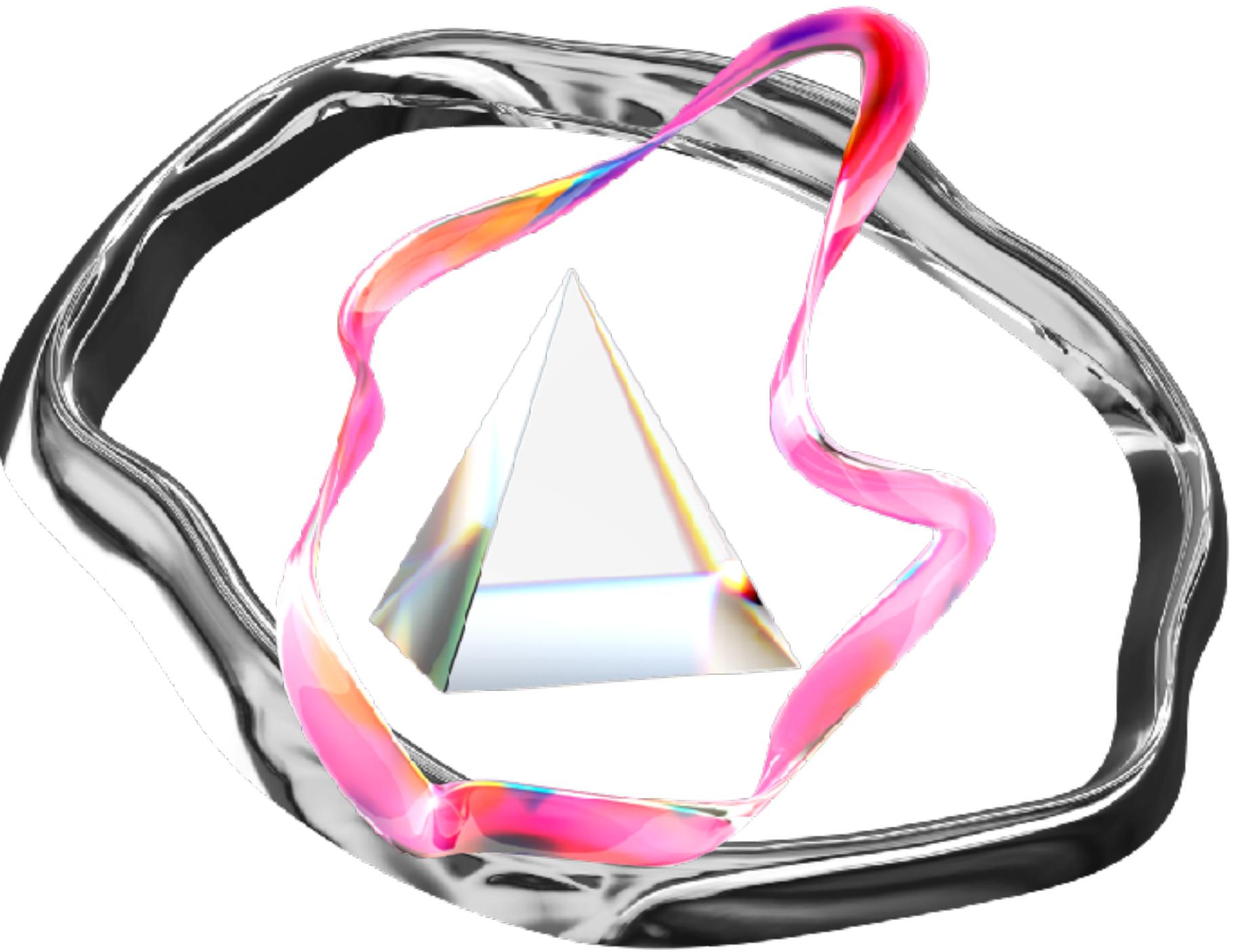
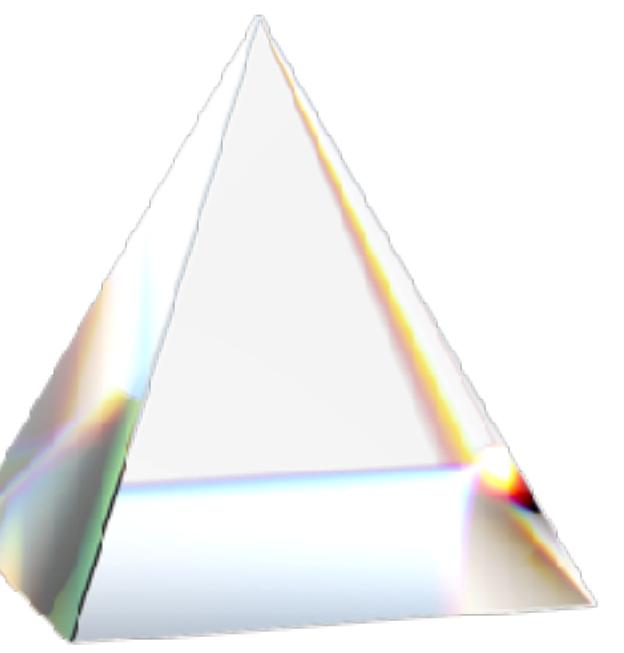


