

HEK

en
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Haus der
elektronischen
Künste Basel

and handwriting, which gives form to the "dreamt" movement of the bacteria through Deep Learning.

12 Anna Ridler & David Pfau
Bloemenveiling
(flower auction), 2019

Anna Ridler and David Pfau generate their own data, such as photographs of tulips, in order to train GAN networks and their algorithms. Their newest work draws parallels between 17th century "tulip mania" and contemporary speculation around crypto currencies. Their AI is trained to infinitely generate video clips of digitally imagined tulip variations. These moving image pieces are sold at auction using so-called smart contracts on the Ethereum blockchain, which contain the code defining the tulip bulb's behaviour. Some tulip bulbs contain a virus that can be identified by particularly beautiful blossoms. All flowers eventually die, but those affected with the virus have an even shorter lifespan. The artists' collaboration reflects on economic dynamics and speculation in a world influenced by human beings and artificial bots.

13 Holly Herndon & Mat Dryhurst
Deep Belief, 2018-2019

Holly Herndon and Mat Dryhurst initially created their own artificial neuronal network called Spawn to recognise and reproduce their own voices. In order to extend Spawn's repertoire, the artists carried out a training ceremony with their vocal ensemble in front of an audience at ISM Hexadom in Berlin in 2018. Its aim was to teach Spawn to understand and interpret influences from its environment – text recitals, singing and interaction. The three-channel video installation displayed at HeK documents the training set and the development of artificial neuronal network's vocal abilities. While demonstrating new potential in the creation of music, their work also challenges the question of the sound compositions' authorship.

Entangled Realities Living with Artificial Intelligence

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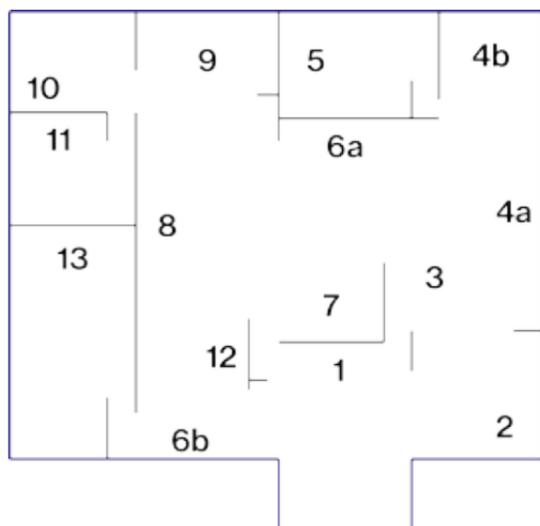


Zach Blas and Jemima Wyman, *im here to learn so :))))))*, four-channel HD video installation, 2017

Entangled Realities

Living with Artificial Intelligence

09.05. - 11.08.2019



HeK's exhibition *Entangled Realities* is dedicated to the current topic of artificial intelligence (AI) and its effects on contemporary society. A specific focus lies on how AI effects our perception of reality as well as its use as an artistic tool that brings forth new and unexpected visual worlds and artifacts. Our interaction with intelligent algorithmic systems and the power of authority we transfer to machines in manifold processes and fields, gives rise to new entangled realities. The works assembled here demonstrate how these algorithmic networks "see" and also generate our world. These artistic positions illustrate processes of machine learning and provide insight into the technological cognition and perception normally hidden in the "black box". They reveal how the machine learning processes of neuronal networks function and therefore enhance our understanding of non-human recognition and subjectivity. AI helps to shape our contemporary environment and it is up to us to consciously organise this inevitable new entanglement of man and machine as we increasingly share our lives with "intelligent" objects and systems.

Curated by Sabine Himmelsbach and Boris Magrini

1 Mario Klingemann *Uncanny Mirror*, 2018

Mario Klingemann employs neuronal networks and GAN (Generative Adversarial Network) algorithms in his creative experiments. The artist has been writing code for over 30 years, developing the algorithms and data with which he trains his AI system, which he employs in his creative process. Here he is particularly interested in faces, bodies and human identity in general. His fascination for GAN algorithms lies in their ability to surprise. The material the machine "learns" is continually "re-hallucinated". In *Uncanny Mirror* Klingemann trains GANs to interpret data and simultaneously generate new and unexpected images. In the mirror of this work, viewers encounter themselves as they are understood and seen by the AI.

2 Ursula Damm *Membrane*, 2019

The installation *Membrane* employs machine learning supplied by a neuronal network to analyse and interpret particular image features from a real time video stream. The system is trained to work on image artifacts, such as edges, lines, colours, basic geometric shapes or movement – rather than a reconstruction of the scenery. A user interface with a number of controls allows viewers to interact with the image stream and influence the images or alter its parameters, for example the algorithm's responsiveness or the depth of its visual memory, which leads to powerful aesthetic manipulation. Here the AI-based software is not only used for analysis, but also as a means of synthesis.

3 Dries Depoorter *Surveillance Paparazzi*, 2018

Dries Depoorter's *Surveillance Paparazzi* revolves around the phenomenon of global surveillance of public space. The work accesses the unsecured data of surveillance cameras around the world that record and transfer their imagery. Depoorter's software uses Microsoft's image detection service to recognise publically known figures. If the system believes to have a match, the surveillance image appears in the exhibition in real time. The screens of *Surveillance Paparazzi* also show the name of the VIP, an official portrait taken from Wikipedia and the person's GPS location on a map of the world.

