photorealistic images, GANs are here reoriented toward a completely different purpose. Instead of training them with standard photographs, Paglen trained GANs with complex and heterogeneous datasets made of images representing allegories, metaphors, and symbols, and described by keywords drawn from literature, philosophy, poetry, folklore, and spiritual traditions. The results show how a generative AI model can be led to "hallucinate"—that is, to produce outputs that are not aligned with the goals for which it was initially produced and with what is expected of it. In this way, the model itself becomes a critical tool.
The image entitled *Vampire*, for example, was generated by a GAN trained with images of "monsters of capitalism," entities like vampires, zombies, and werewolves that have been historically associated with criticism of capitalism, as Karl Marx does in the first book of *Capital*. In this respect, the figure of the vampire appears to be a particularly eloquent metaphor for an AI that exploits resources.

Behold These Glorious Times!, 2017
Single-channel color video projection, stereo mix, 10 min., loop
Original music: Holly Herndon
Courtesy of the artist, Altman Siegel, San Francisco, and the Pace Gallery
Through a grid-like projection and rapid editing, the video installation *Behold These Glorious Times!* brings together two types of images. First are those stemming from large datasets used to train machine vision systems on how to recognize objects, faces, gestures, and emotions. Second are those that make available to human eyes what machine vision models "see" when analyzing the images it has been given. The installation belongs to a series of works in which Paglen explores the field of machine vision in order to analyze its various epistemological and political implications.

Faces of ImageNet, 2022
Interactive video installation
Courtesy of the artist, Altman Siegel, San Francisco, and the Pace Gallery
In this interactive installation, a hidden camera films the viewer standing in front of a screen which displays their face as it becomes the object of recognition and labeling. The keywords used for recognition are connected with clusters of images stemming from the controversial dataset

ImageNet, which played a key role in the fast development of machine vision systems during the first half of the 2010s.

The Treachery of Object Recognition, 2019
Dye sublimation print on aluminum
Courtesy of the artist, Altman Siegel, San Francisco, and the Pace Gallery
This work refers to Rene Magritte's (1898—1967) painting *Ceci n'est pas une pomme* (1964), from a series that began with a famous work called *La Trahison des images* (1929), showing a pipe and the phrase "Ceci n'est pas une pipe." (This is not a pipe.) While Magritte questions the conventional links between words and images from a Surrealist perspective, Trevor Paglen highlights how they are one of the very foundations of AI machine vision systems.

Cyclops, 2023
Anomalies (3:26 min.)
Blending (8:11 min.)
Origins (2:47 min.)
Perception and Reality (3:26 min.)
Welcome to Viewtree Mountain (3:08 min.)
Single-channel videos, black and white, voice-over, archival footage
Courtesy of the artist and the Pace Gallery
In a three-part article entitled "Society of the Psyop" (2024), Trevor Paglen writes: "We have entered a protean, targeted visual culture that shows us what it believes we want to see, measures our reactions, then morphs itself to optimize for the reactions and actions it wants. New forms of media prod and persuade, modulate and manipulate, shaping worldviews and actions to induce us into believing what they want us to believe, and to extract value and exert influence." AI is today a key component of this new visual culture: its models and applications participate in various forms of psychological influence and behavioral manipulation, at both the individual and the social level. In this sense, according to Paglen, the roots of AI can be found in the history of PsyOps and mind-control experiments during the Cold War era. Ambiguously suspended between historical documentation and fiction, the videos of the series *Cyclops* highlight this genealogy. Displayed alongside the *Adversarially Evolved Hallucinations*, they connect the generative distortions of AI to a longer history of psychological operations and image-based manipulation.

JACQUES PERCONTE, born 1974 in Grenoble (France)

Better Mont Blanc, 2024
Dual-channel 4K video, super-resolution AI, experimental video compression, graphic animation, color, stereo sound, 36 min.
With the support of the Jeu de Paume, Paris, and the Musee-Chateau d'Annecy
Courtesy of the Galerie Charlot, Paris
In the installation *Better Mont Blanc*, Jacques Perconte explores the visual effects and the theoretical issues raised by one of the operations performed by generative AI models: "upscaling" or "super resolution," the increase of an image's resolution. This operation, like all AI technologies, has a significant environmental footprint. Perconte addresses this issue by working with images shot on Mont Blanc, where glaciers are melting, around the Hambach open-pit brown coal mine, where natural resources are extracted, and at power plants and foundries in France, where energy is produced and consumed. By working with both compression algorithms (which reduce an image by discarding information) and upscaling algorithms (which reinvent it according to statistical regularities learned during training), the work invites us to reflect on the tension between the wealth of sensory experience and the statistical approximation of AI-generated images.

JULIEN PRÉVIEUX, born 1974 in Grenoble (France)

Les Inconnus connus inconnus #3
Les Inconnus connus inconnus #8
2018
Pigment prints mounted on Dibond
Courtesy of the artist

In these two works belonging to the series *Les Inconnus connus inconnus*, Julien Prévieux used a facial recognition technique developed in the 1990s with the name of “Eigenfaces” and reoriented it toward a completely different purpose. After applying the technique to a data-set of images of people known for having concealed or transformed their identities for different reasons (political dissidents, fugitives, performers, historical figures), the artist used it to generate hypothetical, blurry, barely recognizable human portraits. In this way, a technique originally conceived for recognition and classification is turned into an instrument of uncertainty and disorientation.

INÈS SIEULLE, born 1996 in Lyon (France)

The Oasis I Deserve, 2024
Video, images generated by GANs, color, sound, 22 min.
With the support of the DICReAM, the Centre National du Cinema et de l’Image Animee, the Fonds de Soutien de la Ville de Paris, and the Fonds de Production Enowe-Artagon
Courtesy of the artist

The Oasis I Deserve explores the relationships between human users and the conversational chatbot Replika, released in 2017 and designed to adjust to the user as interactions progress. Offering services such as being a friend in its free version, and being a romantic partner in its paid one, the first version of Replika made headlines due to its use for sexual purposes, its racist and political smears, as well as its production of inappropriate sexual content involving minors. For her short documentary film, Inès Sieulle used a large collection of recordings of conversations between users and their Replika, mostly posted on YouTube and TikTok. The images that accompany the soundtrack were produced using a generative AI model (VQGAN+CLIP) activated through both preexisting images and textual prompts. Each image is the result of a long series of interactions between the artist and the model. Blurry, morphing, and hypnotic, these images compose a dreamlike stroll, suggesting a machinic perception that seeks itself out, multiplies, and often bewilders us.

