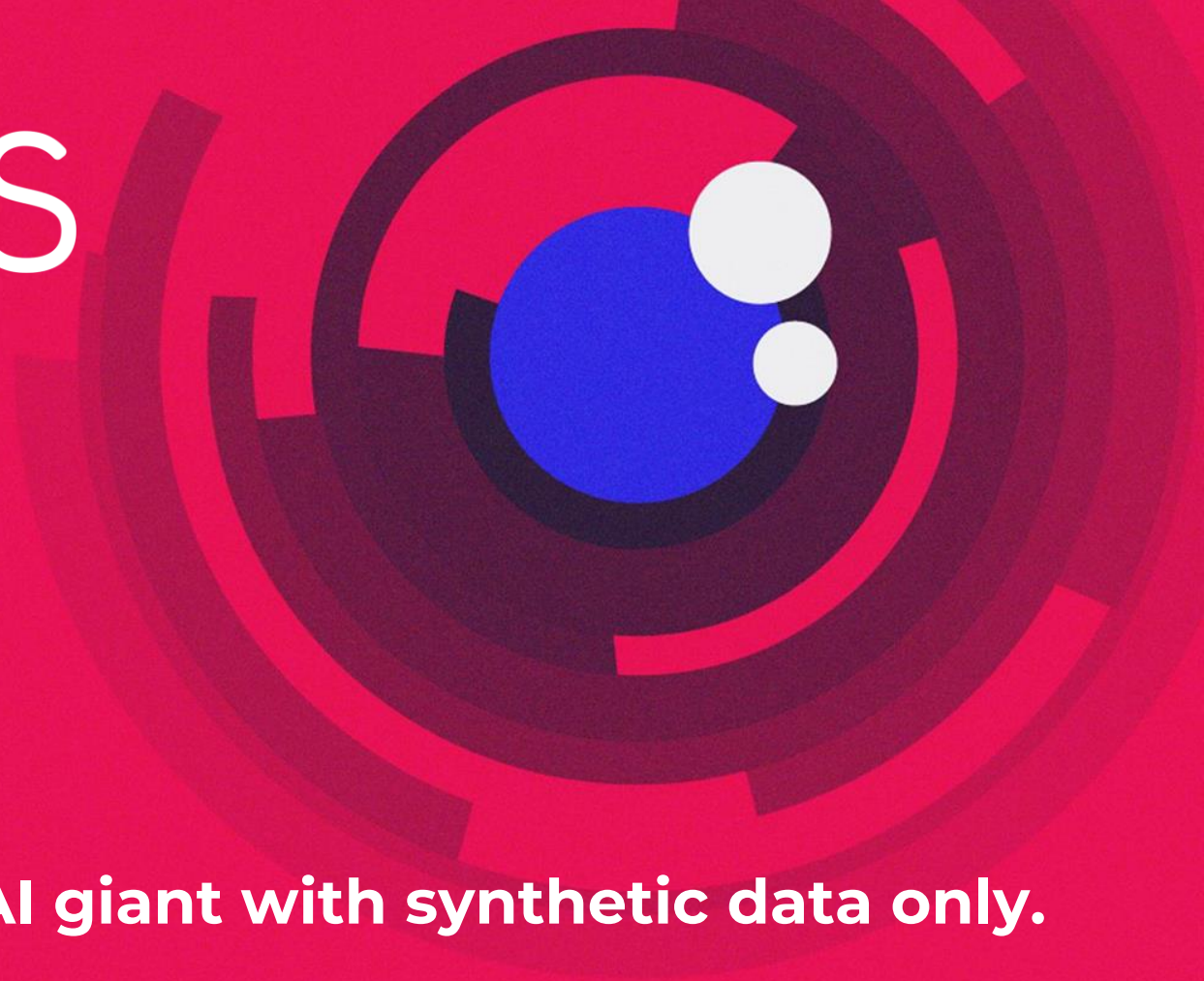
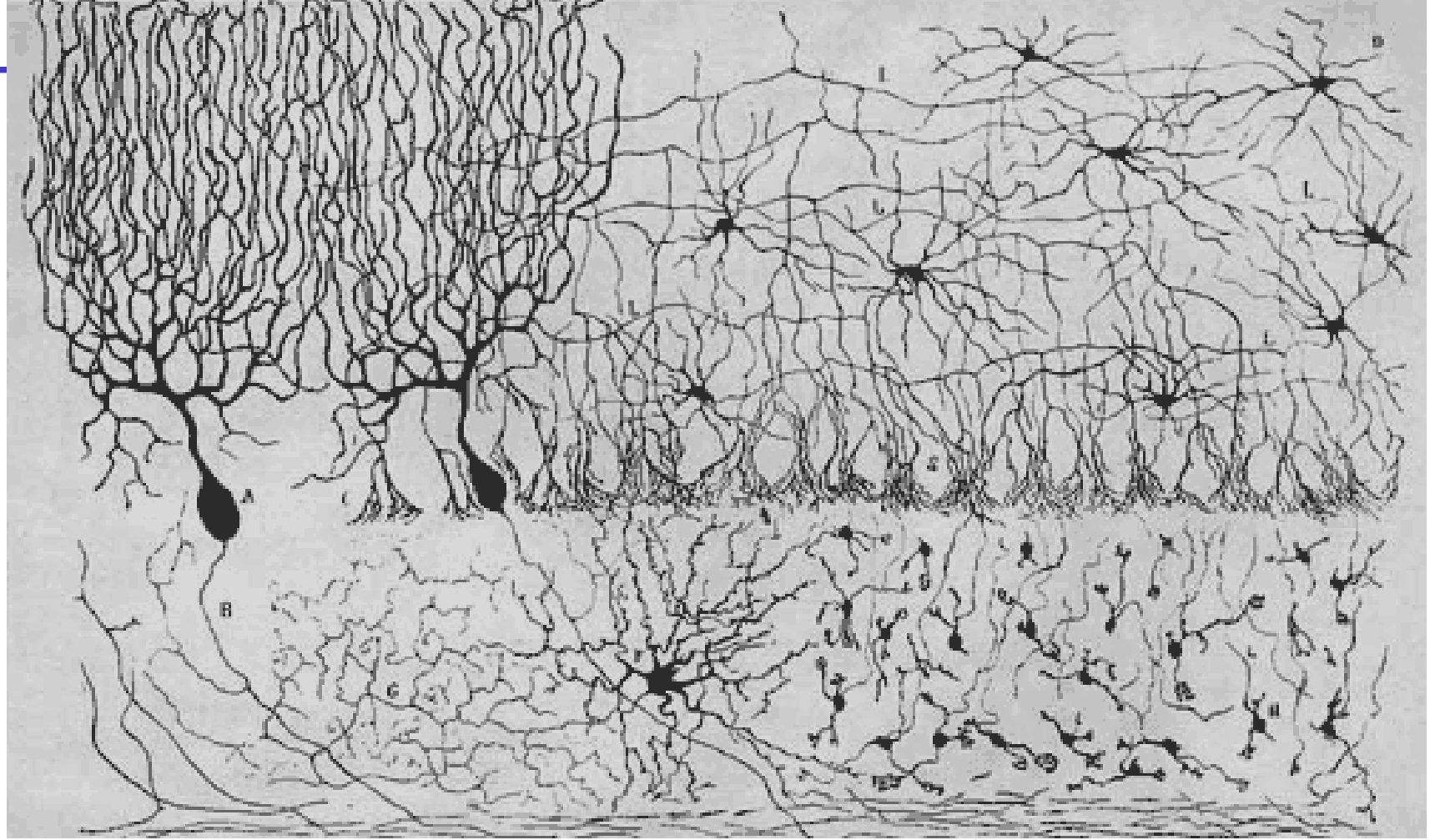
nyris



