

# Why Future Still Needs Us

: AI and Humanity

20 August to 29 October 2017

**QUT** Art Museum

An art center **nabi**

touring exhibition



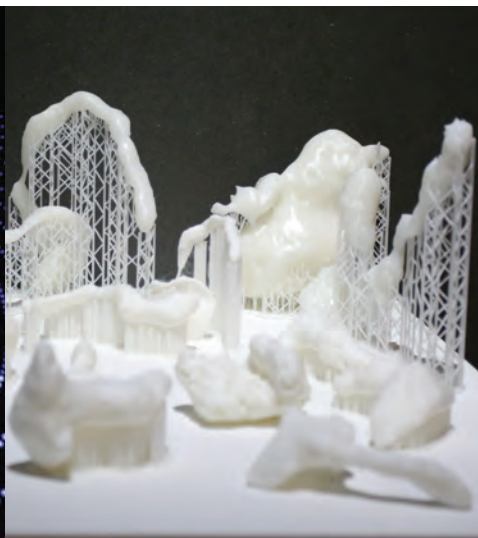
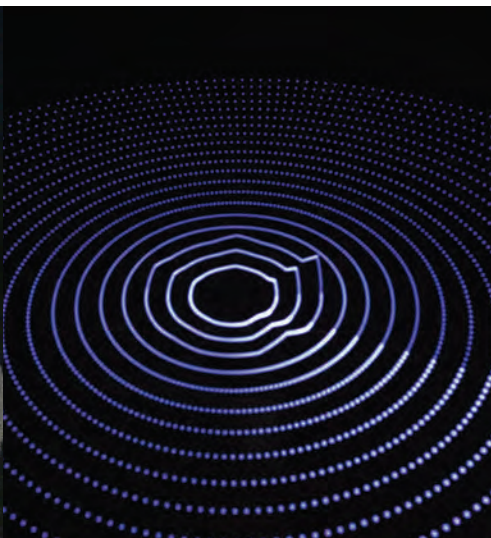


Yang MINHA, *The Listed Words and the Fragmented Meanings* (2016)



ABOVE & ABOVE RIGHT: Gene KOGAN, Andreas REFSGAARD, *Doodle Tunes* (2016)

BELOW, BELOW MIDDLE & BELOW RIGHT: Maurice BENAYOUN, Tobias KLEIN, Jean-Baptiste BARRIERE, *Brian Factory* (2016)





Terence BROAD, *Autoencoding Blade Runner* (2016)

## Why we need creativity in the age of artificial intelligence

We are now familiar with the emergence of artificial intelligence that is able to draw pictures, compose music, write novels, and even produce movies. These creative capabilities of AI are made possible with machine learning and deep learning, which are carried out by the use of big data and the increase in processing power. At Google's Zeitgeist Conference in London in 2015, Stephen Hawking stated, *Computers will overtake humans with AI at some point within the next 100 years. When that happens, we need to make sure the computers have goals aligned with ours. Our future is a race between the growing power of technology and the wisdom with which we use it.*

*Why Future Still Needs Us: AI and Humanity* aims to examine these goals from diverse perspectives.

First of all, the project probes the possibility of artificial intelligence as being both a creator and an amplified collaborator, which can learn by itself and works beyond the existing modes of human-machine interaction. For example, *Cubist Mirror* (2016) and *Kandinsky Mirror* (2016) transfer the scenery captured by webcam into a new style learned from data points collected from Cubist or Kandinsky paintings by using Convolutional Neural Network. Artist Gene Kogan develops

this style transfer technique from the open source code work of Yusuke Tomoto.

Similarly, *Beautiful World* (2016) by Art Center Nabi E.I.Lab (Emotional Intelligence Laboratory) employs a style transfer technique learned from a database of environmental pollution images. In combination with Mixed Reality technology, a visual filter is made through artificial intelligence which transforms the scenery into mixed reality by layering it on human eyes.