AI + AI + AI

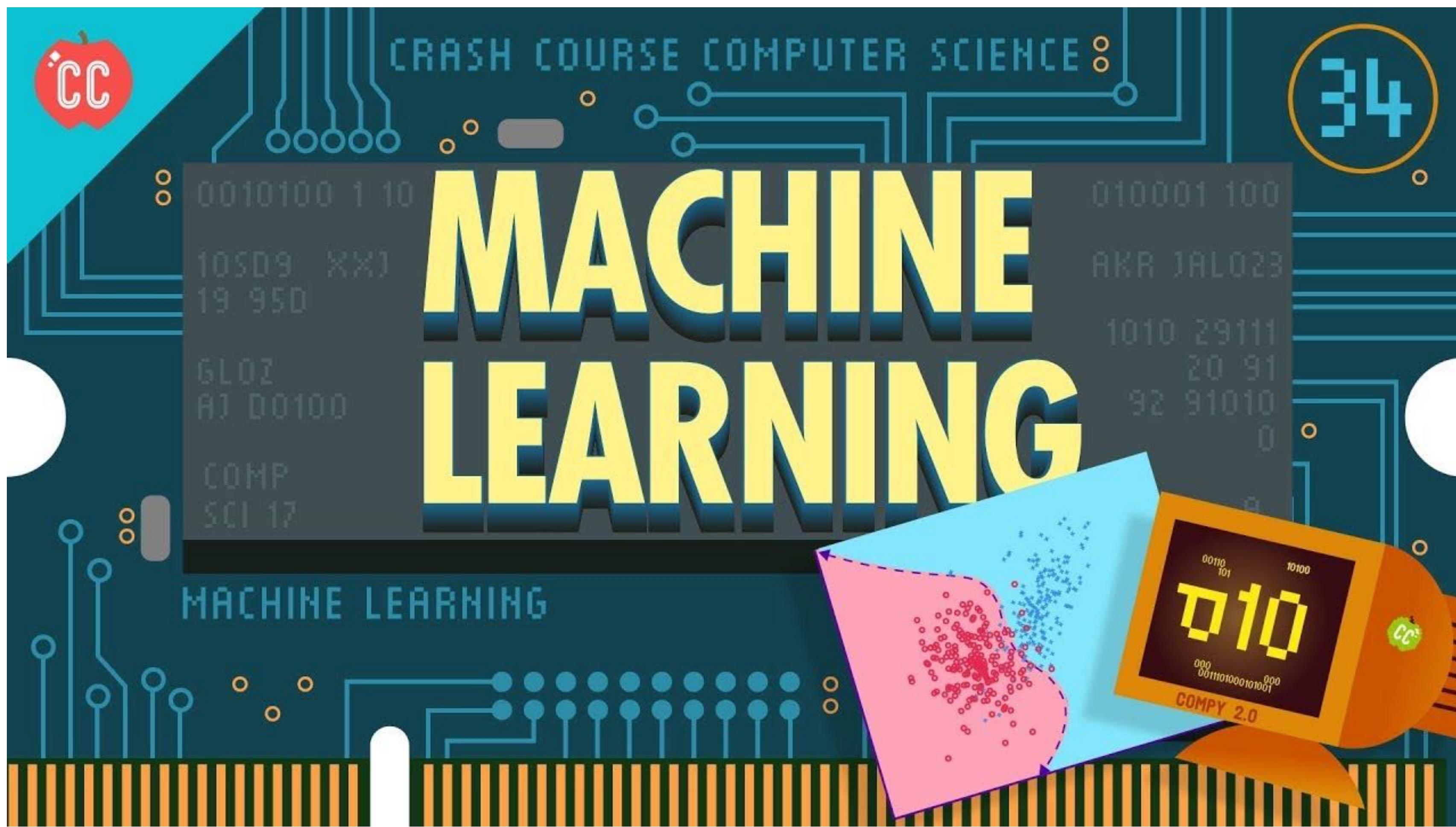
AI MODULE X SCREENS

enrique.encinas @aho.no





ALBARI



The slide has a dark header bar with the title 'History of machine learning' in red. Below the header is a large white content area containing a bulleted list of historical milestones in machine learning. At the bottom of the slide, there is a navigation bar with several items: 'Intro ML (UofT)', 'CSC311-Lec1', and a page number '17'. The main content is as follows:

- 1957 — Perceptron algorithm (implemented as a circuit!)
- 1959 — Arthur Samuel wrote a learning-based checkers program that could defeat him
- 1969 — Minsky and Papert's book *Perceptrons* (limitations of linear models)
- 1980s — Some foundational ideas
 - ▶ Connectionist psychologists explored neural models of cognition
 - ▶ 1984 — Leslie Valiant formalized the problem of learning as PAC learning
 - ▶ 1988 — Backpropagation (re-)discovered by Geoffrey Hinton and colleagues
 - ▶ 1988 — Judea Pearl's book *Probabilistic Reasoning in Intelligent Systems* introduced Bayesian networks

History of machine learning

- 1990s — the “AI Winter”, a time of pessimism and low funding
- But looking back, the '90s were also sort of a golden age for ML research
 - ▶ Markov chain Monte Carlo
 - ▶ variational inference
 - ▶ kernels and support vector machines
 - ▶ boosting
 - ▶ convolutional networks
 - ▶ reinforcement learning
- 2000s — applied AI fields (vision, NLP, etc.) adopted ML
- 2010s — deep learning
 - ▶ 2010–2012 — neural nets smashed previous records in speech-to-text and object recognition
 - ▶ increasing adoption by the tech industry
 - ▶ 2016 — AlphaGo defeated the human Go champion
 - ▶ 2018-now — generating photorealistic images and videos
 - ▶ 2020 — GPT3 language model

AI

An
introduction

ARTIFICIAL
LEARNING
use
systems
to find
patterns in large
amounts of data

AI

An acronym for
Artificial Intelligence.

MAC

Machine
learning
itself.
Algorithms that use
statistics to find
patterns in large
amounts of data.

ML

An acronym for
Machine Learning.

SIMULATED AI

Machines learn
through rules.

AI TECHNOLOGIES

STRONG / GENERAL AI

?