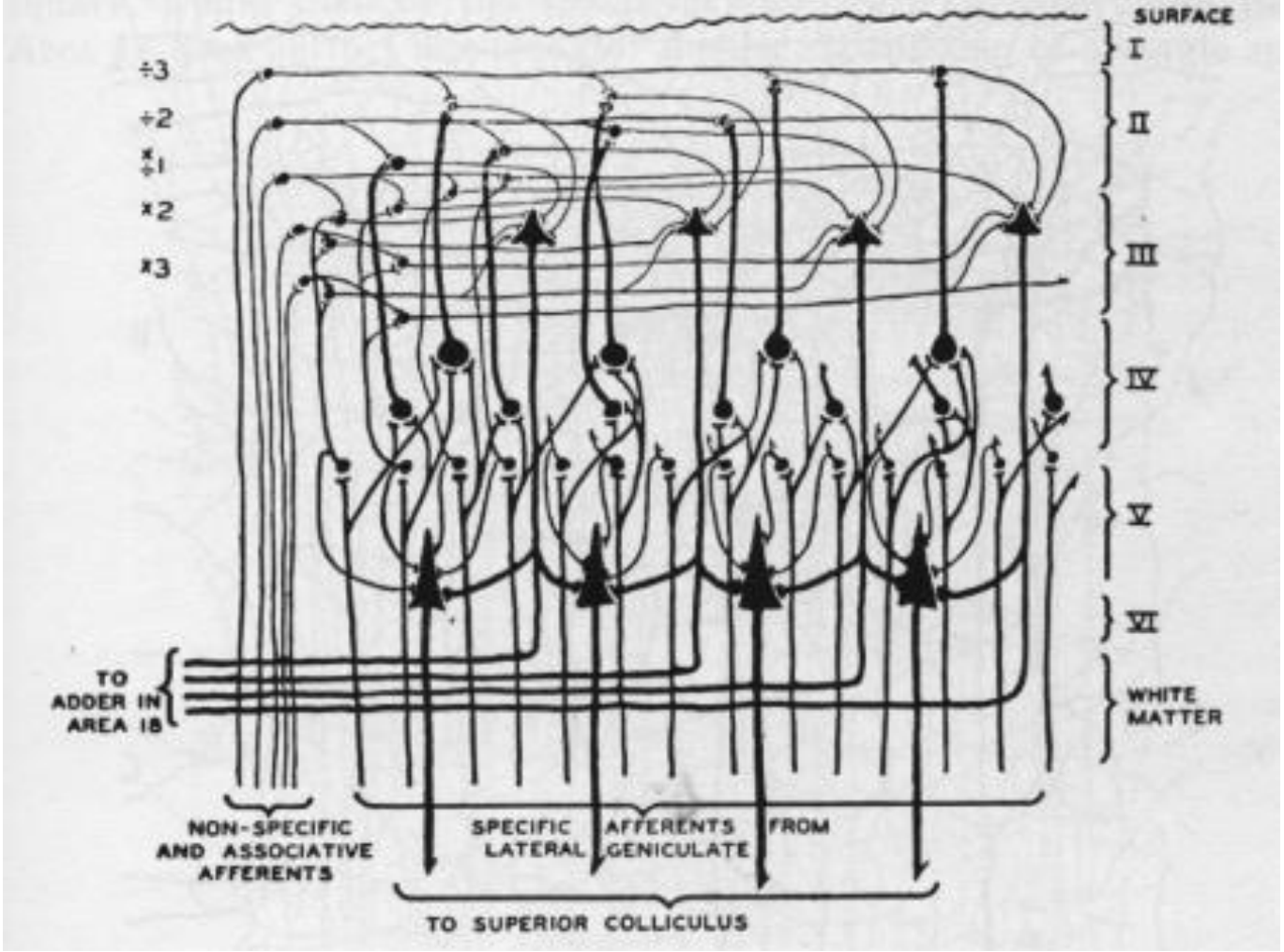
How to feed any AI giant with synthetic data only.