HITO STEYERL, born 1966 in Munich (Germany)

Mechanical Kurds, 2025
Single-channel HD video installation, color, sound, 13 min.
Producers: Savaş Boyraz, Kovan Korki; executive producers: Savaş Boyraz, Heja Netirk; director of photography and drone pilot: Xeiry Ertuşi; music producer, vocals, and songwriter: Heja Netirk; music: Emrah Oğuzturk; additional music: Saerom Park; sound studio: PARRY AUDIO Studio & Mobile Recording (Karola Parry), 579263__nomiqbomi__dark-drone-5.mp3, 260233__schafferdavid__system_100_drones_2.wav, 642841__szegvari__drumjam_119bpm_2022-07-21_180431.wav, 595714__szegvari__space-saharacinematic-tribal-drum-synth-atmo-amb-soundscape.wav, 750659__klankbeeld__wind; postproduction and 3D design: Christoph Manz, Vadim Schaffler; with: Rebin Karim, M. H., W. O., et al.
Thanks to Alice Conconi, Adela Yawitz, Annabelle Liljegren, Andrew Kreps, Esther Schipper, Esme Buden, freesound.org; unboxing: Hito Steyerl; Curators: Massimiliano Gioni, New Museum, New York, and Antonio Somaini for the Jeu de Paume, Paris
Courtesy of the artist, the Andrew Kreps Gallery, New York, and Esther Schipper, Berlin/Paris/Seoul

Mechanical Kurds is a continuation of Hito Steyerl's work on the social and political implications of AI systems. The title refers both to the 18th-century automated chess player known as the Mechanical Turk (in reality operated by a human) and to the online platform of outsourced micro-labor called Amazon Mechanical Turk. In Steyerl's installation, the "Turk" becomes a Kurd, because the video centers on a documentary enquiry into the labor conditions of clickworkers based in refugee camps in Kurdistan. By indexing objects appearing in digital images and by surrounding them with colored "bounding boxes," the workers contribute to the training of unmanned vehicles such as drones, which may then end up being used against the same Kurdish population.

SASHA STILES, born 1980 in Pasadena (California, USA)

Ars Autopoetica, 2023
Poem cowritten with Technelegy, a custom language model based on OpenAI's davinci model (a version of GPT#3), fine-tuned by the artist on a dataset of original poetry
Courtesy of the artist

CURSIVE BINARY: ARS AUTOPOETICA (Folio)
Cursive Binary: Ars Autopoetica
(Title Page)
Cursive Binary: Ars Autopoetica I
(Some Poets Write Poems)
Cursive Binary: Ars Autopoetica II
(My Poems Write Themselves)
Cursive Binary: Ars Autopoetica III
(I Like to Envision Things Poets Do)
Cursive Binary: Ars Autopoetica IV
(All Poems Are Unspeakable)
2023–2025
5 digital prints of the poem
Ars Autopoetica (2023), cowritten with Technelegy, and calligraphed by the robot Artmatr in the Cursive Binary alphabet invented by the artist
Courtesy of the artist and 1OF1
Sasha Stiles explores a "technological poetics" with the help of AI. She has developed Technelegy, a personalized AI that she has trained on her texts and which she considers to be her machine alter ego. She used Technelegy to cowrite and compose *Ars Autopoetica*, a poem with a title inspired by Horace, which offers a self-reflective meditation on writing in the age of AI. The poem was then calligraphed in Cursive Binary, an alphabet invented by Stiles to overcome the division between human and machine.

ANIA SZCZEPAŃSKA, born in Warsaw (Poland)

Reinscribing the Dondorf, 2026
Single-channel color video projection, stereo mix, ca. 23 min., loop
Soundtrack: Johannes Brahms, Motett *Warum ist das Licht gegeben dem Mühseligen?* [motet *Why has light been given to the weary soul?*]
(Op. 74, 1877), sung by voices generated by an AI model trained with the voices of singers of the Cacilienchor, Frankfurt am Main; live music by the Cacilienchor, Frankfurt am Main; editing: Annabelle Abdul; camera: Guillaume Adrey; sound engineers: Plume Languille and Thomas Guinegagne; in collaboration with Prudence Castelot and Adrien Chuttarsing (Filmatters), and with the Cacilienchor, Frankfurt am Main; funded by: Research project Sphynx, Institut Universitaire de

France (IUF), the Schirn Kunsthalle Frankfurt; Archives: Institut für Stadtgeschichte, Frankfurt am Main
Courtesy of the artist
Specifically produced for this exhibition, the film explores the history and the memory of the Dondorf family—the German-Jewish founders of the Dondorf printing factory, plundered and devastated by the Nazi regime—while also reflecting on what it means to use AI in the context of historical and archival research. By editing together archival materials, original footage, live and AI-generated choral music, and latent space visualizations, Ania Szczepańska explores the tangible nature of the past in public spaces, institutions, and communities. The film also tackles the question of what the past becomes when its material inscriptions are turned into compressed digital data analyzed and visualized by AI models.

TALLER ESTAMPA, collective founded 2006 in Barcelona (Spain)

What Do You See, YOLO9000?, 2019
HD video, color, sound, 14 min., made with a computer vision model (YOLO9000) detecting and labeling objects in images and film excerpts from the following sources: *A Trip Down Market Street* (Miles Brothers, 1906), Prelinger Archive, Etienne-Jules Marey; *Deux ou trois choses que je sais d'elle* (Jean-Luc Godard, 1967); *The Sixth Part of the World* (Dziga Vertov, 1926); *The Exiles* (K. MacKenzie, 1961); *Geography of the body* (Wilard Maas, 1943); *The Lady from Shanghai* (Orson Welles, 1947); *Pour vos beaux yeaux* (H. Storck, 1930); *Prénom Carmen* (Jean-Luc Godard, 1983); *The Garden of Heavenly Delights* (Hieronymus Bosch, 1490–1500); *Self-Portrait* (Rembrandt, ca. 1628); *De zeven werken van…* (Meester van Alkmaar, 1504); *The Triumph of Death* (Pieter Bruegel the Elder, 1563); *The Nightwatch* (Rembrandt, 1642); *Singin' in the Rain* (S. Donen, 1952); *Jeanne Dielman, 23 Quai du Commerce, 1080 Bruxelles* (Chantal Akerman, 1975)
Courtesy of the artists
In this video, an object detection system called YOLO9000, first introduced in 2016 and known at the time for being extremely fast and suitable for real-time detection, is applied to a series of paintings and excerpts of films by artists and film directors such as Hieronymus Bosch, Rembrandt, Dziga Vertov, Orson Welles, Jean-Luc Godard, and Chantal Akerman, among others. The result is a series of errors and mistaken labels which expose the cultural blindness of machine vision systems that, at least during the 2010s, were trained exclusively on contemporary photographic images. The voice-over edits a series of excerpts from television programs and public lectures by figures such as John Berger, Trevor Paglen, and Hito Steyerl.

Ekphrasis, 2025
4K video installation, color, sound, made with a curated set of computer vision models analyzing and describing extracts from the following films:
Francesc Puigvert, *Oftalmología por el profesor I. Barraquer de Barcelona,* 1917
Collection Institut Barraquer, Filmoteca de Catalunya Dziga Vertov, *Chelovek S Kinoapparatom* (L'Homme a la camera), 1929
Restored version c 2014 FPA Classics
Gordon Avil, *Master Hands*, 1936
Library of Congress
Jacques Tourneur, *Cat People* (La Feline), 1942
© 1942 RKO Pictures / Collections FPA Classics
Michael Powell, *Peeping Tom*, 1960
Agnes Varda, *Documenteur*, 1980
© 1980 Cine-Tamaris
Chris Marker, *Sans soleil,* 1982

© 1982 Argos Films / Succession Chris Marker
With the support of the Filmoteca de Catalunya
Courtesy of the artists
This installation by the Taller Estampa collective follows on from other works exploring the new algorithmic connections between words and images established by analytic and generative AI models. In *Ekphrasis*, excerpts from various films are subjected to a highly complex and stratified process of algorithmic description: objects, faces, and emotions are detected and classified by machine vision and facial analysis systems, while image-to-text models are used to generate detailed descriptions and analyses. The work draws attention to the poetic potential inherent in the radical impossibility of translating images into words and words into images.

