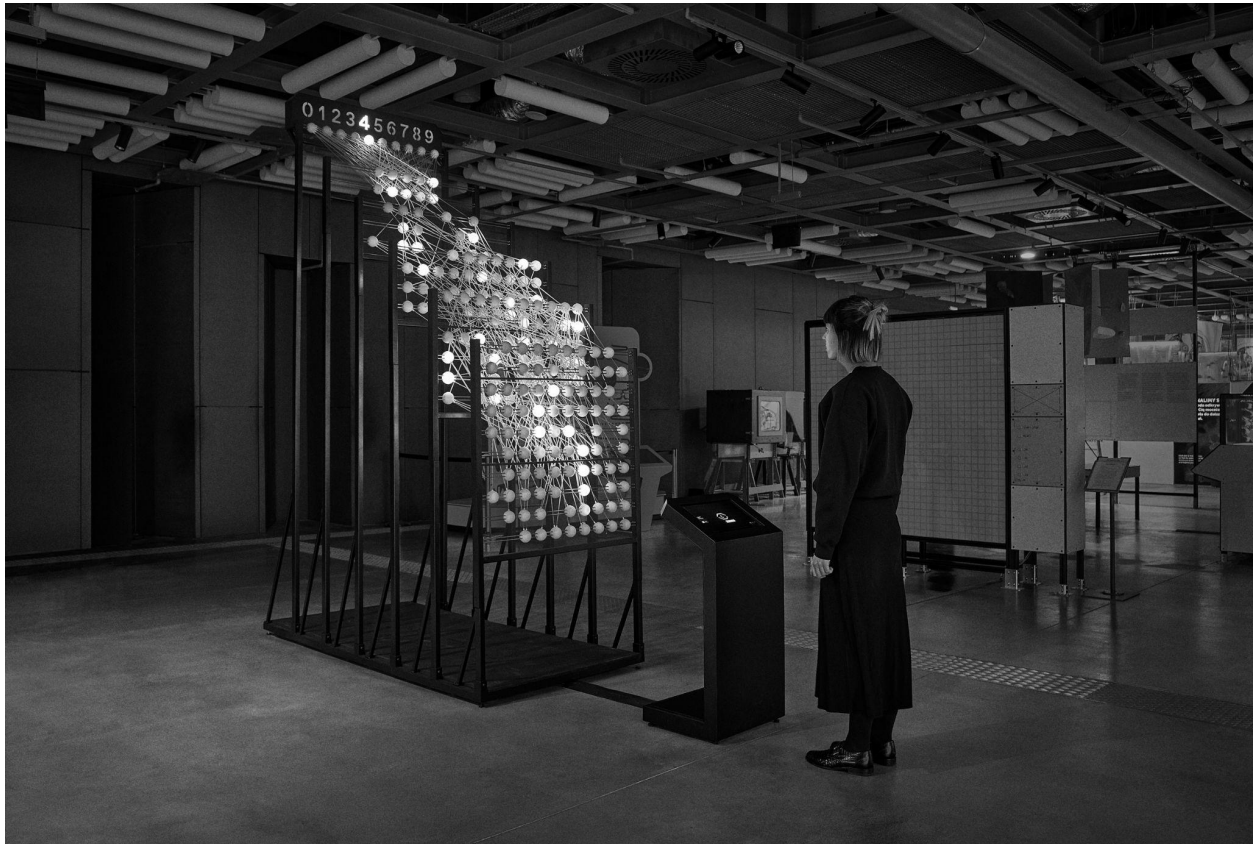


THE ABACUS

Materialising the ephemeral

05.05.2022
Warsaw, Poland



Who, what, when, where, why:

THE ABACUS is probably the first ever 1:1 interactive physical representation of real, functioning deep learning network, represented in the form of a light sculpture.

Commissioned by the **Copernicus Science Centre** in Warsaw, Poland.

Created by **panGenerator** in collaboration with **Wojciech Stokowiec**.

The main purpose of the installation is to materialise and demystify inherently ephemeral nature of artificial neural networks on which our lives are becoming increasingly reliant on. As the part of new permanent exhibition devoted to the Future the installation aims to engage and educate the audience in artistically compelling ways being the manifestation of art & science movement goals.

Installation consists of 6 layers and 195 neurons in total. The network has been trained to do simple hand written digit classification – quite a basic task, but the main challenge was to prune and optimise the network so it has as few neurons and connections as possible to make it feasible to build the physical representation of it. Each of the 195 neurons is unique due to topology of inputs and outputs so 3D resin printing (SLA) was used. The whole geometry of the “connectome” has been calculated using parametric design approach (Grasshopper) utilising spatial simulation techniques to solve the connections in physical space. Inside of each neuron there is a custom electronics module designed to control the light not only for each neuron as such but also all outgoing connections representing the behaviour of the network during the inference.

About creators:

panGenerator

panGenerator is a new media art & design collective based in Warsaw, Poland, founded by Piotr Barszczewski, Krzysztof Cybulski, Krzysztof Goliński and Jakub Koźniewski. Since 2010 the group creates unique projects exploring new means of creative expression and interaction with the audience. Their works are characterised by blending ephemeral digital realm with physical world. PanGenerator is mixing bits & atoms to create audience-engaging, dynamic and tangible experiences in opposition to typically static, hermetic and unapproachable conventions prevalent to traditional, mainstream “modern art” practice.

<http://pangenerator.com>

Wojciech Stokowiec

is a AI / Machine Learning expert and data scientist currently working at Deep Mind as Senior Research Engineer.

<https://1o0ko.github.io/1o0ko/>

Links:

Project page: <https://pangenerator.com/projects/the-abacus/>

HQ video (with download option): <https://vimeo.com/706124692>

Web res photos: <https://pangenerator.com/public/press/abacus/abacus-photo-web.zip>

Print res photos: <https://pangenerator.com/public/press/abacus/abacus-photo-print.zip>

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