AI Recap:
How did it started?

Source: spainculture.us



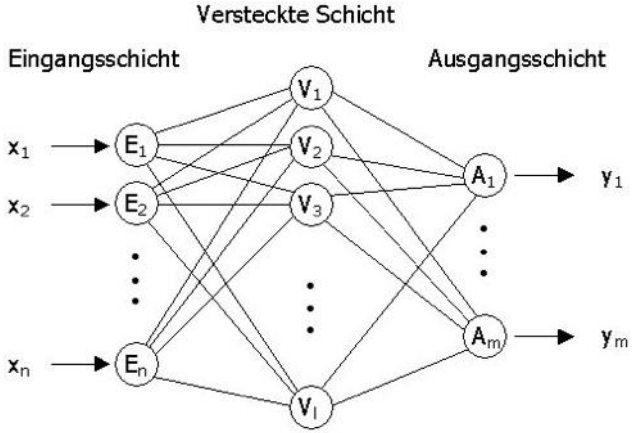
Source: famousscientists.org



Source: brianholmes.files.wordpress.com

AI Recap: How to teach computers to see?

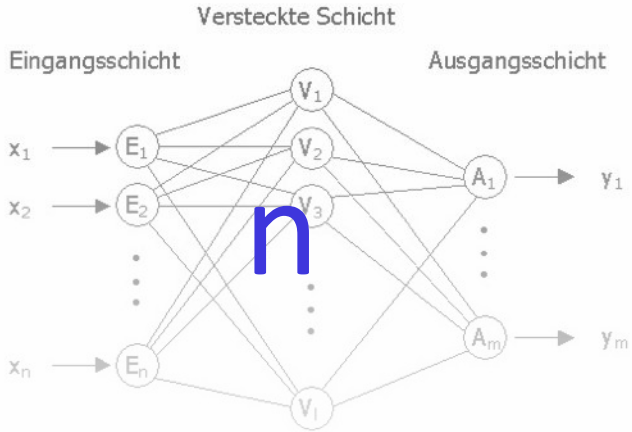
BIRD



BIRD

Source: Nikolaus Petry “Fuzzy Logik und neuronale Netze”, JurPC Web-Dok. 187/1999

x



= BIRD

Source: Nikolaus Petry “Fuzzy Logik und neuronale Netze”, JurPC Web-Dok. 187/1999