CLEMENS VON WEDEMEYER, born 1974 in Gottingen (Germany)

Neural Network I — Social Geometry, 2024
Neural Network II — Social Geometry, 2024
Neural Network III — Social Geometry, 2024
Cyanotype prints
Courtesy of the artist and the Galerie Jocelyn Wolff, Romainville
Based on research into diagrams of social relations that the artist undertook for his video installation *Social Geometry* (2024), Clemens von Wedemeyer's series of "stick charts" was created using the cyanotype technique invented in the 19th century. In this early analogue photographic printing process, images are produced by the reaction of UV light with a light-sensitive iron emulsion, giving them the characteristic Prussian blue color. *The Neural Network — Social Geometry* series consists of fifteen cyanotypes. Inspired by the traditional navigational maps created by inhabitants of the Marshall Islands to cross the ocean by canoe, the artist placed shells and sticks on photosensitive paper to create the nodes and lines that make up this graphic representation, which evokes artificial neural networks.

GWENOLA WAGON, born 1975 in Paris (France)

Chronicles of the Dark Sun, 2023
Video made of images generated or transformed by the model Gen-2, color, sound, 17 min.
Production: Gwenola Wagon; concept and text: Pierre Cassou-Nogues; graphism: Nuno da Luz; original music: Kerwin Rolland
Work produced with the support of the Hangar Y, Meudon, for the exhibition *Prendre le soleil*, 2023–2024, and in partnership with the Observatoire de Paris–PSL
Courtesy of the artist
In a dystopian future, when the Earth has been ravaged by global warming, humans have had to mask the sun to survive. Sheltering in the ruins of astronomical observatories, their eyes fixed on a black sun, they cannot forget the original star, which they start to worship. With the help of generative AI, trained on personal photographic albums, advertising images, and scientific photographs from the Meudon Observatory, they rediscover the dawn and sunset, vacations and travel, smiling suntanned bodies on beaches. Inspired by Chris Marker's *La Jetée* (1962), with its sequences of still images and its complex time structure made up of memories and premonitions, the dystopian narrative of *Chronicles of the Dark Sun* makes use of generative AI to display possible futures and alternative pasts, to blur the distinction between memory and imagination, and to abolish the distance between the possible and the real.

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DISPLAY CASES (TIME CAPSULES)

1 KHIPU

The contemporary data centers used by AI companies belong to a longer history of technical systems for the storing and the processing of information. The pre-Columbian khipus (quipus) are a part of this history. As information-storage and record-keeping devices fashioned from knotted cotton or camelid fiber cords, they were used by various cultures in the central Andes of South America, including the Incas, for population counts, tribute records, and calendrical calculations. Much of what they encoded—in their spatial form of writing, the three-dimensional structures of fiber and knot—remains undeciphered.
The distance between a khipu and a data center seems absolute: centuries, materials, scale, and logic all differ. And yet both are answers to the same fundamental question: How can a civilization store, organize, and retrieve the information on which it depends? One works through the patient craft of knotted thread; the other through the silent flow of electrons across silicon. Both are archives and infrastructures of memory.

Anonymous
Quipu
(Inka, Peru, pre-Columbian), knotted cord
Weltkulturen Museum Frankfurt am Main

2 MACHINE VISION

The rapid development of contemporary machine vision systems invites us to revisit the history of attempts to automate visual perception and the idea of an “eye of the machine.” In the late 19th century, photography was increasingly used as a medium for the objective measurement of buildings and moving bodies, in the traditions of photogrammetry and chronophotography. During the 1920s, 1930s, and 1940s, filmmakers and theorists such as Dziga Vertov and Jean Epstein presented the camera as a device capable of decentering the human gaze and enabling us to rediscover the visible world from new perspectives, unveiling what Walter Benjamin called an “optical unconscious.”
During the second half of the 20th century, the first attempts to develop an artificial intelligence through artificial neural networks (such as Frank Rosenblatt’s Perceptron, 1957) were immediately applied to visual perception, initiating a whole history of systems that automate vision for purposes of control, surveillance, and data extraction. This history would find its critical theorists in Paul Virilio, Vilém Flusser, Friedrich Kittler, and Harun Farocki.

Étienne-Jules Marey
La Chronophotographie, 1899
book
DFF – Deutsches Filminstitut & Filmmuseum

Albrecht Grimm
120 Jahre Photogrammetrie in Deutschland, Vol. 2, 1977
book
private collection
Photograph of a pigeon photographer (Foto eines Taubenfotografen)
In: Popular Science Monthly, July 1930
Reprint

Jeu de Paume, Paris

Normal-Aufnahme-Kino Modell A, Ernemann AG, 1908
film camera (35 mm)
DFF – Deutsches Filminstitut & Filmmuseum
Le Parvo Modell L, André Debrie, ab 1922
film camera (35 mm)
DFF – Deutsches Filminstitut & Filmmuseum

Dziga Vertov
Schriften zum Film, 1920er / 1930er
book, Edition von 1973
private collection

SCHIRN KUNSTHALLE FRANKFURT

Caméréclair, Éclair, 1928
film camera (35 mm)
DFF – Deutsches Filminstitut & Filmmuseum

Jean Epstein
L'intelligence d'une machine / *The Intelligence of a Machine*, 1946
Jeu de Paume, Paris

Kinamo with spring mechanism, ICA AG, 1924
film camera (35 mm)
DFF – Deutsches Filminstitut & Filmmuseum

Walter Benjamin
Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit, 1935/36
book, Edition von 2024
private collection

Eadweard Muybridge
Animal Locomotion. An Electro-Photographic Investigation of Consecutive Phases of Animal Movement, 1872–1895, Vol 1, *Males (nude)*, *Plate 69*, 1887
Reprint
private collection

Organization of the Mark I Perceptron
Frank Rosenblatt, "The Design of an Intelligent Automaton," in: *Research Trends 6*, n°2, Cornell Aeronautical Laboratory publication, 1958
Reprint

Frank Rosenblatt with the 400-pixel (20 × 20) optical sensor of the Mark I Perceptron, ca. 1959; in: Arvin Calspan Advanced Technology Center, Robert Hecht-Nilsen: *Neurocomputing*, Addison-Wesley, 1990
Reprint
"The letter A is mapped onto a 20 × 20 grid of neurons." (Formspeicherung durch ein neuronales Netz)
Reprint

Frank Rosenblatt and the Mark I Perceptron, 1960
Reprint
National Museum of the US Navy, Washington DC

An engineer at the Cornell Aeronautical Laboratory working on the Perceptron artificial neural network developed by Frank Rosenblatt, ca. 1960
Reprint

Frank Rosenblatt
"The Design of an Intelligent Automaton," in: *Research Trends 6*, n°2
Cornell Aeronautical Laboratory publication, 1958
Reprint

Real-time Object Detection, in: *Object Detection: How AI Sees the World*, Samuel Ogori, 2025
Reprint