Harshit Agrawal's *Tandem* (2016) offers a more active drawing board on which humans can work together with artificial intelligence to draw images. *Tandem* uses Google's DeepDream, a computer vision program that generates images by enhancing patterns using a machine-processed algorithm. Draw a sketch on the touchscreen and choose an individualised emotion such as joy and sadness. Select whether the final result will be figurative or abstract and push the imagine button to make the artificial neural network complete the image. As the title of the work suggests, a human participant and a machine work together and teach each other different languages, creating an unexpected picture.

Exploring these concepts further, what if artificial intelligence responds in the form of music to a picture drawn by a human? In *Doodle Tunes* (2016) by Andreas Refsgaard and Gene Kogan, doodles transform into musical scores. When the participants draw musical instruments on paper, a Convolutional Neural Network trained by an image database called ImageNet recognises them via a webcam. It then classifies musical instruments and connects to the music sequencing software program Ableton Live, presenting a live musical performance by importing musical sequences in midi that correspond to each instrument such as the keyboard, bass guitar, saxophone, and drum. Another work in the exhibition that is related to music is *Bremen Music Bot* (2016) by Art Center Nabi's E.I.Lab. It is a sound robotics system that collects sound data by tracking sounds in the exhibition space. Once the collected data are transmitted to the server, the artificial intelligence operates algorithms of the Magenta program, a musical creation program based on Google's machine learning platform *TensorFlow* which composes and arranges music.

By employing a Deep Convolutional Neural Network, *Terrapattern* (2016) created by Golan Levin, Kyle McDonald, and David Newbury, interprets the

pattern of the city. This project employs an artificial intelligence that learns OpenStreetMap data and compares it with Google Map's satellite images, making itself a kind of satellite image search engine that is capable of locating similar geographic patterns within urban landscapes. Currently, *Terrapattern* has learned information about seven cities - New York, San Francisco, Pittsburgh, Detroit, Miami, Austin, and Berlin. For the general public, the project sheds new light on the urban traces produced by humans through the eyes of artificial intelligence and raises interest in particular patterns that have been invisible before. In addition, as an alternative to the artificial intelligence technology that is currently going through rapid commercialisation and militarisation, this project is provided in open source for humanitarian organisations, social activists, civil researchers, and journalists to quickly search and find similar patterns in spaces with human, social, scientific, and cultural meanings.

*Why Future Still Needs Us: AI and Humanity* includes artworks that raise questions not only about the potential but also the limitations of current artificial intelligence using the technology of machine learning. Terence Broad's *Autoencoding Blade Runner* (2016) presents a movie restructured by an artificial neural network called Autoencoder. The artificial neural network learns every single frame of the movie *Blade Runner* (1982) and recomposes it through its own memory. The result reflects the nature of Autoencoder, which is to store very contracted and reduced information. Thus, the restructured film is not so clear and precise but relatively coherent in its composition. This gives a sense of the ways in which artificial intelligence currently sees the world. As we approach the year 2019, the year in which movie *Blade Runner* is set, the project raises another question about the criteria of how we discern humanity, the central question of the original movie.

Shinseungback Kimyonghun's *Animal Classifier* (2016) exposes the ambiguity of classification through machine learning, using the peculiar classification system of animals described in Jorge Luis Borges' essay *The Analytical Language of*

*John Wilkins*. Borges describes the system with an explanation from an ancient Chinese encyclopedia. The classification system divides animals into fourteen largely unrelated categories such as 'those that belong to the emperor; mermaids; those that are not included in the classification; and those that resemble flies from a distance.' The artist arbitrarily selects each of the ambiguous categories and classifies initial image data. The machine learns and discovers images, then presents them through fourteen monitors. Although the project deals with image processing, which is known to be a field of artificial intelligence with relatively high accuracy, the artist's arbitrary, random initial classification creates an ambiguous result. In a way, the project deals not only with the issue of classification but also raises awareness about the distortion and bias of data affected by human intervention.

Minha Yang's *The Listed Words and the Fragmented Meanings* (2016) explores language learning, a field of artificial intelligence technology that is known to be the most imperfect and incomplete area of research. The project employs a Long Short-Term Memory Recurrent Neural Network to learn texts by philosophers and scientists about the self-awareness of machines, producing 'thoughtful languages' as a result. The resulting sentences, generated by an artificial intelligence that has learned more than three hundred and fifty thousand sentences from nine books written by authors such as Bruce Mazlis, Ray Kurzweil, and Lev Manovich, are grammatically sound yet fragmented in terms of their meanings. One can merely assume that it is because of the difference in distinctive writing styles of each author and insufficient data.