WEAK / SPECIALIZED KI

CLASSIC / SYMBOLIC

DECISION TREES

SEARCH

RULE BASED SYSTEMS SYMBOLIC LOGIC

TABLE BASED

AGENTS

EXPERT SYSTEMS

EXPERT SYSTEMS

WITH NN INPUT

MONTE CARLO
SEARCH WITH NN

NEURAL NETWORKS

LSTM

CONVOLUTIONAL NN

ATTENTION

AUTOENCODER

DEEP LEARNING

MACHINE LEARNING

DECISION TREE

LEARNING

XGBOOST

MIXED ALGORITHMS

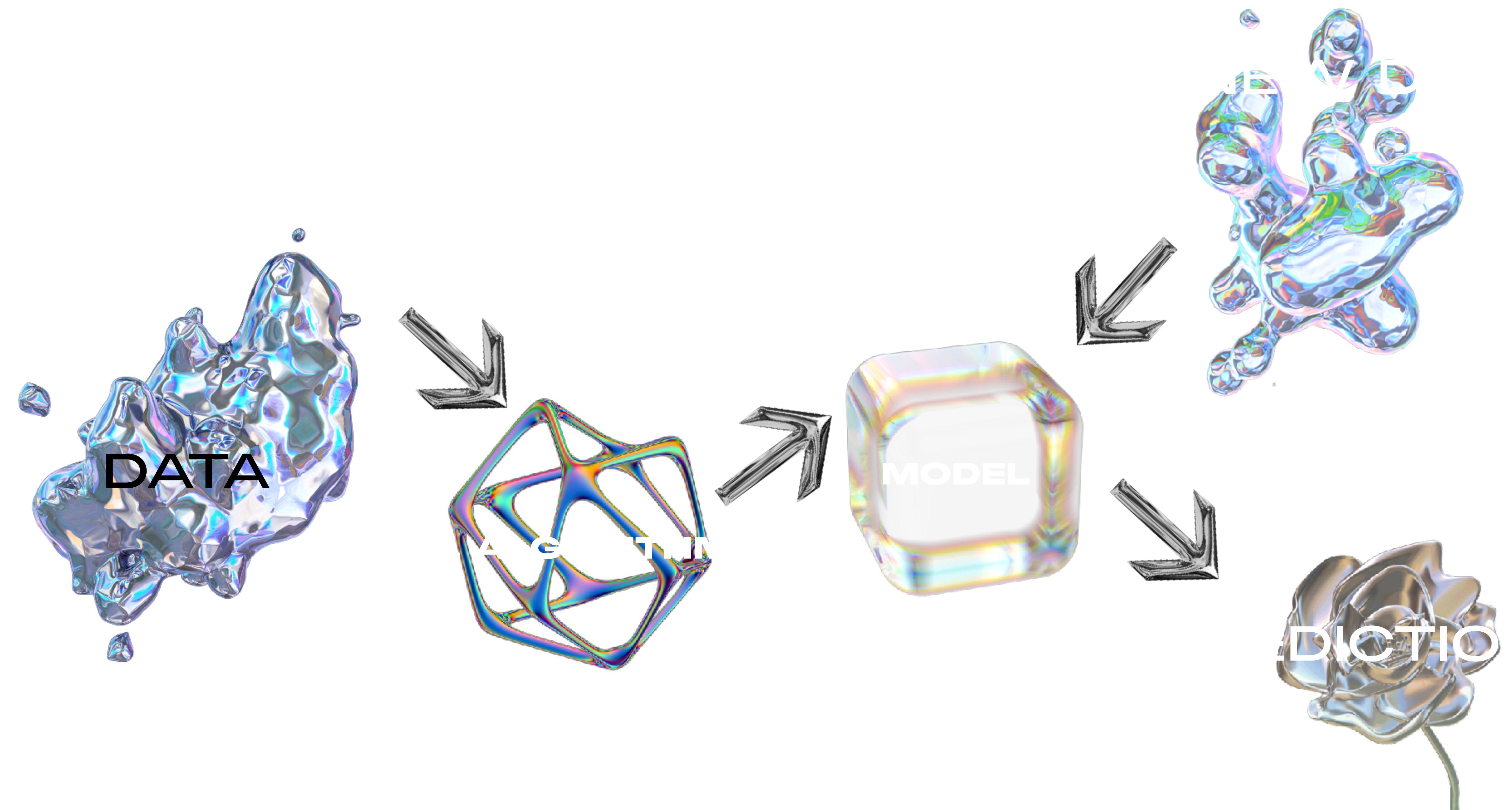
LINEAR REGRESSION

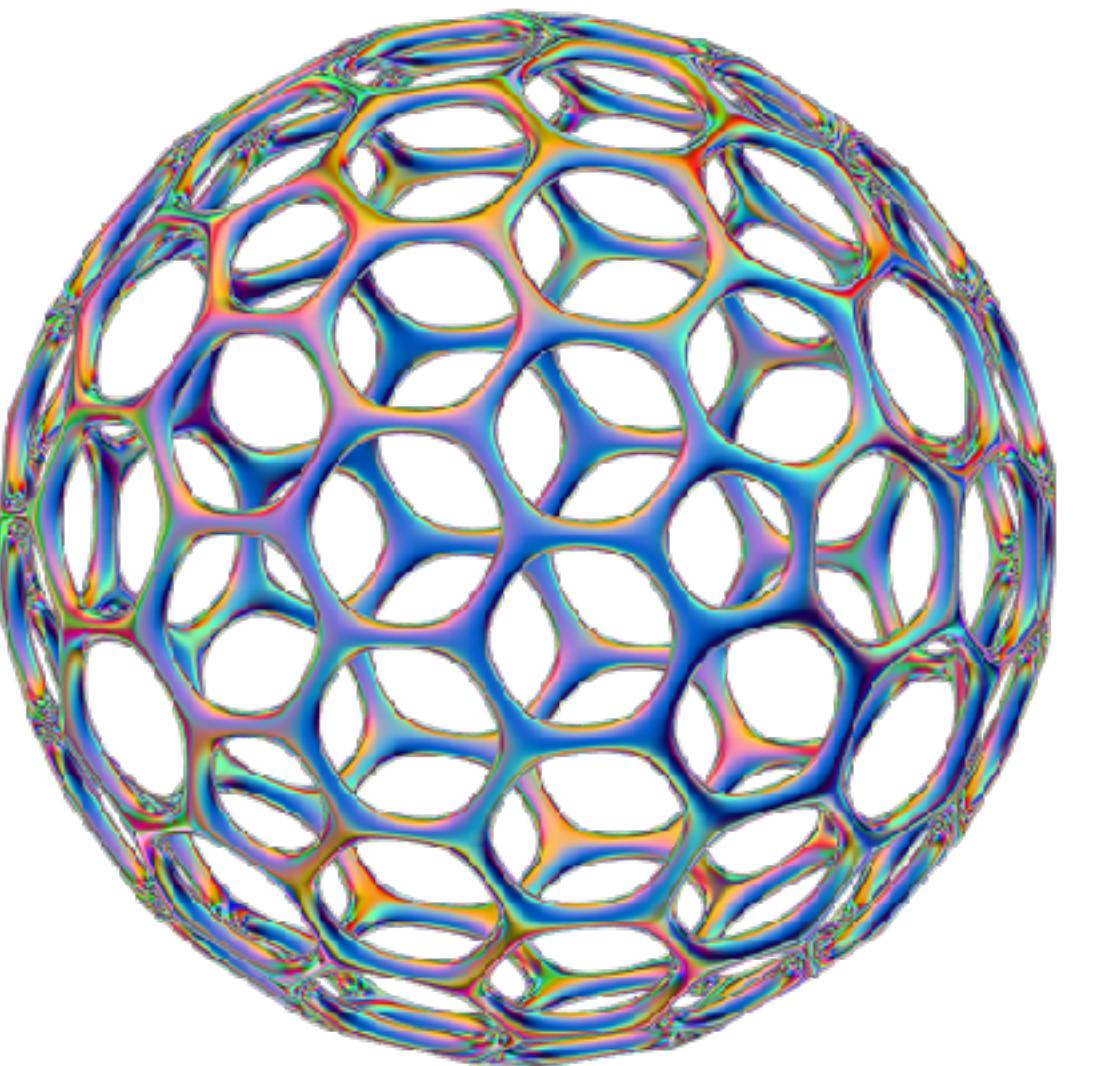
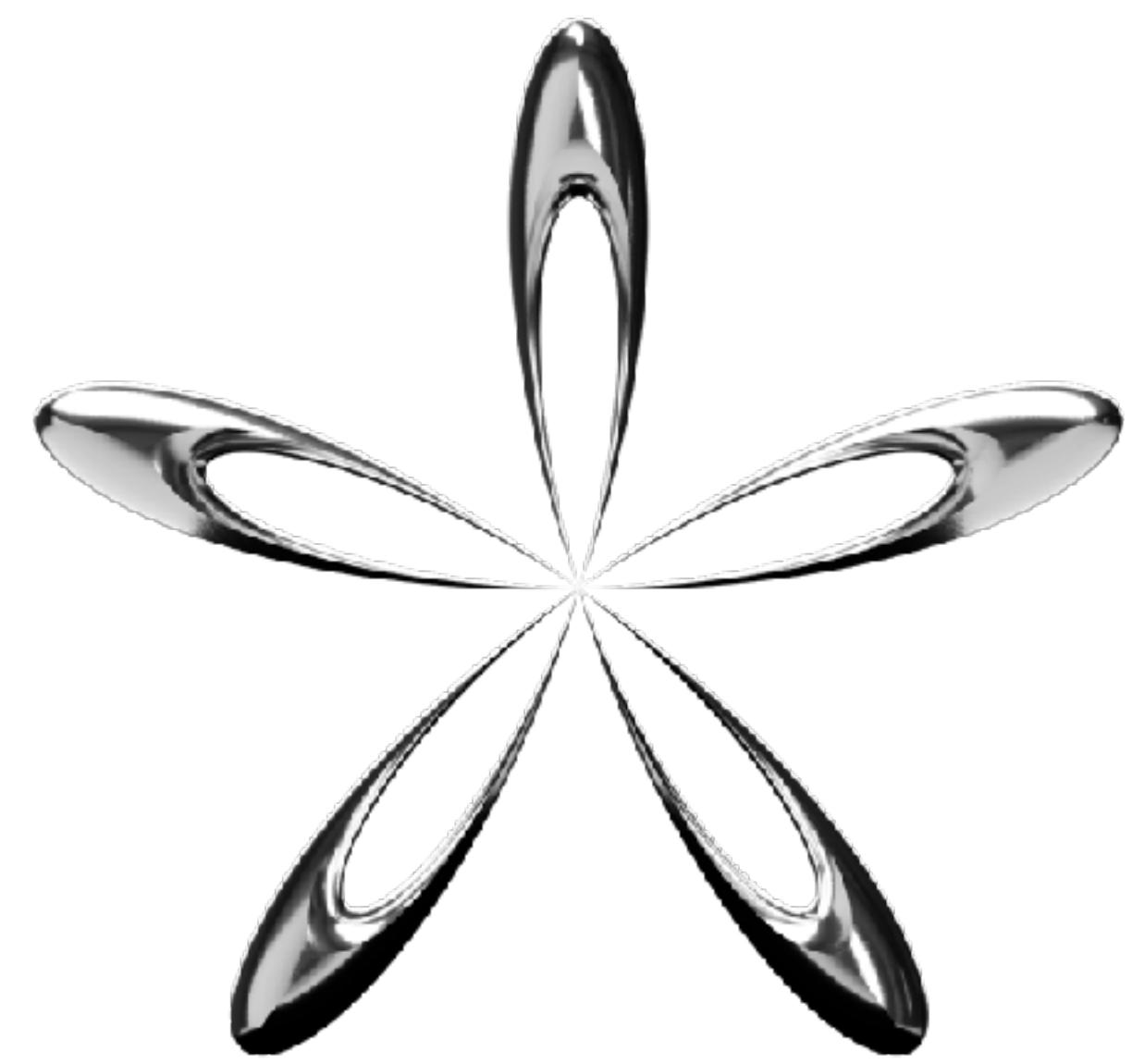
NAIVE BAYES