$$a^{x} n = b$$

$$b = a^{x} n$$

$$0 = a^{x} n - b$$

$$\text{Error} = a^{x} n - b$$

Source: Google for TED@BCG

$$\text{Error} = a \times n - b$$

$$\text{Error} = a_1 \times n_1 - b$$

$$\text{Error} = a_2 \times n_2 - b$$

$$\text{Error} = a_{\dots} \times n_{\dots} - b$$

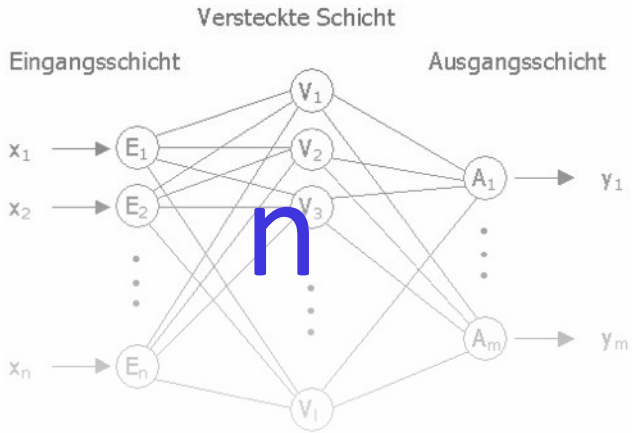
$$\text{Error} = a_n \times n_n - b$$

Not known

known

known

x



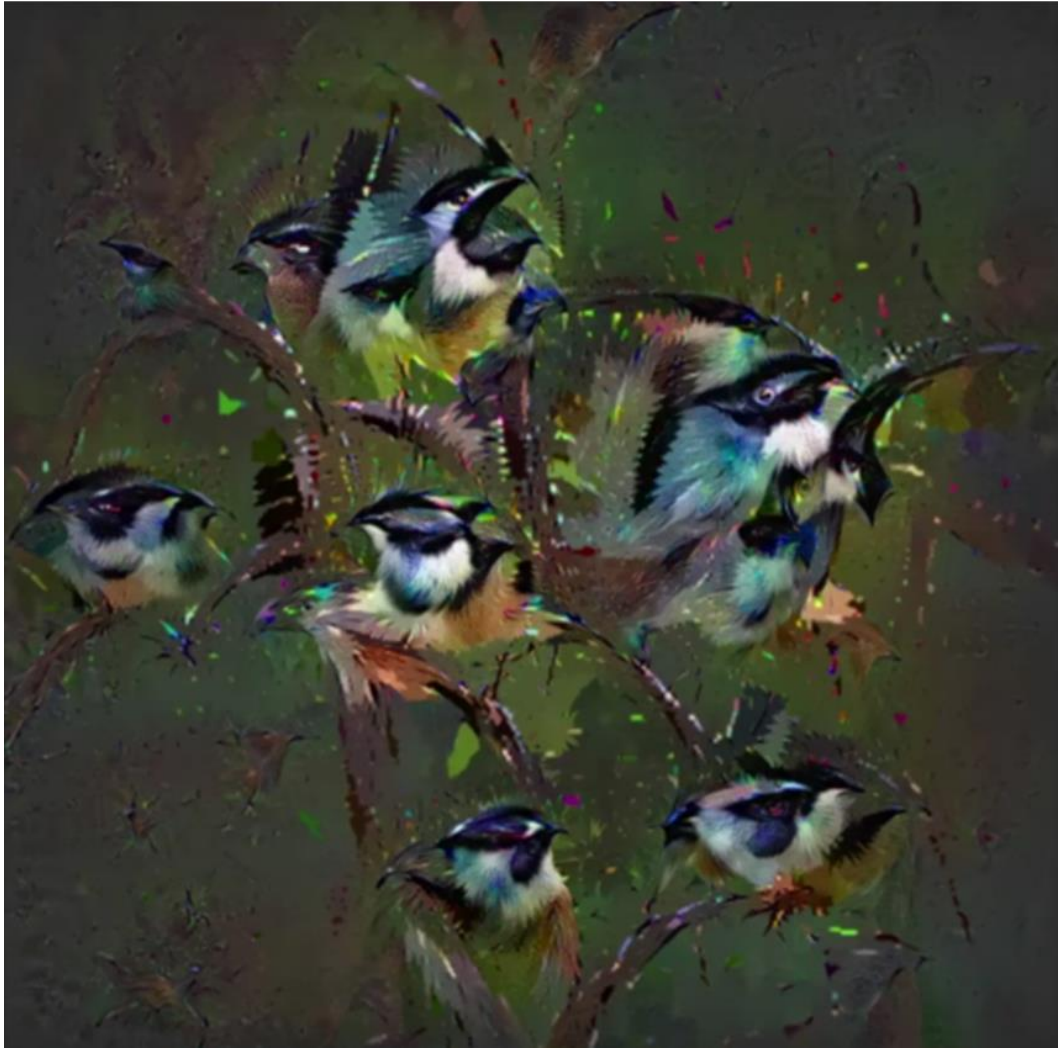
n

=

BIRD

b

Source: Nikolaus Petry “Fuzzy Logik und neuronale Netze”, JurPC Web-Dok. 187/1999

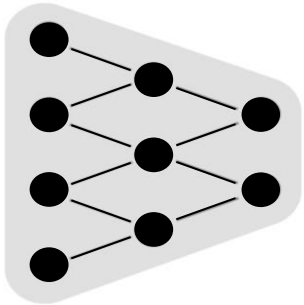


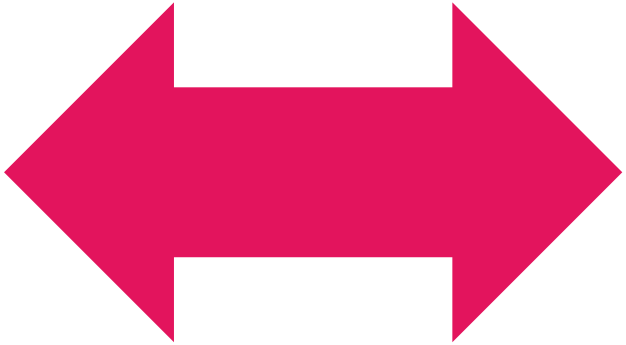
Source: Google for TED@BCG

Computer generated images - what’s the magic?

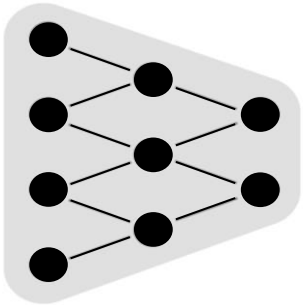
HOW DO GENERATIVE ADVERSARIAL NETWORKS WORK?