*Why Future Still Needs Us: AI and Humanity* introduces practical cases where artificial intelligence is used in many areas of life. *Robo-Panda* (2016) is a robot that combines robotics, voice recognition and other related APIs of IBM Watson to provide assistance with learning English through conversations. It examines the potential of artificial intelligence in the field of education through collaboration between Art Center Nabi's E.I. Lab, the Bio Intelligence Laboratory at Seoul National University, and the Aibril team at SK C&C.

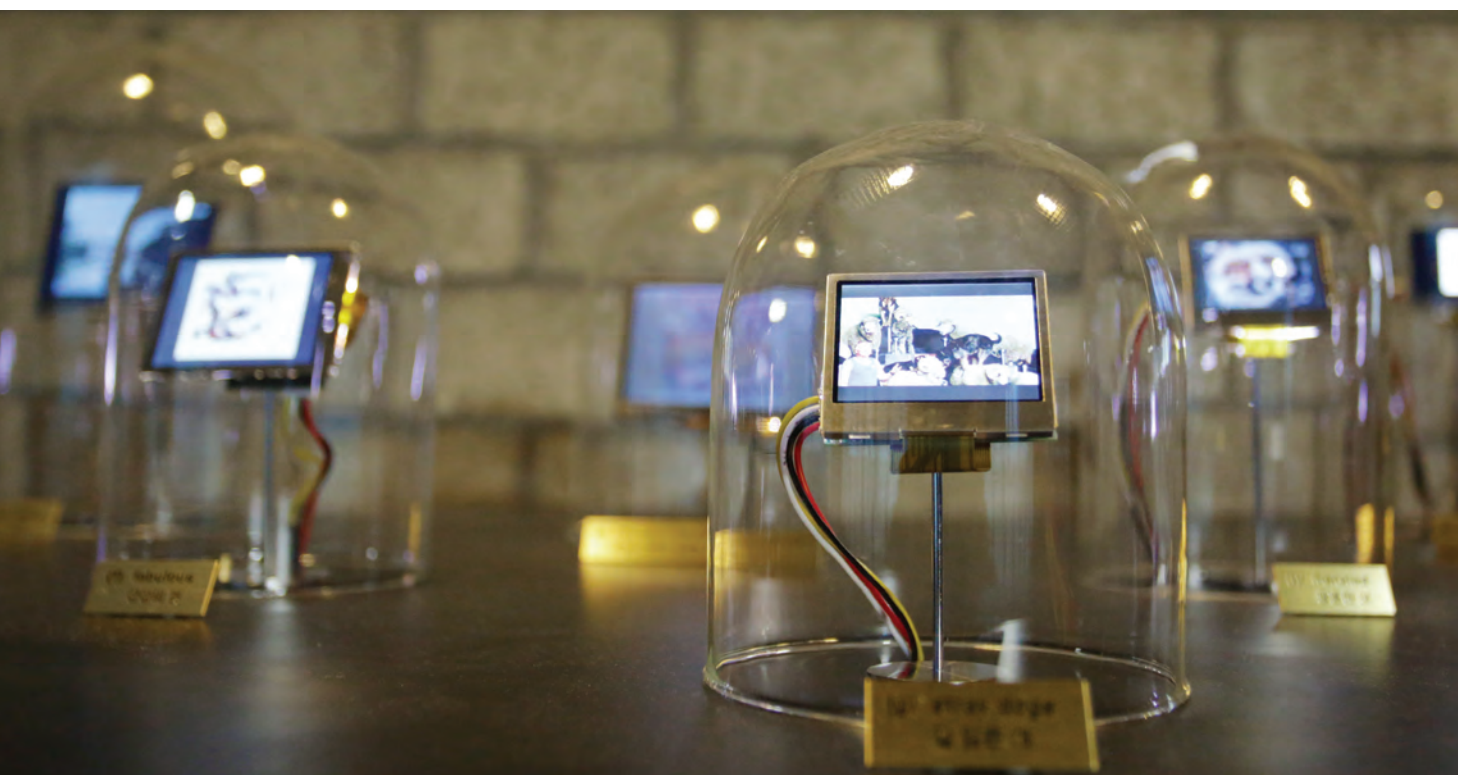
*Why Future Still Needs Us: AI and Humanity* does not make a hasty value judgment on creative applications for artificial intelligence as they are still in their early stages. Rather, it is an exhibition to broaden understanding of artificial intelligence and facilitate diverse discussions about humanity. For this reason, *Brain Factory* (2016) deserves proper attention in the exhibition. Created by Maurice Benayoun, Tobias Klein, and Jean-Baptiste Barrière, the project narrates a new relationship between humans and machine although it does not directly employ machine learning technology. When a participant looks at words related to certain emotions or senses, such as love, desire, or pain, the EEG headset collects brainwave data, which is then transformed into a three-dimensional animation on the screen by a system designed by the artists. The collected data for each word is then printed by a 3D printer as a sculptural piece. This raises questions about the nature of human emotions and the role of humans in the age of artificial intelligence. Collecting data about an authentic human realm of emotions is an example of why humans are still needed. And yet, as the title *Brain Factory* suggests, humans may have to provide certain service to machines in the age of artificial intelligence just as robots served the role as human hands in the industrial age. Artificial intelligence might possess emotions in the near future based on the data collected about human emotions.