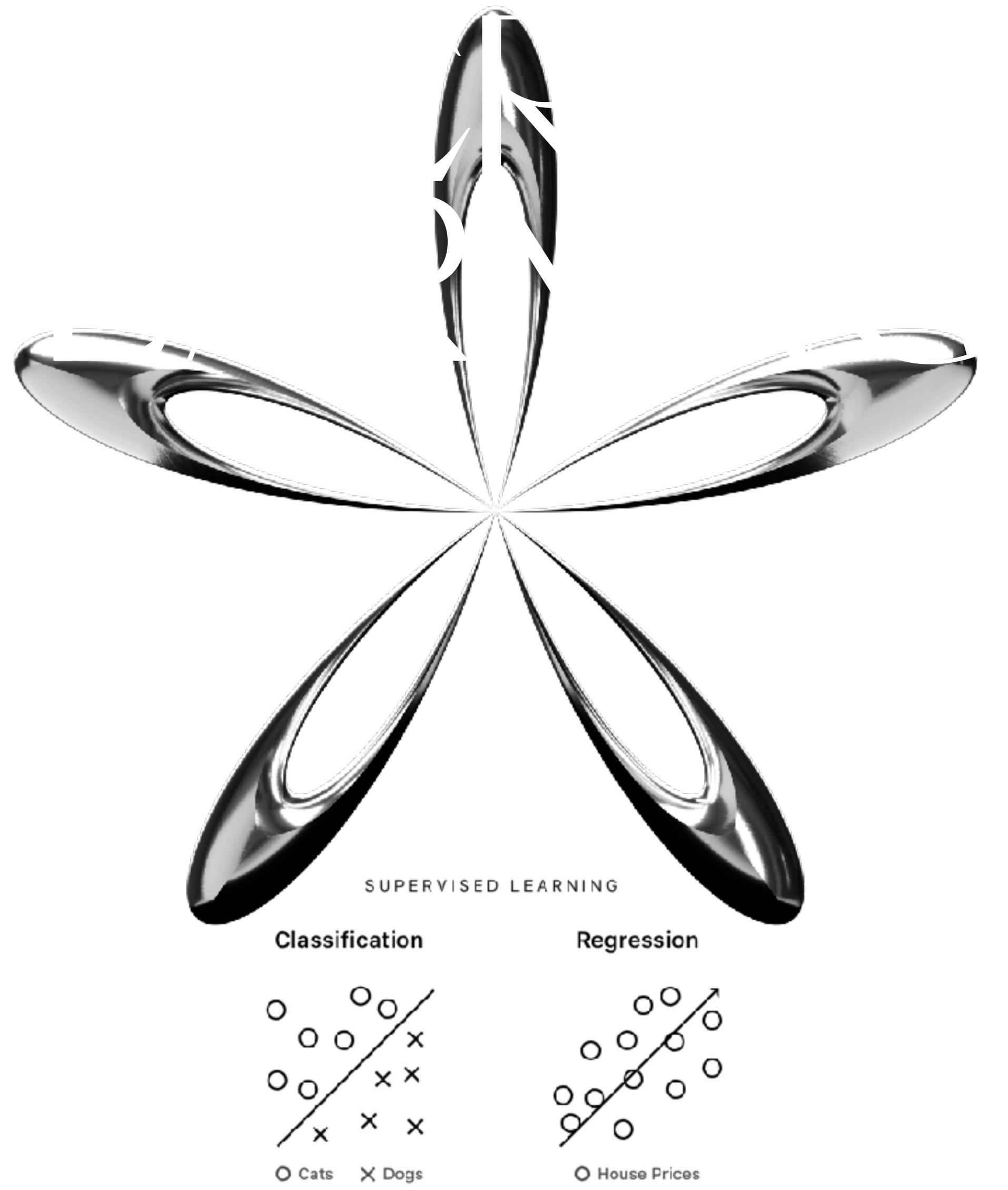
RANDOM FOREST

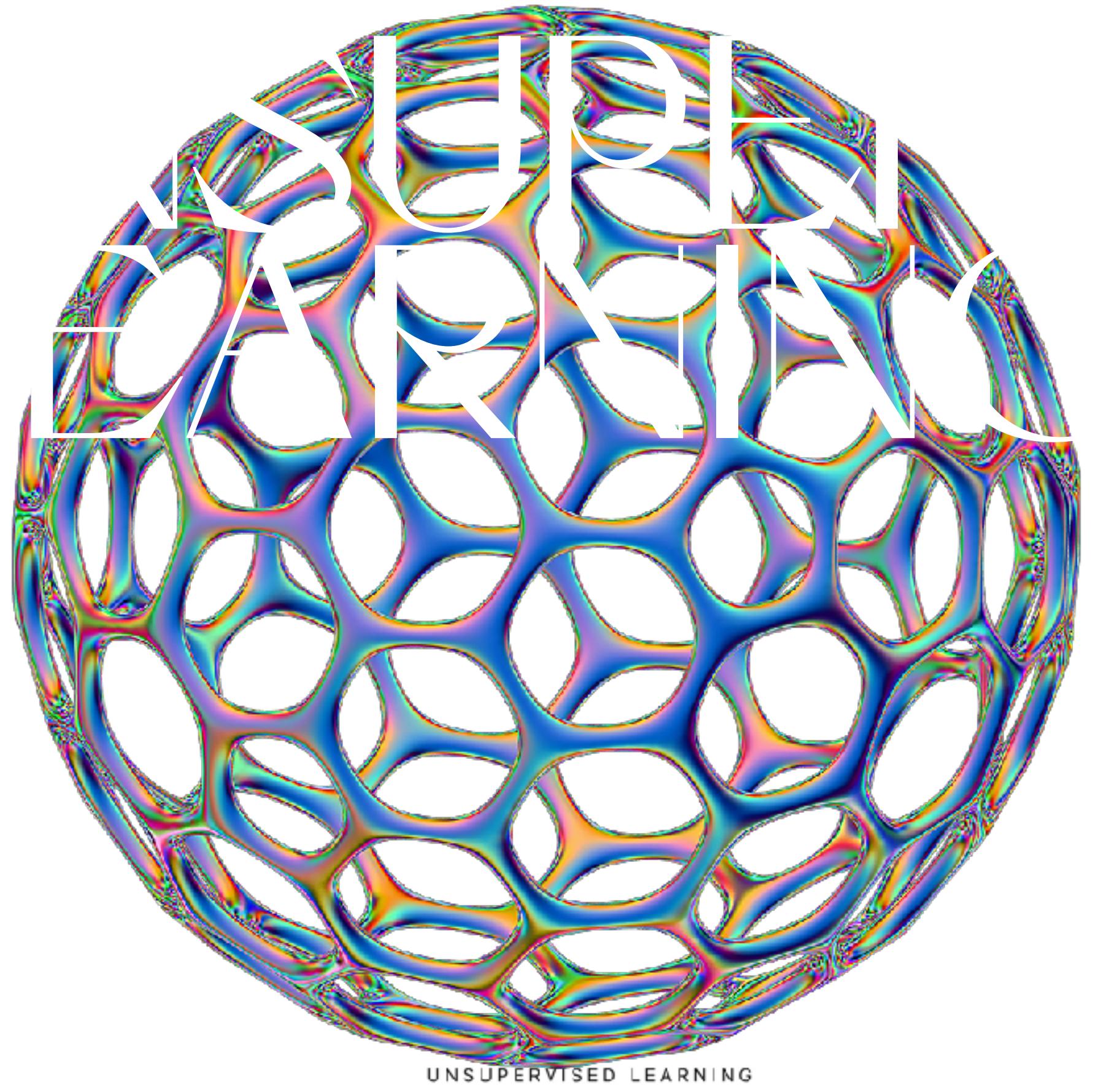
Q LEARNING

EVOLUTIONARY
ALGORITHIMS



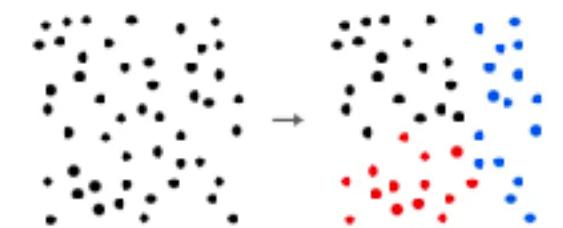