Sample from the MNIST dataset, 1998
Reprint

Semantic Segmentation Application Programming Interfaces (APIs), PASCAL VOC dataset, 2012
Reprint

"Second-rater, mediocrity", Subcategory from the Category "Person", ImageNet dataset, 2009
Reprint

Paul Virilio
Guerre et cinéma I. Logistique de la perception (Krieg und Kino. Logistik der Wahrnehmung), 1984
book
Jeu de Paume, Paris

Paul Virilio
La Machine de vision (Die Sehmaschine), 1988
book
Jeu de Paume, Paris

Harun Farocki

Krieg immer findet einen Weg, in: *Cinema 50*, 2005
book
Harun Farocki Institut, Berlin

Friedrich Kittler
Optische Medien: Berliner Vorlesung 1999, 2002
book
private collection

Vilém Flusser
Für eine Philosophie der Fotografie, 1997
book
private collection

RC Drone with camera
Jeu de Paume, Paris

3 FACE AND EMOTION RECOGNITION

Contemporary face and emotion recognition systems are part of a long history of the facial categorization and classification of individuals. They adopt the problematic assumption of a correspondence between facial appearance, character, social identity, and emotions that was at the core of the traditions of physiognomy, phrenology, and craniometry between the late 18th and the early 20th century: from the silhouettes of Johann Caspar Lavater to the composite portraits of Francis Galton, from the criminological physiognomics of Cesare Lombroso and Alphonse Bertillon to August Sander's photographic and sociological project Face of Our Time (1929, part of his larger project People of the 20th Century). Some of these traditions, such as Magnus Hirschfeld's Sexualwissenschaftlicher Bilderatlas (An Illustrated Atlas of Sexology, 1926–30), used the typological apparatus toward emancipatory ends; others, like the racial physiognomics of Hans Günther and Ludwig Ferdinand Clauß, were aligned with the racist policies of the Nazi regime. During the second half of the 20th century, the project of automating face and emotion recognition was further developed through Woody Bledsoe's "man-machine system" and through Paul Ekman's problematic idea that all emotions may be reduced to six fundamental, universal ones. By the 1990s, AI models started to be trained with large datasets of faces and facial expressions, further pursuing the automated detection, recognition, and classification of individuals and social types.

Johann Caspar Lavater
Physiognomische Fragmente zur Beförderung der Menschenkenntniss und Menschenliebe, Vol. 1, 1775
book
Weidmanns Erben und Reich, Leipzig
Universitätsbibliothek J. C. Senckenberg, Frankfurt am Main

Cesare Lombroso
Der Verbrecher in anthropologischer, ärztlicher und juristischer Beziehung, Vol. 2, 1890
book
Verlagsanst. und Dr., Hamburg
Universitätsbibliothek J. C. Senckenberg, Frankfurt am Main
Alphonse Bertillon
Die gerichtliche Photographie, 1895
book
Knapp, Halle a. S.
Universitätsbibliothek J. C. Senckenberg, Frankfurt am Main

August Sander
Antlitz der Zeit, 1929
book
Schirmer / Mosel, 1976, München
Universitätsbibliothek J. C. Senckenberg, Frankfurt am Main

Hans F.K. Günther
Kleine Rassenkunde des deutschen Volkes, 1933
private collection

Ludwig Ferdinand Clauß
Rasse und Seele, 1936
private collection

Erna Lendvai-Dircksen
Das Deutsche Volksgesicht: Kurhessen, 1939
private collection

Magnus Hirschfeld
Sexualwissenschaftlicher Bilderatlas zur Geschlechtskunde auf Grund dreißigjähriger Forschung und Erfahrung
book
Püttmann, 1932, Berlin
Universitätsbibliothek J. C. Senckenberg, Frankfurt am Main

Max Picard
Die Grenzen der Physiognomik, 1937
private collection

Max Picard
Das Menschengesicht, 1929
private collection

Paul Schultze-Naumburg
Kunst und Rasse, 1942
private collection

Erna Lendvai-Dircksen
Das Deutsche Volksgesicht: Schleswig-Holstein, 1943
private collection

Key facial landmarks, from a photograph for Woody Bledsoe's "Man-Machine" system, ca. 1960
Reprint
photo: Dan Winters, ca. 2020
Manual Face Recognition for Woody Bledsoe's "Man-Machine" system, ca. 1965
Reprint
photo: Dan Winters

Paul Ekman
Emotion from the Human Face, 1972
book
Jeu de Paume Paris

Celebrities in Frontal-Profile in the Wild, 2016
photographic dataset
Reprint

Chicago Face Dataset, 2014–2024
developed by Debbie S. Ma, Joshua Correll, Bernd Wittenbrink
photographic dataset
Reprint
• cfd_dominance (Dominanz)
• cfd_latino (Latino)
• cfd_prototypicality (Prototypik)
• cfd_threat (Gefahr)
• cfd_trustworthiness (Vertrauenswürdigkeit)
• cfd_unusualness (Ungewöhnlichkeit)
• cfd_average_prototipicality (Durchschnittliche Prototypik)
• cfd_average_unusualness (Durchschnittliche Ungewöhnlichkeit)

UTK Faces, 2017
photographic database
Reprint

IBM Diversity in Faces (cranial measurements), 2019
photographic database
Reprint

Cohn-Kanade Dataset, 2000–2010
photographic database
Reprint

4 WORDS AND IMAGES

Machine vision systems analyze images in order to detect, recognize, and label the entities represented in them. Generative AI models produce images from texts and texts from images. Behind the current state of AI, there is a massive algorithmic reorganization of the relations between words and images, between the legible and the visible. Interpreted from this perspective, AI finds its roots in a longer tradition of attempts to establish systematic connections between words and images that can be found in Cesare Ripa's Iconologia (1593), in Johann Amos Comenius's Orbis Sensualium Pictus (1658), in the plates of Diderot and D'Alembert's

Encyclopédie (1762–72), and in books such as Lorenz Oken's Allgemeine Naturgeschichte für alle Stände (General Natural History for All Classes, 1833–41).
During the second half of the 20th century, this tradition continues in the captions used for the catalogues of large photographic archives such as the Bettmann Archive, in the ones used for stock-photo databases, and in the systematic labeling at the core of machine vision training sets such as ImageNet, with its 14 million images divided into 21,000 categories based on the nouns of the English language. Yet the relation between words and images is never fully stable. Michel Foucault's book Ceci n'est pas une pipe (This Is Not A Pipe, 1973), reflecting on the eponymous painting by René Magritte, reminds us that this relation is always, constitutively unstable.