Discriminator/ Detective
discriminates whether sample is real or fake





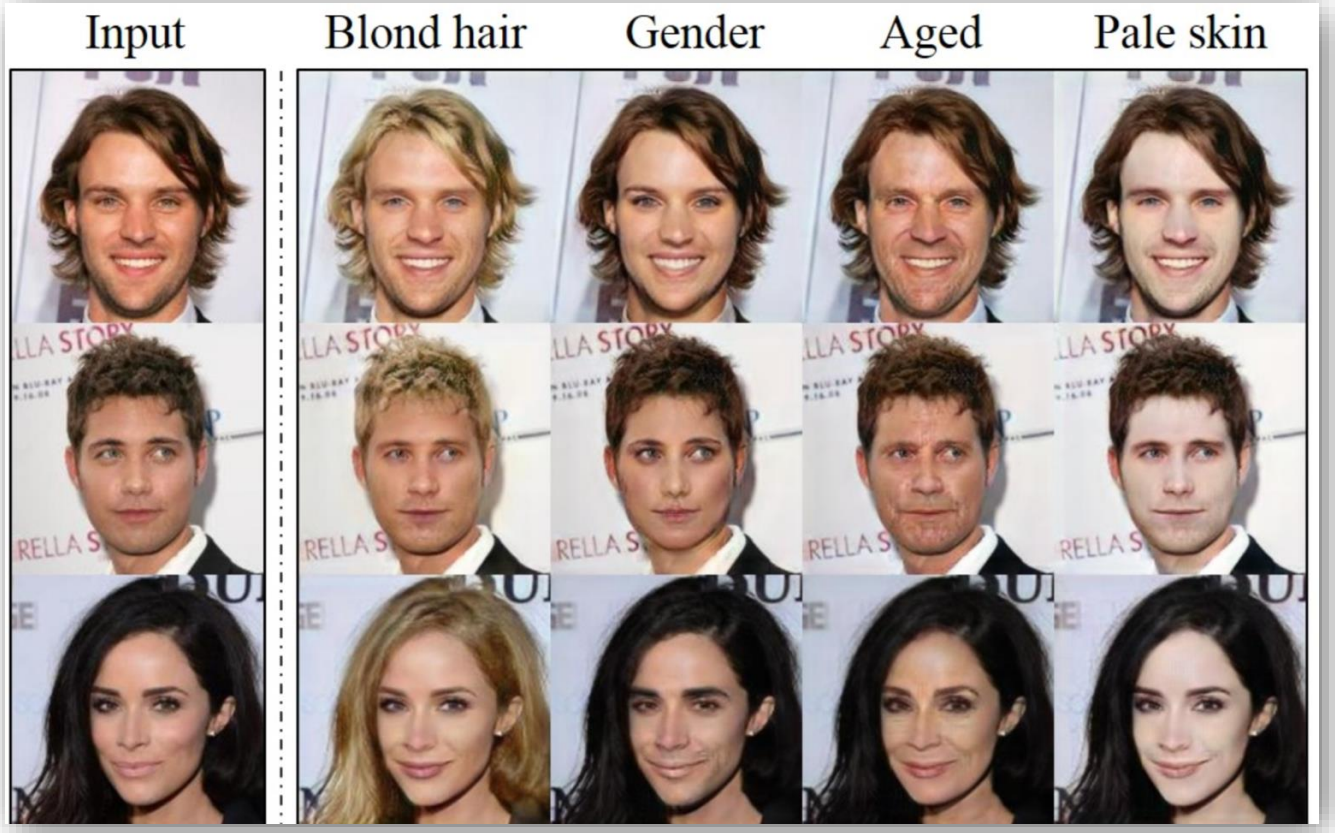
Generator / Forger
generates samples so real that they fool discriminator



THE RISE OF GENERATIVE DEEP LEARNING

Face synthesis

MULTI-DOMAIN TRANSLATION VIA A SINGLE GENERATOR NET



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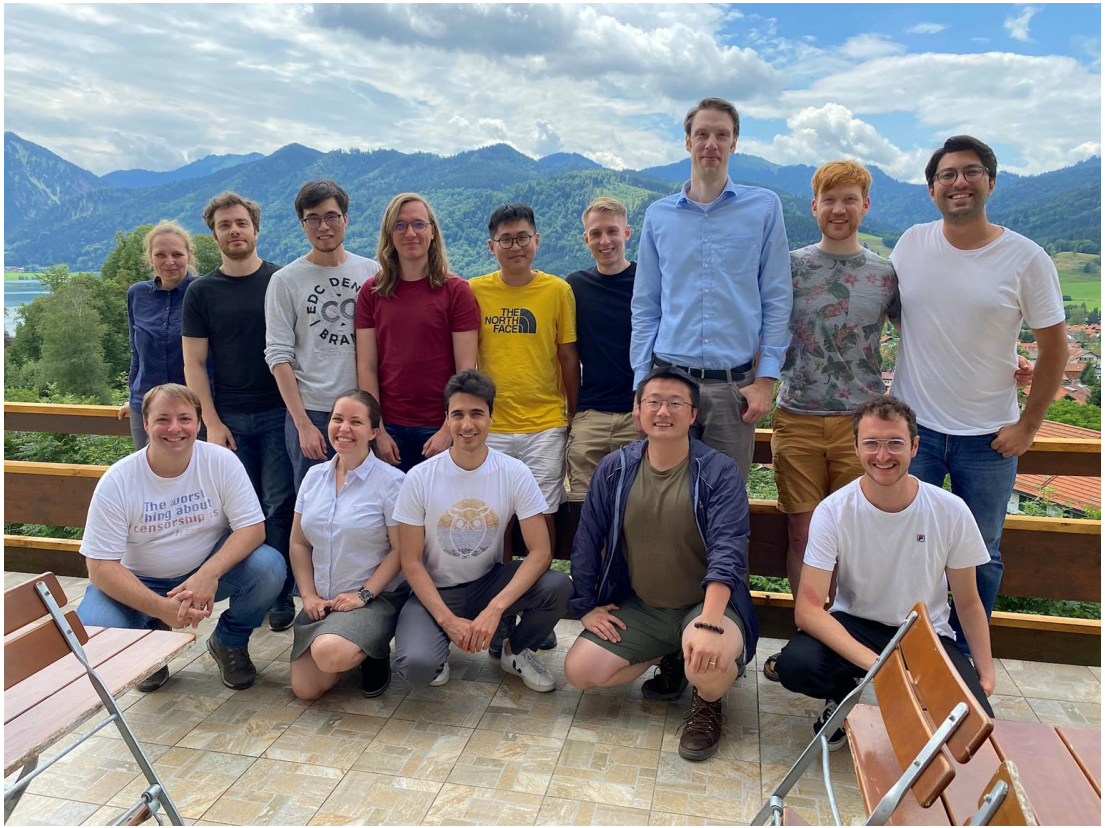
LATENT DIFFUSION MODELS ACHIEVE THE NEXT MILESTONE



HOW DO LATENT DIFFUSION MODELS WORK?