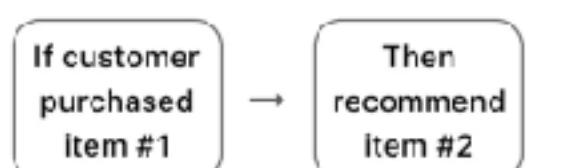


UNSUPERVISED LEARNING

Clustering



Association





ARTIFICIAL INTELLIGENCE

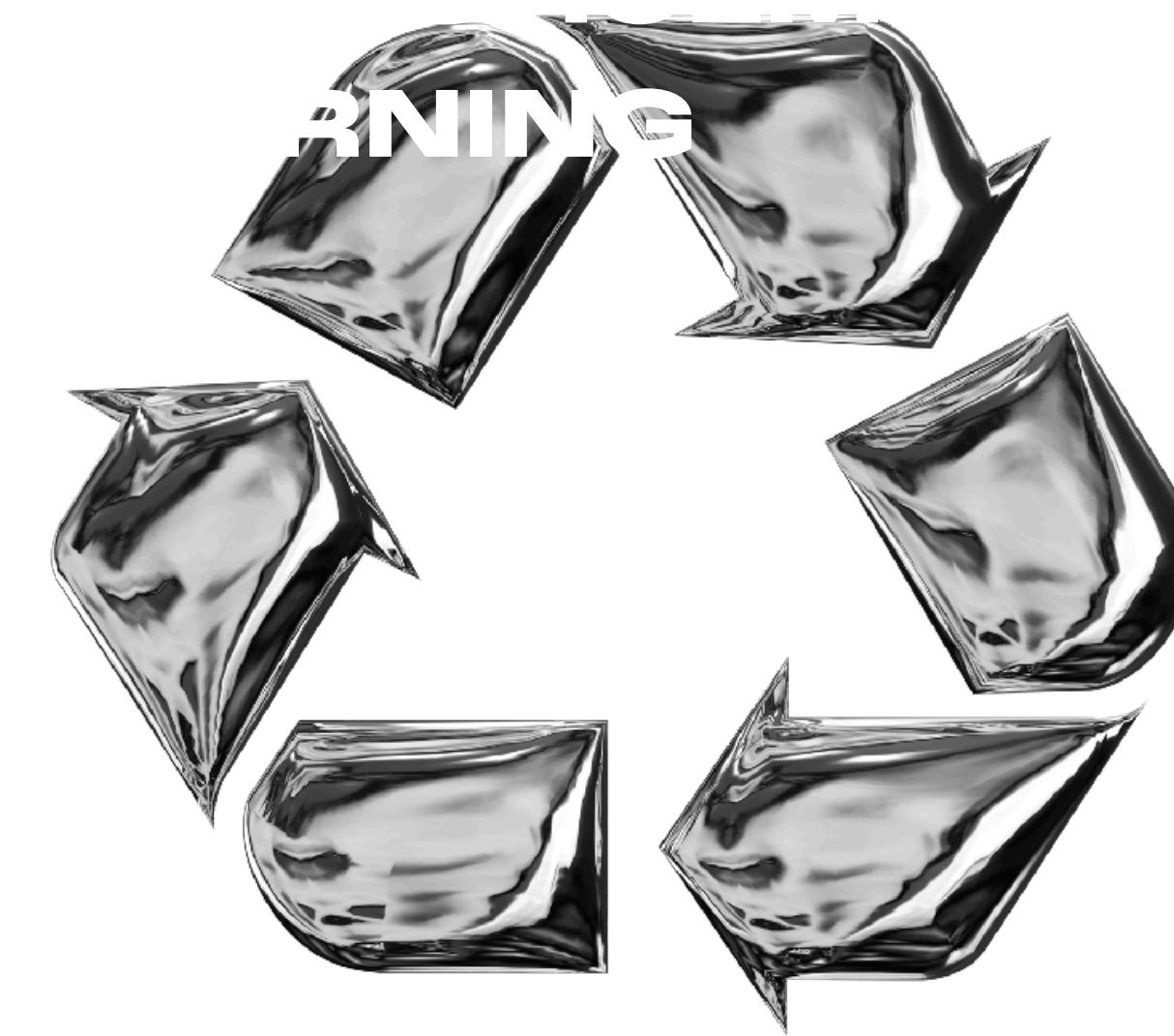