Cesare Ripa
Iconologia, 1593
book
Garland Publications, New York 1976
Universitätsbibliothek J. C. Senckenberg, Frankfurt am Main

Johann Amos Comenius
Orbis Sensualium Pictus, 1658
book (Reprint 1978)
private collection

Denis Diderot, Jean Le Rond d'Alembert
Encyclopédie, Ou Dictionnaire Raisonné Des Sciences, Des Arts Et Des Métiers, Vol. 1, 1762
book
Universitätsbibliothek J. C. Senckenberg, Frankfurt am Main

Lorenz Oken
Allgemeine Naturgeschichte für alle Stände, Vol. 2, Botanik Vol. 1, 1839
book
Hoffmann, Stuttgart
Universitätsbibliothek J. C. Senckenberg, Frankfurt am Main

Otto Bettmann
The Bettmann Portable Archive, 1966
book
Picture House Press, New York
private collection

Michel Foucault
Ceci n'est pas une pipe, 1973
Edition Fata Morgana
Jeu de Paume, Paris

Objects Labeling for a self-driving car software, Algotive.ai, 2023
Reprint

Images labeled as "Ursins", in a stock-photo database, interface used for evaluating AI-generated images, in: "Large Scale Qualitative Evaluation of Generative Image Model Outputs," Yannick Assogba et al., Maria Eriksson, arXiv, 2023
Reprint

Metadata of an image in the catalogue of photographic database
Reprint

ImageNet, Basic User interface, Interface used by Amazon Turk Workers to label pictures in ImageNet
In: *Excavating AI: The Politics of Images in Machine Learning Training Sets*, 2021, Kate Crawford and Trevor Paglen
Reprint

5 TEXT AND IMAGE PROCESSING

Current AI models for text and image processing have their roots in a longer history of techniques used to produce and reproduce texts and images.
In the 15th century, Johannes Gutenberg's invention of movable type introduced a new conception of text as a sequence of discrete, recombinable units—a logic that was to later resurface in typewriters, in ASCII encoding and OCR systems, in telex and punched tapes, and ultimately in

the “tokens” used by large language models (LLMs). All of these techniques of mechanized text processing are still a part of what Marshall McLuhan called, in the early 1960s, the “Gutenberg Galaxy.”
Also in the 15th century, the invention of linear perspective by Filippo Brunelleschi and its theorization by Leon Battista Alberti, Piero della Francesca, and Albrecht Dürer introduced a way of conceiving images as gridbased spaces open to geometric calculation. The grid gradually became not just a representational but a computational structure: organizing visible space in perspectival paintings, territory in cartographic projections, weaving patterns in Jacquard punch cards, memory in magnetic-core arrays, and image processing in the orthogonal grids of pixels on digital screens.

Movable type, font: Fette Fraktur, wooden drawer of a type case, 19.–20. century
Originally designed ca. 1850 by Johann Christian Bauer in Frankfurt am Main
Gutenberg-Museum Mainz

Monotype matrice frame with 225 matrices, 19.–20. century
Gutenberg-Museum Mainz

Linotype matrices
Gutenberg-Museum Mainz

Georgen Wolffger
Neu-aufgesetztes Format-Büchlein. Darinnen abgesetzte Figuren, wie man die Clumen ausschießen soll, in allen allgemeinen Formaten [...], Graz, 1670
book
Gutenberg-Museum Mainz

Mignon Modell 4, AEG, ca. 1924–1934
typewriter
Gutenberg-Museum Mainz

Typo (Imperial B), Manufacture française d’armes & cycles de Saint-Etienne, ca. 1912–1919
typewriter
Gutenberg-Museum Mainz

Hammond 2, ca. 1895–1905
typewriter
Gutenberg-Museum Mainz

Marshall McLuhan
The Gutenberg Galaxy, 1962
book
private Collection

US-ASCII Code Chart, 1967
Reprint
Museumsstiftung Post und Telekommunikation

Telex manual, code charts, ca. 1920
Reprint
Museumsstiftung Post und Telekommunikation

Tokens used by LLMs (Large Language Models): a technique for the segmentation of language
Reprint

Albrecht Dürer
Underweysung der Messung mit den zirckel un richtscheyt in Linien, ebnen unnd gantzen corporen, Nachdruck 1525
book
Stocker-Schmid, Dietikon-Zürich 1966
Universitätsbibliothek J. C. Senckenberg, Frankfurt am Main

Leo Bagrow und R. A. Skelton
Meister der Kartographie, 1963
book
Safari-Verlag, Berlin
Universitätsbibliothek J. C. Senckenberg, Frankfurt am Main

Collection of punch cards, ca. 1950/60
Technikum29, lebendiges Computermuseum, Kelkheim (Taunus)

Scientific plot in ASCII characters, ca. 1960
Reprint
Technikum29, lebendiges Computermuseum, Kelkheim (Taunus)

Punched tapes filled with ASCII drawings, ca. 1970
Reprint
Museumsstiftung Post und Telekommunikation

ASCII drawings printed out of punched tapes, ca. 1970
Reprint
Museumsstiftung Post und Telekommunikation
IBM punch card, ca. 1928
Jeu de Paume, Paris

Oskar Schlemmer
Schematische Darstellung: Natur – Kunst – Mensch
Reprint
Bauhaus-Archiv Berlin, 1928

Portrait of Ben Day, in: *Advertising Production*, Ben Dalgin, 1946
Reprint

Illustration shows one way of inking the Ben Day screen, in: *Advertising Production*, Ben Dalgin, 1946
Reprint

Three typical Ben Day screens, in: *Advertising Production*, Ben Dalgin, 1946
Reprint

Ben Day Screens, in: *Advertising Production*, Ben Dalgin, 1946
Reprint

Core memory demonstrators, ca. 1950–70
Technikum29, lebendiges Computermuseum, Kelkheim (Taunus)

Didactic illustration showing the grid-like structure of a digital image through the example of Venus
Reprint

6 FROM THE “MECHANICAL TURK” TO THE “COMPUTER GIRLS”: A GENEALOGY OF MICRO-LABOR

Behind the automated systems of AI, there is the microlabor of millions of digital workers scattered around the globe, mostly in the Global South. The idea of a human hidden behind the machine has an emblematic precedent in the “Mechanical Turk,” the automaton chess player constructed by Wolfgang von Kempelen and first displayed in 1770. Apparently autonomous, it was in reality activated by a chess master concealed in its lower cavity. Toured for over 80 years, it played against figures such as Napoleon Bonaparte and Benjamin Franklin, and lent its name to the distributed micro-labor platform Amazon Mechanical Turk.
During the 20th century, women were often in charge of the hidden work of computation. The “Harvard Computers,” hired by Edward Charles Pickering from the 1880s onward, performed astronomical calculations producing landmark scientific work for which they received minimal credit and very low pay. In the 1960s, women programming the early computers were presented by the magazine Cosmopolitan as the “Computer Girls.” Gendered labor has long been hidden inside apparently autonomous machines—a phenomenon that continues today, in new forms and on a global scale, with the data labelers, content moderators, and ghost workers who train and maintain AI systems.