*The Why Future Still Needs Us: AI and Humanity* exhibition acknowledges that we are still in the early stage of AI development and can therefore explore many different questions. This is, why human creativity is still in demand in the age of artificial intelligence.

**Doo Eun Choi, Chief Curator,  
Art Center Nabi**



ABOVE: Gene KOGAN, *Cubist Mirror*, *Kandinsky Mirror* (2016)  
BELOW: Shinseungback KIMYONGHUN, *Animal Classifier* (2016)





#whyfuturestillneedsus

Why future still needs us: AI and humanity is an artcenter nabi (Korea) touring exhibition.

art center **nabi**



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COVER IMAGE: Nabi E.I.Lab, *Robo-Panda* (2016)

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## LIST OF WORKS

1. **Tandem**, 2016 Harshit Agrawal  
Dimensions variable, Google Deep Dream Library, pc (Ubuntu Linux OS), touch monitor
2. **Cubist Mirror, Kandinsky Mirror**, 2016 Gene Kogan  
Dimensions variable, PC, Web camera, Monitor
3. **Autoencoding Blade Runner**, 2016 Terence Broad  
Dimensions variable, PC, Monitor
4. **Brain Factory**, 2016 Maurice Benayoun, Tobias Klein, Jean-Baptiste Barriere  
Dimensions variable, PC, Monitor, EEG headset, 3D printer, Speaker
5. **Terrapattern**, 2016 Golan Levin, Kyle McDonald and David Newbury  
Dimensions variable, PC, Monitor
6. **The Listed Words and the Fragmented Meanings**, 2016 Yang Minha  
Dimensions variable, LSTM-RNN based sentence generation software
7. **Animal Classifier**, 2016 Shinseungback Kimyonghun  
900 (h) x 1800 (w) x 700 (D) mm  
TensorFlow, Inception-v3, online images, 14 Raspberry Pis, 14 glass domes and 14 monitors
8. **Beautiful World**, 2016 Nabi E.I.Lab  
Space: 1000 x 1000mm (dimensions variable)  
PC, HTC Vive (VR), Monitor
9. **Robo-Panda**, 2016 Nabi E.I.Lab  
290 (H) x 225(W) x 194 (D) mm  
Resin, Acrylic, Smartphone, 9 servo-motors, microcontroller
10. **Doodle Tunes**, 2016 Gene Kogan, Andreas Refsgaard  
Open Frameworks (including mainly ofxOpenCv, ofxCv, ofxCcv, ofxAbletonLive), a stand and attached web camera, paper, pens