Image Encoder

Compressed Image (aka Latent Code)

Forward Diffusion Process
Systematically adds noise to the compressed image

Compressed Image corrupted with noise

Reverse Diffusion Process
Learns to predict the noise added to compressed image

Denoised Compressed Image

Image Decoder

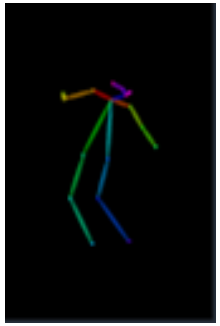
"A yellow Porsche 911 speeding on a road."

Supports the denoising process with guidance from text prompt encoded via Language models

nyris

INPUT IMAGE

annotation (open pose key point detection)



Stable Diffusion ControlNet

INPUT PROMPT

“full-body, a young female, highlights in hair, dancing outside a restaurant, brown eyes, wearing jeans”

OUTPUT

How do we use synthetic data & AI at nyris?

OUR MISSION

To build the ultimate multi-model search engine for identifying parts and products using advanced computer vision, natural language processing and generative data models.

THE PROBLEM WE SOLVE

Keywords?

Search

EXAMPLE OF A SPARE PARTS ORDERING PROCESS

Spare part identification accounts for ~30% of Service Team work

Customers expect 24 hs delivery

Technician cannot identify spare part

Searches for part in offline media, manuals or drawings

Calls support/ service team for help

Tries to describe part and optionally sends them a picture

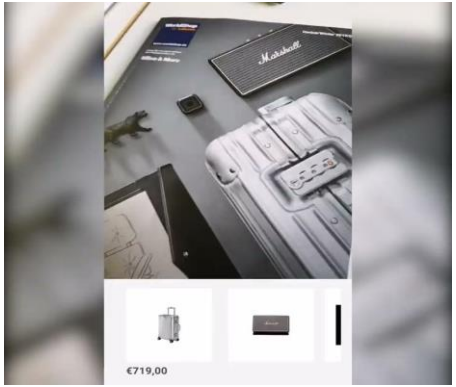
Support / Expert team tries to identify part

Part ID transmitted to ERP

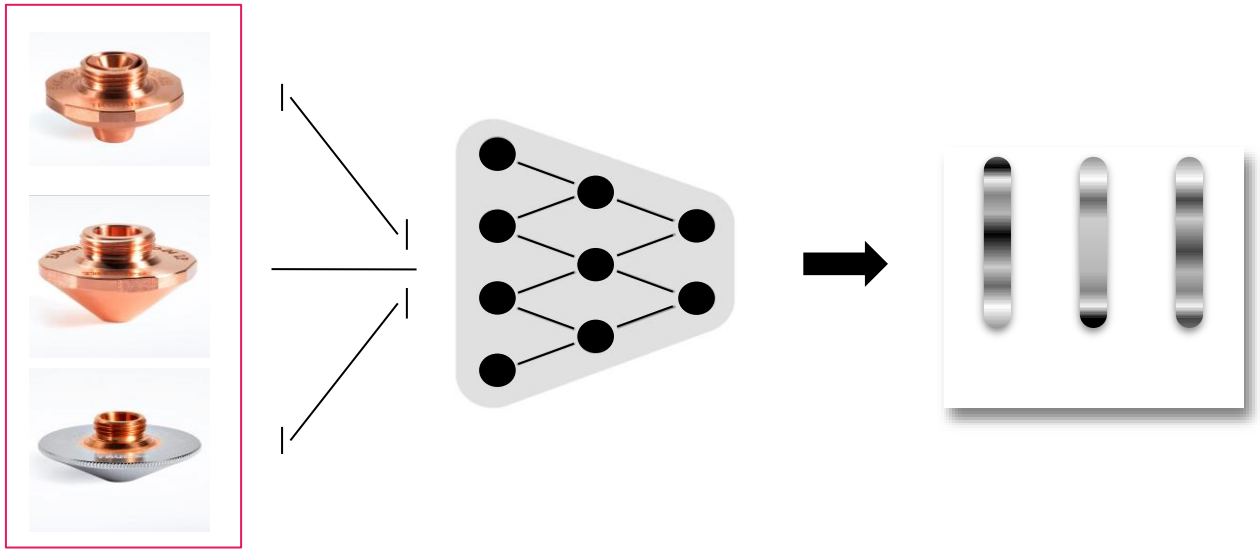
Part ordered and dispatched

up to 2 weeks

nyris


Marshall
€719,00

STEP 1: USING AI TO GENERATE A SEARCH INDEX



data
(images)

CNN or ViT
(deep feature extraction)

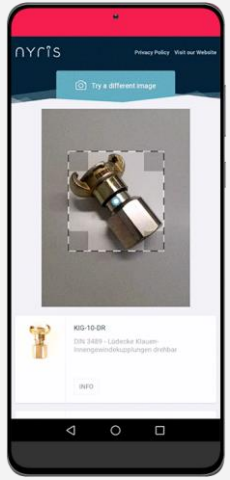
index
(embeddings)