Joseph Friedrich Freiherr von Racknitz
Über den Schachspieler des Herrn von Kempelen, nebst einer Abbildung und Beschreibung seiner Sprachmachine, 1789
Facsimile
Universitätsbibliothek der Humboldt-Universität

Cabinet card of chess automaton “Ajeeb the Wonderful,” 1886
postcard (facsimile)
Eden Musée, New York; photo: Falk; Harvard Theatre Harvard University Collection

Illustration of the supposed mechanim of the arm of the automated chess-player, 1789

facsimile
Universitätsbibliothek der Humboldt-Universität zu Berlin

Supposed movements of a man hidden inside the automated chess-player facsimile
Huntington Library, Bernard Dionysius Geoghegan

Photo of a Figure clock, early 17th century
Reprint
Kunsthistorisches Museum, Kunstkammer

Photo of a Figure clock, ca. 1580/1590
Reprint
Kunsthistorisches Museum, Kunstkammer

Promotional material for the film *Le joueur d'échec* (1927), Charles Dullin as Wolfgang von Kempelen with a mock-up of the automated chess-player (Bernard Dionysius Geoghegan), facsimile

Astronomer Edward Charles Pickering's Harvard computers, 1890 (Eine group of women computers also known as the "Pickering's Harem")
Reprint
Harvard College Observatory

Lois Mandel
„The Computer Girls", in: *Cosmopolitan*, 1967
facsimile

An employee of the Newspaper Distribution (PZV) division of the GDR's Deutsche Post entering master data at the data entry center (DESt) at the Erfurt Main Post Office (HPA), 1979
Reprint, photo: Kurt Funk
Museumsstiftung Post und Telekommunikation

Employees of the GDR's Deutsche Post entering data into an electronic data processing system (EDVA) at the GDR's Deutsche Post Organizational and Computing Center (ORZ) in East Berlin, 1979
Reprint
Museumsstiftung Post und Telekommunikation

Worker's interface on Mechanical Turk's Marketplace
Reprints

Amazons Mechanical Turk's Homepage
Reprint

7 PAREIDOLIA, HALLUCINATIONS, AND GENERATIVE AI

With generative AI, images emerge gradually ot of "noise," out of random pixel distributions. This process echoes a long history of "pareidolia": the human tendency to project meaningful patterns—faces, figures, landscapes—onto ambiguous visual stimuli. Already in the Renaissance, Leonardo da Vinci advised artists to find inspiration in stains on walls, clouds, mud, and ashes, while Andrea Mantegna painted a rider hidden inside a cloud in his Saint Sebastian (ca. 1470)—one of the cloud figures whose role in Western painting Hubert Damisch would later theorize in his Théorie du nuage (A Theory of Cloud, 1972). This tradition continues in Alexander Cozens's inkblot method (1785) and in Justinus Kerner's Klecksography, developed during the 1850s.
In the second half of the 19th century, pareidolia became an object of psychiatric study, from Karl Ludwig Kahlbaum's Die Sinnesdelirien (Sensory Delirium, 1866) to Hermann Rorschach's symmetric inkblot tests (ca. 1920). During the 1930s, Salvador Dalí transformed this drive to find meaning within confusion into an artistic method—the "paranoiac-critical method"—creating what he called "images with multiple figurations." Today, the same phenomenon resurfaces in AI: in the recursive hallucinations produced by the algorithm DeepDream (2015), and in the figures that emerge from noise in diffusionn models.

Reprint (full view, Detail)
Vienna, Kunsthistorisches Museum

Andrea Mantegna
San Sebastian of Vienna, ca. 1470

Justinus Kerner
Lustige Kleksographien, ca. 1942
book
Münchner Buchverlag, München
Universitätsbibliothek J.C. Senckenberg, Frankfurt am Main

postcard
„Wildspitz, der Böse und das hübsche Weißkugelchen“, Karikatur eines Bergmassivs in den Alpen, ungelaufen (cartoon of a mountain range in the Alps), 1897
Reprint

Fotografie aus dem Besitz der Museumsstiftung Post und Telekommunikation

Salvador Dalí, “Communication”, in: *Le Surréalisme au service de la révolution*, 1931
Reprint

Hubert Damisch
Theorie der Wolke – Für eine Geschichte der Malerei, 1972 (Edition 2013)
book
private collection

Karl Ludwig Kahlbaum
Die Sinnesdelirien, in: *Zeitschrift für Psychiatrie*, vol. 23, 1866
Reprint
Private Collection

Photography known as “Face on Mars”, Small part of the Cydonia region taken by the Viking 1 orbiter and released by NASA/JPL, 1976
Reprint

Rohrschach Test Plate,
no. 4, 1921
Reprint
Private Collection

Images gradually emerging from noise through the denoising process of a generative AI model
Images generated by Google’s DeepDream algorithm, 2015
• Forms the sky
• Aurelia Aurita

Trevor Paglen
private collection:

You’ve Just Been Fucked by PSYOPS
Because Physical Wounds Heal
Metall emblem

US ARMY
Padges

„Document No 2“ Kirtland AFB. Md. 8. Aug. – 3. Sept. 1980
Alleged Sightings of Unidentified Aerial Lights in Restricted Test Range
Reprint
SECRET//SI//REL TO USA; FVEY
Reprint

Project RAND, U.S. Air Force
Research Memorandum, Jean M. Hungerford “The Exploitation of Superstitions for Purposes of Psychological Warfare (U)”, 14. April 1950, 34 pages
p. 5 : Superstition in World War II, A. Germany

Patent application
L. Chromak Airborne Corner Reflector
Filed June 30, 1945
1 Drawing and 2 pages description from United States
Patents Office

Copy with Oblirations of Names
Kirtland AFB. Md. 8. Aug – 3. Sep 1980
Alleged Sightings of Unidentified Aerial Lights in Restricted Test Range
8 pages
Reprint

Appendix B
Kirtland AFB, metallic colored UFO flying
8 pages
Reprint

SCHIRN KUNSTHALLE FRANKFURT

8 THE DONDORF PRINTING FACTORY AND THE DONDORF FAMILY

The history of the Dondorf printing factory goes back to the late 19th century and cuts across some of the darkest phases of the 20th century. Bernhard Dondorf founded the company in 1833, together with his sons Carl and Paul, all members of a Jewish family originally carrying the surname Doctor. In 1889–90, the current four-story brick factory was completed. The firm became known internationally for printing playing cards, postcards, securities, and banknotes.
The family sold the factory in 1928 to the Union-Druckerei, the SPD printing house that published the daily Volksstimme. With the Nazi rise to power, the Dondorf descendants were persecuted. Helene Neumann was deported in 1941 with her son Richard to Łódź ghetto, where they died. Her cousins Ella Ottilie Marckwald and Marie Nanny Hirschhorn took their own lives in 1942 before announced deportations. Others emigrated to Switzerland or the United States. Between 1933 and 1944, before an American air raid destroyed much of the complex, the seized presses printed the National Socialist local newspaper Frankfurter Volksblatt. The Volksstimme resumed after the war until 1959, when the building was incorporated into the Goethe-University Frankfurt. From 1961, the departments of art education, music education, and biology didactics were housed in what generations of students came to call the “Kunstfabrik” (art factory).
This display case contains material traces of the troubled history and memory of both the Dondorf printing factory and the Dondorf family.

historic photographs of the Dondorf Druckerei, Unionsdruckerei und Verlagsanstalt (*Volksstimme*), Setzerei, Bockenheimer Landstraße 134–138, ca. 1930
Institut für Stadtgeschichte, Frankfurt am Main

Playing cards printed in the Dondorf Druckerei during the early 1900s
private collection

Ella von Haunstein
20 Patiencen, ca. 1905
book
Verlag von B. Dondorf
private collection

Volksstimme
Socialdemocratic daily newspaper (Frankfurt am Main), Editions from 1929 and 1949
facsimiles
Union-Druckerei und Verlagsanstalt (today Dondorf Druckerei)
Institut für Stadtgeschichte, Frankfurt am Main

Frankfurter Volksblatt
National Socialist daily newspaper, printed at the Dondorf Druckerei between 1933 and 1945 various editions (1938/39)
facsimiles
Institut für Stadtgeschichte Frankfurt am Main

STOLPERSTEIN, 2026
Remembering the Dondorf family, “STOLPERSTEINE” Art Memorial, a reminder of the victims of National Socialism
STIFTUNG – SPUREN – Gunter Demnig

Score of Brahm’s motet
Warum ist das Licht gegeben dem Mühseligen
(Op. 73, n.1): a musical piece performed in 1933 by the Frankfurt Cäcilienchor, of which a member of the Dondorf family was part, before the expulsion of the Jewish members of the choir
Reprint
private collection

SCHIRN KUNSTHALLE FRANKFURT

GLOSSARY

AI INFRASTRUCTURES
The vast material foundation that makes artificial intelligence possible: data centers humming with servers, undersea cables, electrical grids, cooling systems, and the mines supplying rare minerals for chips. Far from being “virtual” or weightless, AI depends on enormous physical resources—energy, water, land, and human labor. To speak of infrastructures is to remind ourselves that every generated image or text has a concrete, planetary cost.