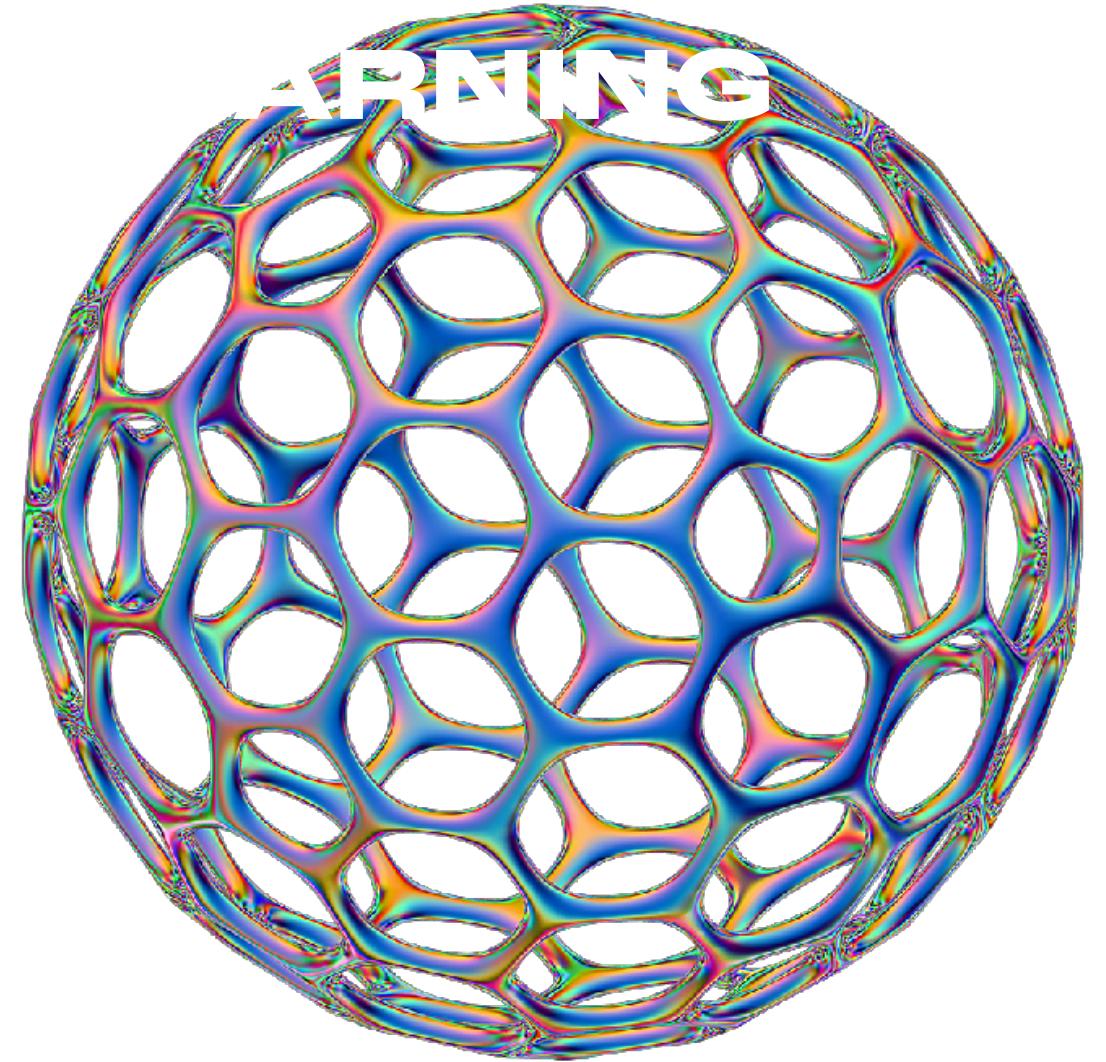
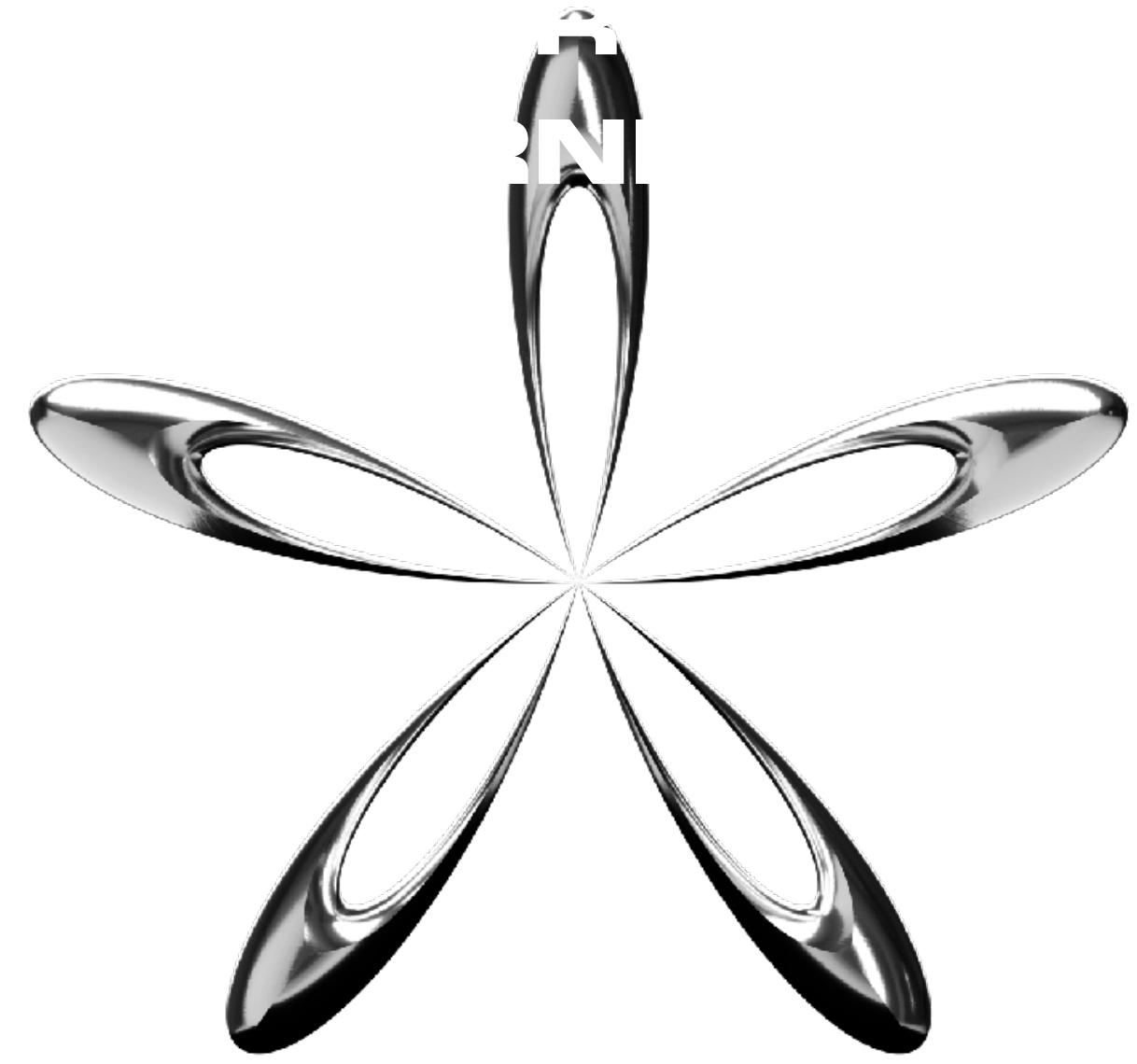
Any intelligent behaviour by a computer system or machine.