CAD BASED SYNTHETIC DATA GENERATION ON SCALE

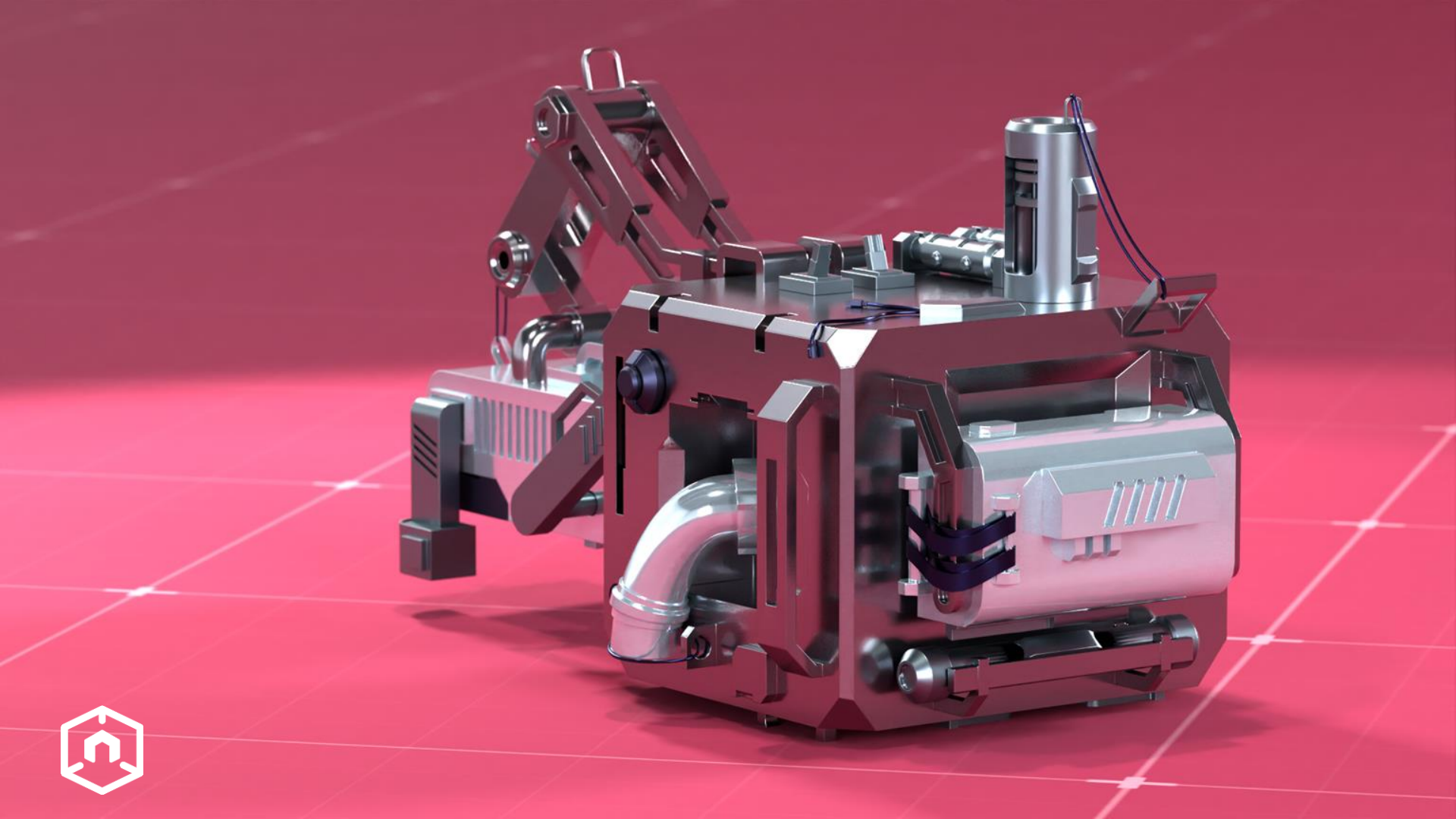
3D CAD Model, provided by our customers

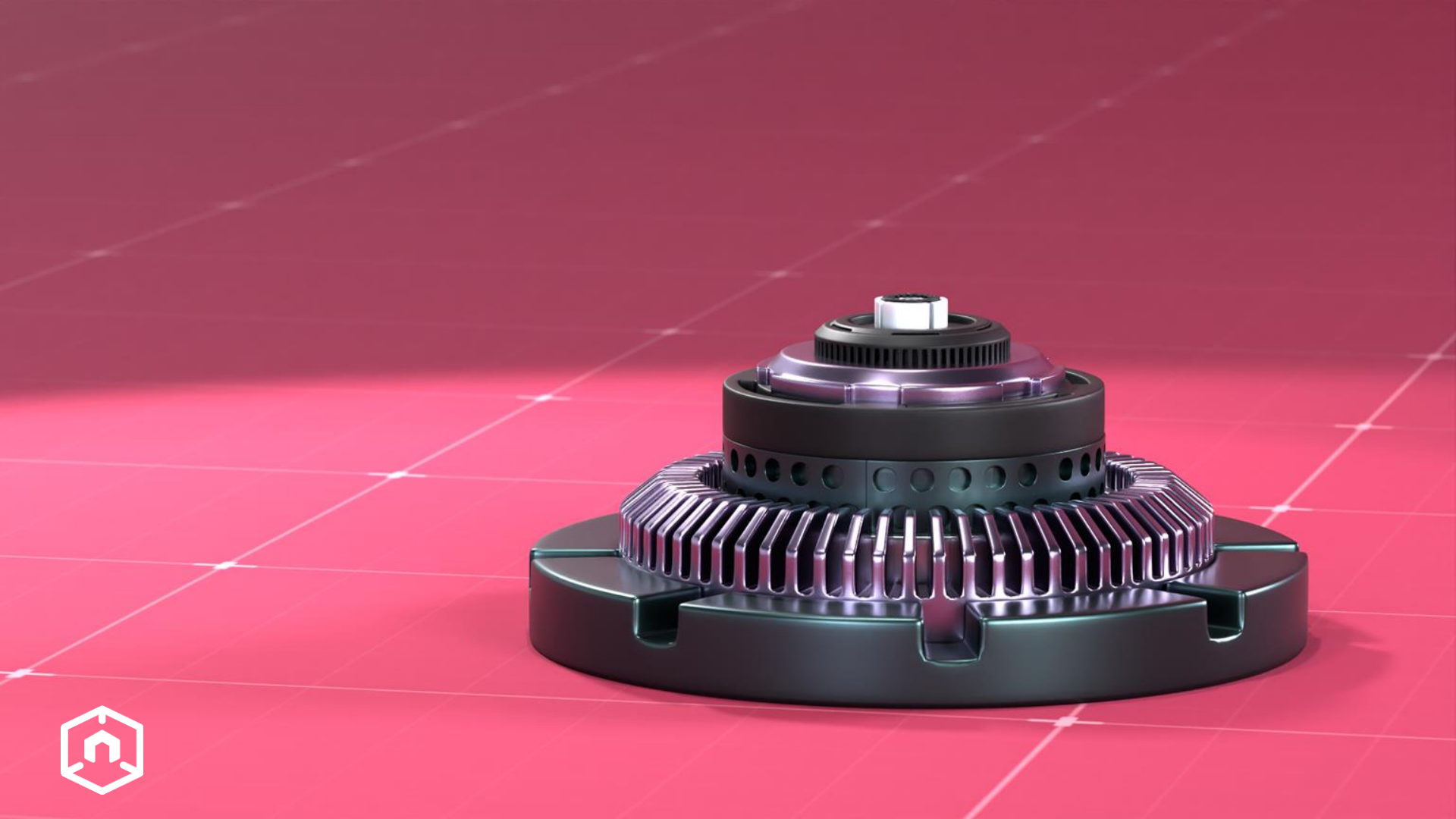
AI-assisted rendering performed by nyris