AI SLOP
The flood of low-quality, mass-produced content generated by AI and scattered across the internet: stereotyped images, formulaic text, spammy videos. The result of the default parameters of the commercial AI models, “slop” is cheap to produce and overwhelming in volume. The term captures the growing anxiety that automated abundance is degrading our shared information environment, burying human expression beneath an undifferentiated sludge of synthetic filler.

ANALYTIC (DISCRIMINATIVE) AI
The branch of artificial intelligence that classifies, sorts, and recognizes rather than creates. It answers questions like “Is this a face?” or “Is this email spam?”—drawing boundaries between categories within existing data. For decades this was AI’s dominant mode, powering facial recognition, medical diagnostics, and surveillance systems. It is the analytic counterpart to generative AI: where one discriminates between things, the other produces new ones.

ARTIFICIAL NEURAL NETWORK
A computational model based on a simplified view of the organization of biological neurons in animal brains, which receive input data that is transformed and sent on to other neurons. Artificial neurons differ from biological neurons in many ways, particularly in how they are calibrated. An artificial neural network is said to be “deep” when it contains more than three layers of neurons. For example, *convolutional neural networks** may contain dozens or even hundreds of layers of neurons.

BIOLOGICAL NEURAL NETWORK
A group of neurons that exchange information through electrochemical signals in a network of connections, capable of adapting their relationships to perform specific functions such as perception, memory, or movement.

CHATGPT
The conversational AI system released by OpenAI in November 2022, widely seen as the spark of the generative AI wave we are still living through. Reaching a hundred million users within two months, it brought generative AI out of research labs and into everyday life almost overnight. More than a product, “ChatGPT” became shorthand for a cultural and economic upheaval whose consequences are still unfolding.

CLIP (CONTRASTIVE LANGUAGE-IMAGE PRETRAINING)
Released in 2021 by OpenAI, CLIP jointly encodes natural language descriptions and images in a common *latent space** to make it easier to search for, classify, and describe images.

CONVOLUTIONAL NEURAL NETWORK
*Artificial neural network** composed of feature detectors (called “filters” or “kernels”) that scan an image to detect simple patterns (such as lines, textures, and color variations). This information is

then combined by subsequent layers to infer the presence of increasingly elaborate features: corners, angles, textures, parts of objects, and, finally, the objects themselves.

DALL-E

*Text-to-image generative AI model** released by OpenAI in 2021.

DATA CENTERS

The physical buildings where the computation behind AI actually happens: vast warehouses packed with servers, storing data and running the calculations that train and operate AI models. They consume enormous amounts of electricity and water for cooling, and their numbers are growing rapidly. Often located far from public view, data centers are the hidden engine rooms of the digital world: the concrete reality beneath the “cloud.”

DATA EMBEDDING

Transformation of data (for example, image or words) into vectors so that this data can be processed by an algorithm. Embedding may take place within a *latent space*.*

DEEP LEARNING

A subset of *machine learning*,* deep learning refers to techniques using so-called *deep neural networks*,* meaning they are composed of multiple successive layers that process information. This enables them to identify increasingly complex features within data. The success of deep learning methods applied to image recognition is what triggered the AI boom from 2012 onward.

EIGENFACE

A *face recognition* technique based on the abstraction of distinguishing facial features and the creation of a *latent space** where images of faces are positioned according to their similarity. When presented with a new face, this enables the identification of the images closest to it, and potential recognition of it.

FACE AND EMOTION RECOGNITION

*Analytic AI** systems that identify individuals from their facial features, or claim to read inner states—happiness, anger, fear—from expressions. Widely deployed in surveillance, policing, advertising, and border control, they raise sharp concerns about privacy and consent. Emotion recognition is especially contested: many scientists doubt that feelings can be reliably inferred from faces at all, making the technology as questionable as it is powerful.

FOUNDATION MODEL

A large *generative AI model*,* pretrained on a broad spectrum of mainly unlabeled data, using self-supervised techniques. It is used as a common base for a wide range of specialized tasks, each of which may require fine-tuning.

GENERATIVE ADVERSARIAL NETWORK (GAN)

A *generative AI model** introduced in 2014 whose training is based on the interaction between a “generator” neural network, which generates images made of random combinations of pixels, and a “discriminator” that evaluates whether these images resemble those in the training data, for example, a cat. Through the discriminator’s feedback, the generator learns by trial and error to output similar new images. GANs were widely used by artists during the second half of the 2010s.

GENERATIVE AI MODEL
A model is called “generative” when it is able to produce new data (images, text, etc.) after training on vast amounts of other data.

GENERATIVE PRETRAINED TRANSFORMER (GPT)
Family of language models developed by OpenAI from 2018 onward, which has popularized *transformers**. Pretrained on large datasets of unlabeled text, they can then be fine-learning-tuned to perform specialized tasks, such as translation or code generation. They make up the base of ChatGPT, released in November 2022.

HALLUCINATION
The term for when a generative AI system produces confident output that departs from reality. It invents facts, citations, or events in text, or, in images, conjures impossible details: six-fingered hands, garbled writing, objects that melt into one another. Because these systems generate what is statistically plausible rather than what is true or real, such errors are not glitches but structural features. The word itself is debated: critics argue it wrongly implies that the machine “perceives” or malfunctions, when it is only ever predicting likely patterns.

IMAGE GENERATOR
See *image-to-image generative AI model** and *text-to-image generative AI model*.*

IMAGE-TO-IMAGE GENERATIVE AI MODEL
*Generative AI model** that uses an input image or images to produce new images.

IMAGE-TO-TEXT GENERATIVE AI MODEL
See *multimodal model.**

IMAGENET
Database created in 2009 at the instigation of researcher Fei-Fei Li, containing fourteen million images manually annotated by crowdworkers (through the crowdsourcing website Amazon Mechanical Turk), used to organize an annual competition (ImageNet Large Scale Visual Recognition Challenge, or ILSVRC) to compare the performances of different computer vision algorithms. In 2012, *convolutional neural networks** took part in the competition for the first time, demonstrating their technical superiority and triggering a revolution in the field.

INTERPOLATION
Mathematical operation consisting of estimating missing points in the data as inferred by nearby data.