4 James Bridle *Untitled (Activation 001-005)*, 2017; *Untitled (Autonomous Trap 001)*, 2017

In his series of prints *Activations* and *Autonomous Trap 001* James Bridle investigates the pattern recognition of machine learning and the principle of self-driving cars. *Activations* pictures the layers of a neuronal network, which enable the system to drive an automatic car. Originating from the street view of the car's camera, the images in the series slowly dissolve into increasingly illegible data as the AI's cognition process progressively deviates from human perception.

Autonomous Trap shows a self-driving car caught in the trap of a painted white circle. Bridle's work takes a critical look into the intertwined worlds of man and machine and questions the boundaries of our dependence on automated systems.

5 Trevor Paglen *Behold these Glorious Times!*, 2017

Trevor Paglen's video installation demonstrates how artificial intelligence is humanly trained by countless data (so-called training sets); for example how neuronal networks learn to "see" and recognise patterns in automatic face and object detection. The work's stream of images gradually dissolves into singular pixels and reveals how the system analyses, interprets and manages the data from the given images. While the huge mass of images can hardly be captured by the human eye, it is easily managed by the machine. Paglen's installation allows us to catch a glimpse of the uncanny manner in which machines see the world and human beings. The video's soundtrack was composed by Holly Herndon and her artificial neuronal network Spawn.

6 Sebastian Schmiege *Segmentation.Network*, 2016-2018; *Decisive Mirror*, 2019

Sebastian Schmiege often explores how we are personally – consciously or unconsciously – involved in the optimisation of AI systems, which go on to perform human functions and permanently effect our working environment. In *Segmentation.Network* the artist looks at tasks people perform in order to train artificial intelligence, such as drawing contours that aids the machine learning system to recognise objects. *Decisive Mirror* confronts viewers with an intelligent mirror supported by an AI system. The mirror assesses each viewer according to categories it has learned to identify. Not only does the artist demonstrate how artificial intelligence is trained, but also how we fall victim to its bias, which is however based on our own prejudices.

7 Lauren McCarthy *LAUREN*, 2018; *LAUREN Testimonials*, 2018

The artist herself performs a form of artificial intelligence in *LAUREN*. Her work is a meditation on smart home intelligence, the tension between intimacy and privacy, convenience and agency, and the role of human labour in a future of automation. A furnished room equipped with numerous networked smart devices: cameras, microphones, switches etc. enable the artist to virtually assist and interact with visitors from outside the exhibition. In her aim to be better than existing virtual assistants, she allows us to reflect on what it means to invite these smart devices into our lives. *LAUREN* will be performed live on the 8th of May and on the 11th of June and is also shown in form of a video documentation.

8 Zach Blas & Jemima Wyman *im here to learn so :))))))*, 2017

In their collaboration, Zach Blas and Jemima Wyman look at the story of the AI chatbot Tay, whose existence was launched by Microsoft in 2016 and then terminated within 24 hours for having become so homophobic and racist due to its users input. The two artists bring Tay back to life, giving the chatbot a platform to reflect on her artificial existence. Tay is resurrected as a three-dimensional avatar immersed within a backdrop of hallucinogenic landscape of images generated by Google's DeepDream software.

9 Anna Dumitriu & Alex May *ArchaeaBot: A Post Singularity and Post Climate Change Life-form*, 2018

This project by Anna Dumitriu and Alex May fuses developments in AI and machine learning with new research findings in robotics and synthetic biology. Archaea are microorganisms that were initially discovered in extremely harsh environments. They are considered to be the most ancient life form on earth. In their underwater robot installation, the artists' explore the functionality of algorithms by employing them in conjunction with single cell organisms. Equipped with various sensors, *ArchaeaBot* gathers data, which is processed by a neuronal network and uploaded to determine the robot's actions.

10 fabric | ch *Atomized (curatorial) Functioning*, 2019

The Swiss artist group has developed a custom-made software for the exhibition, that uses artificial intelligence to generate various exhibition scenographies. Practical specifications regarding the wall system, lighting, sound and the technical requirements of the respective works served as parameters for the programme. The AI recommends configurations of the space that deliberately remain abstract in order to enable a further interpretation on the part of the curators. Elements from the scenography, for example the position and the colour of some walls, were actually implemented according to the AI recommendations. The system itself is also shown at work in the exhibition space.

11 Jenna Sutela *nimiia cétii*, 2018; *Bacillus subtilis nattō to z via VAE*, 2018

For some years Jenna Sutela has been developing complex biological and computational systems. Her current work *nimiia cétii* draws its inspiration from experiments in the communication between different species and the desire to connect with a world beyond our ordinary perception. Here AI acts as the medium for the transmitting messages between non-human subjects – based on the coupling of audio recordings of the artist's voice learned by the neuronal network and recordings of the microscopic movements of bacillus subtilis, an extremophile bacterium. The resulting work is a poetic glossolalia, decoded into a sound script