Neural Network Training & Indexing performed by nyris



Visual Search SaaS available to our customers





STEP 2: COMPARE EMBEDDINGS TO FIND THE RIGHT MATCH

On-site

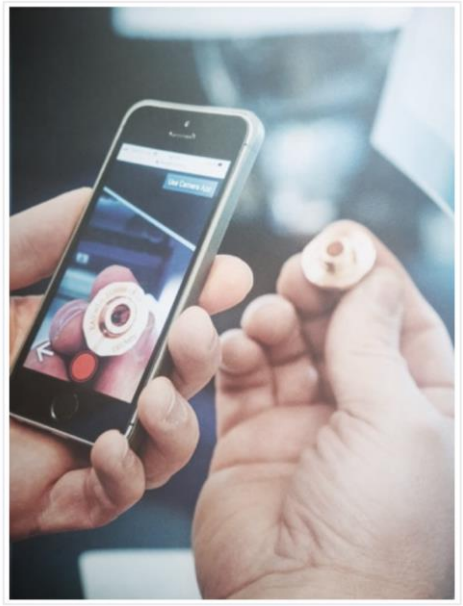


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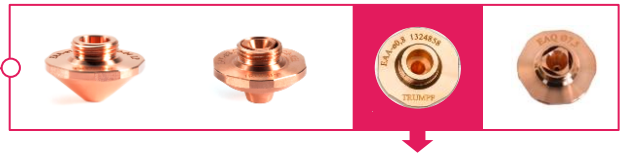
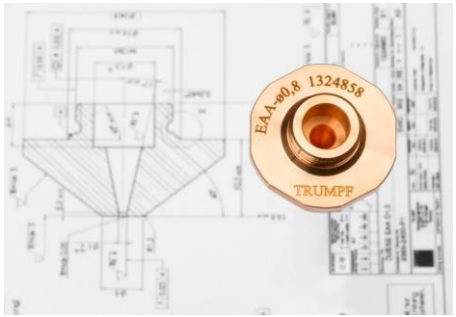
Image Matching Cloud Platform

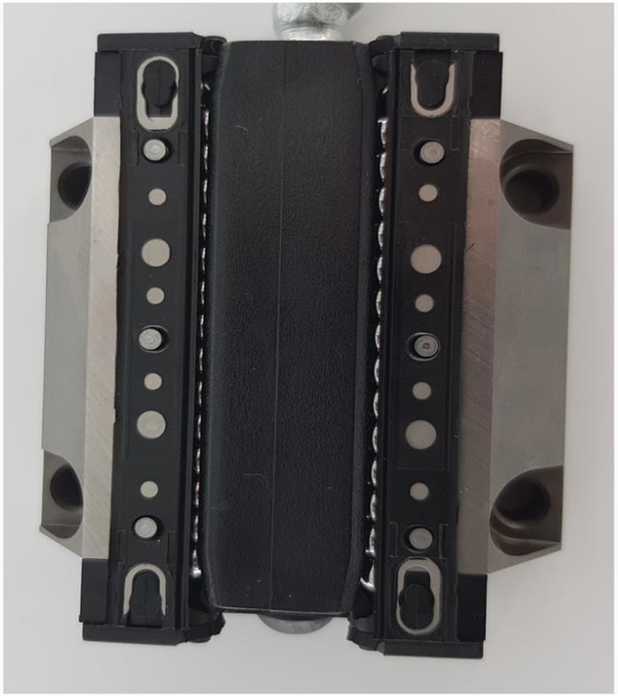




Part found

Today at 2:16 PM OK 0.9s





TRUMPF & nyris

THANK YOU!

#**nyris**crew