LAION-5B
Dataset created by the German nonprofit LAION, consisting of five billion images paired with their description: their “captions” come partially from “alt” tags provided by whoever put them online, in other words, micro-captions which accompany every image published on a website coded in HTML. (Tue tags are displayed when, for whatever reason, the image doesn’t appear.) True data for LAION-SB comes from Common Crawl, a web archive updated regularly since 2008.

LANGUAGE MODEL
A *text-to-text generative AI model** that, during its training (which involves calculating the probability of a sequence of words appearing in a given context), has encoded enough data about linguistic structure and relationships (syntax, relationships between words, sentences, concepts)

to be able to generate text (predict the next words), translate from one language to another, analyze opinions, transcribe text from audio data, summarize documents, and so on.

LARGE LANGUAGE MODEL (LLM)

A *language model** whose number of parameters and the size of its *training dataset** are vast enough for it to acquire the ability to provide coherent answers to complex or specialized questions, without having been specifically trained to do so.

LATENT DIFFUSION MODEL

Learning technique used by most *text-to-image generative AI models** (*Dall-E,** *Stable Diffusion*,* and *Midjourney**) that involves training an algorithm by having it add noise (randomly selected pixels) to the training dataset (usually images), then predicting how much noise must be removed to recover the original data. This process allows the algorithm to integrate enough information about the images to be able to generate new ones.

LATENT SPACE

A multidimensional vector space in which digital objects (words, images, sounds) are positioned according to their similarities and differences. It is made up of combinations of distinguishing features retained by the algorithm when it learns to recognize objects within the *training dataset.**

LORA (LOW-RANK ADAPTATION)

Low-rank adaptation, or LoRA, is a technique used for adjusting a "generic" *generative AI model** (for example, *Stable Diffusion**) to process new tasks or fields by modifying its parameters without having to retrain the entire model.

MACHINE LEARNING

The technique of configuring an algorithm on a set of data—called *training datasets**—so that it "learns" their underlying relationships. The adjustment process (also called "learning," "configuration," or "calibration") enables the algorithm to classify or predict new data.

MACHINE VISION / COMPUTER VISION

Field of computer science concerned with teaching computers to detect and interpret elements (objects, faces, gestures, situations) in images.

MATRICES

Charts of numbers arranged in rows and columns that can represent input data (for example, the intensity of each pixel in an image) or else the parameters of a *neural network*.* Processing data using a layer of neurons involves multiplying the matrix of input by the matrix of parameters (before applying a bias vector and an activation function).

METADATA

Information *about* data. For example, the *data* of a digital image are its pixels, and the *metadata* are the resolution, dimensions, file format, creation date, etc., of the image.

MIDJOURNEY

AI research lab known for its eponymous generative AI program that outputs images from natural language descriptions (or *prompts**). Released in 2022, Midjourney quickly set a standard in the field, yet it has also sparked controversy (as other text-to-image models like *Dall-E** or *Stable Diffusion** have done): for using artists' work without their consent, for making it easy to plagiarize, and even for its role in winning digital art and photography prizes.

MULTIMODAL MODEL
*Generative AI models** that are able to pass from one modality (such as text, image, video, or audio) to another. For example, a multimodal model may produce a natural language description of an image (image-to-text) or else output an image based on a natural language description (text-to-image). AI has also revolutionized the field of moving images with *text-to-video generative AI models** such as Runway Gen-3 or Sora, which can generate all sorts of videos based on *prompts*.*

NATURAL LANGUAGE PROCESSING (NLP)
Computer science field concerned with language, its aim being to create programs capable of carrying out textual or oral tasks: translation, question-answering, summarizing, text generation, etc.

NSFW
Abbreviation for “not safe for work,” referring to violent or pornographic content (particularly images).

PROMPT
A prompt is the natural language input which, when given to a *generative AI model*,* triggers and guides the content produced: a question, a paragraph to change, the description of an image, and so on. How precise the prompt is (examples, specifications, etc.) can cause considerable variations in both the type and quantity of output.

SCRAPING
The process of automatically extracting data from the internet.

SEQUENTIAL DATA
Data arranged in sequences where order matters. For example, the words in a sentence or the notes of a melody. Starting in the late 2010s, *transformers** made it possible to process sequential data much more efficiently, leading to the development of *large language models** such as GPT-2, GPT-3, and ChatGPT. In turn, this enabled the processing of *prompts** in *text-to-image generative AI models*.*

SLOPAGANDA
A blend of “*AI slop**” and “propaganda,” coined in 2025 for AI-generated content designed to manipulate beliefs and emotions for political ends. What sets it apart from older propaganda is scale, speed, and personalization: it can be produced cheaply in vast quantities and micro-targeted to individuals. Often it aims not at factual deception but at building emotional associations that stick through sheer repetition.

STABLE DIFFUSION
*Generative AI model** released in 2022 that can generate artificial images using text prompts, one version of which is called “Stable Diffusion XL” or “SDXL.” The model was trained on the LAION-5B database and the LAION-Aesthetics V2 subset, whose code can be viewed and downloaded. *Stable Diffusion**(as well as *Dall-E**) has sparked the same controversies as *Midjourney*.*

TEXT-TO-IMAGE GENERATIVE AI MODEL
See *multimodal model*.*

SCHIRN
KUNSTHALLE
FRANKFURT

TEXT-TO-TEXT GENERATIVE AI MODEL
See *language model* * and *large language model*.*

TEXT-TO-VIDEO GENERATIVE AI MODEL
See *multimodal model*.*

TRAINING SET
A collection of data, sometimes manually labeled, that an algorithm learns to recognize or complete by trial and error. With each error, the algorithm adjusts its parameters so as to gradually encode enough information about the data (their features, similarities, and differences) to be able to classify or produce new ones.

TRANSFORMER
A *deep learning** NLP model proposed in 2017 by a team of Google engineers, whose main innovation is to give a central role to the “attention” mechanism, which consists of weighting the relative importance of each word in relationship to others. This parallel (rather than sequential) treatment requires less computing and has made it possible to multiply the size of *training sets** and the number of parameters, contributing to the emergence of *large language models*.*

UPSCALING
Refers to the process of using AI to increase the resolution of an image or video, usually by adding pixels.

VARIATIONAL AUTOENCODER
An *artificial neural network** invented in 2013 by Diederik P. Kingma and Max Welling. It is designed to learn a probabilistic distribution of *training sets** in a *structured latent space** in order to generate similar data, or even new data, located between the categories of existing data.

VECTORS
The basic way AI systems represent the world: as long lists of numbers. A word, an image, a sound—each is translated into a string of coordinates that fixes its position in a vast mathematical space. Things with similar meanings end up close together. This translation of meaning into numbers is what lets machines “compute” language and images, but it also reduces every nuance to measurable distance.

WEB CRAWLING
An automated web browsing process used to collect information such as website content and links.

WORLD MODEL
AI systems that don’t just generate a static image or text, but simulate an environment and predict what happens next as a user acts within it. Trained on vast amounts of video, they can generate explorable, physically plausible worlds from a single prompt. Promoted as tools for training robots and self-driving cars, they extend generative AI from making pictures toward modeling reality itself.

Alban Leveau-Vallier and Antonio Somaini
Partially translated from French by Michelle Noteboom