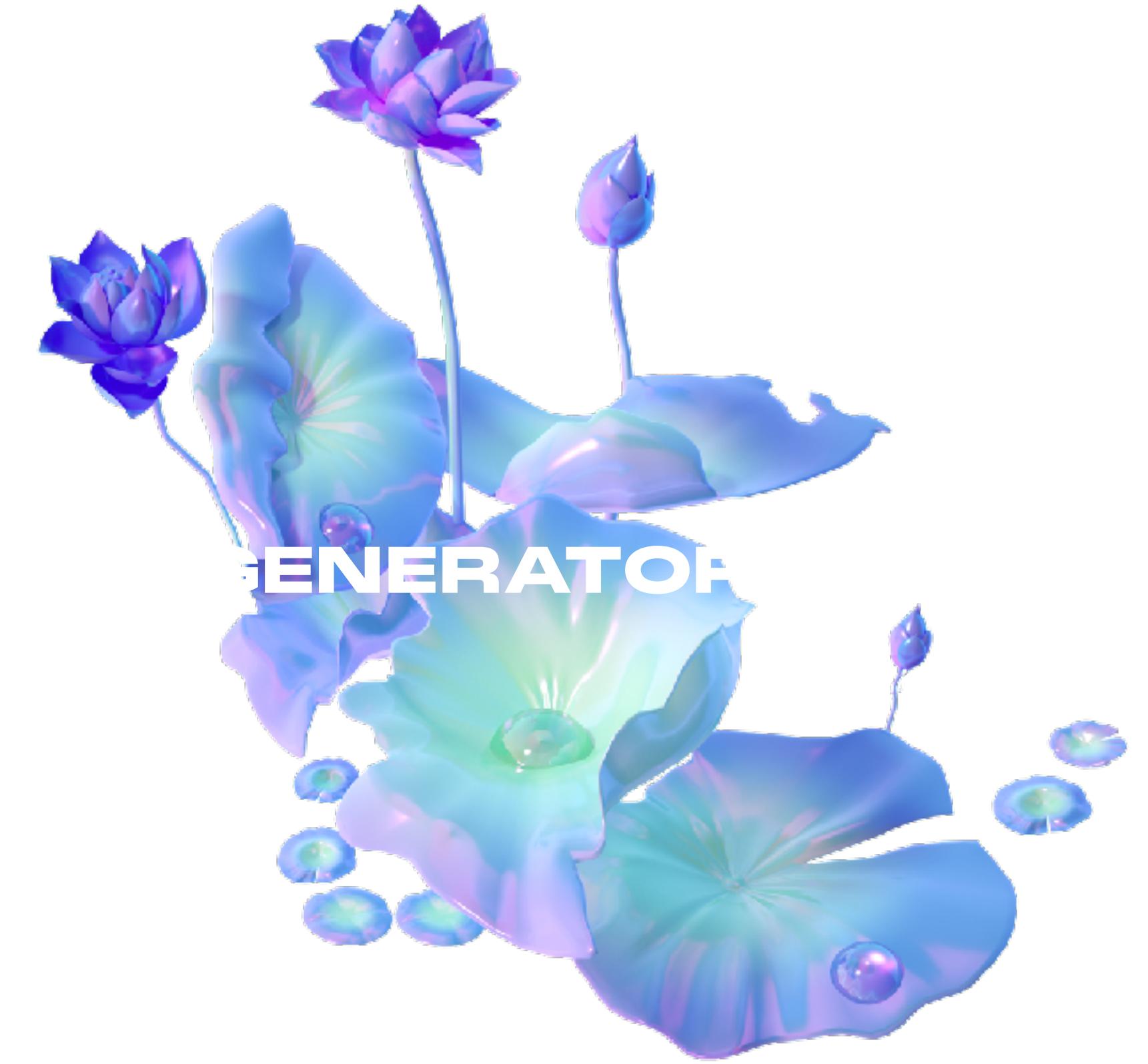
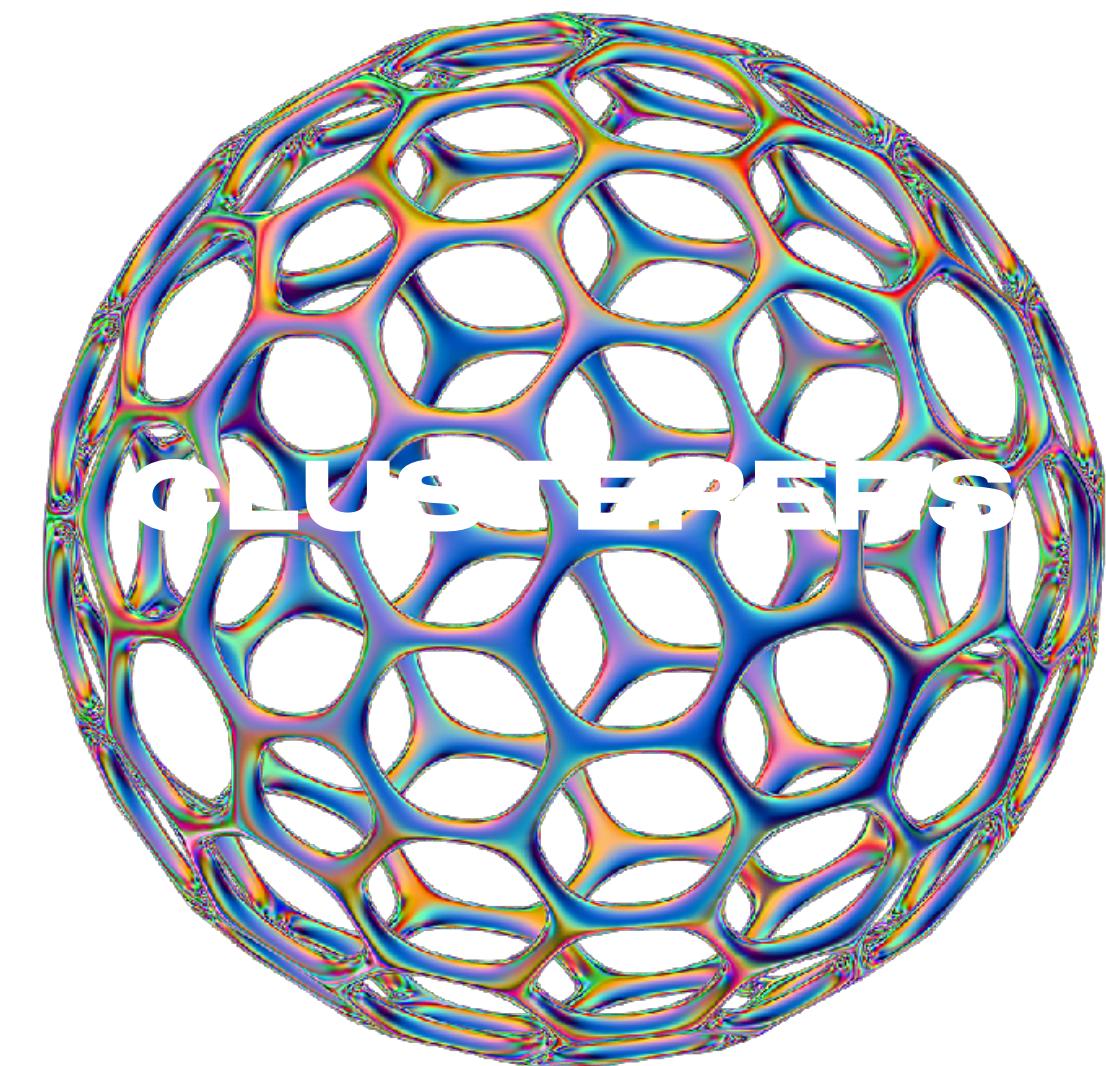
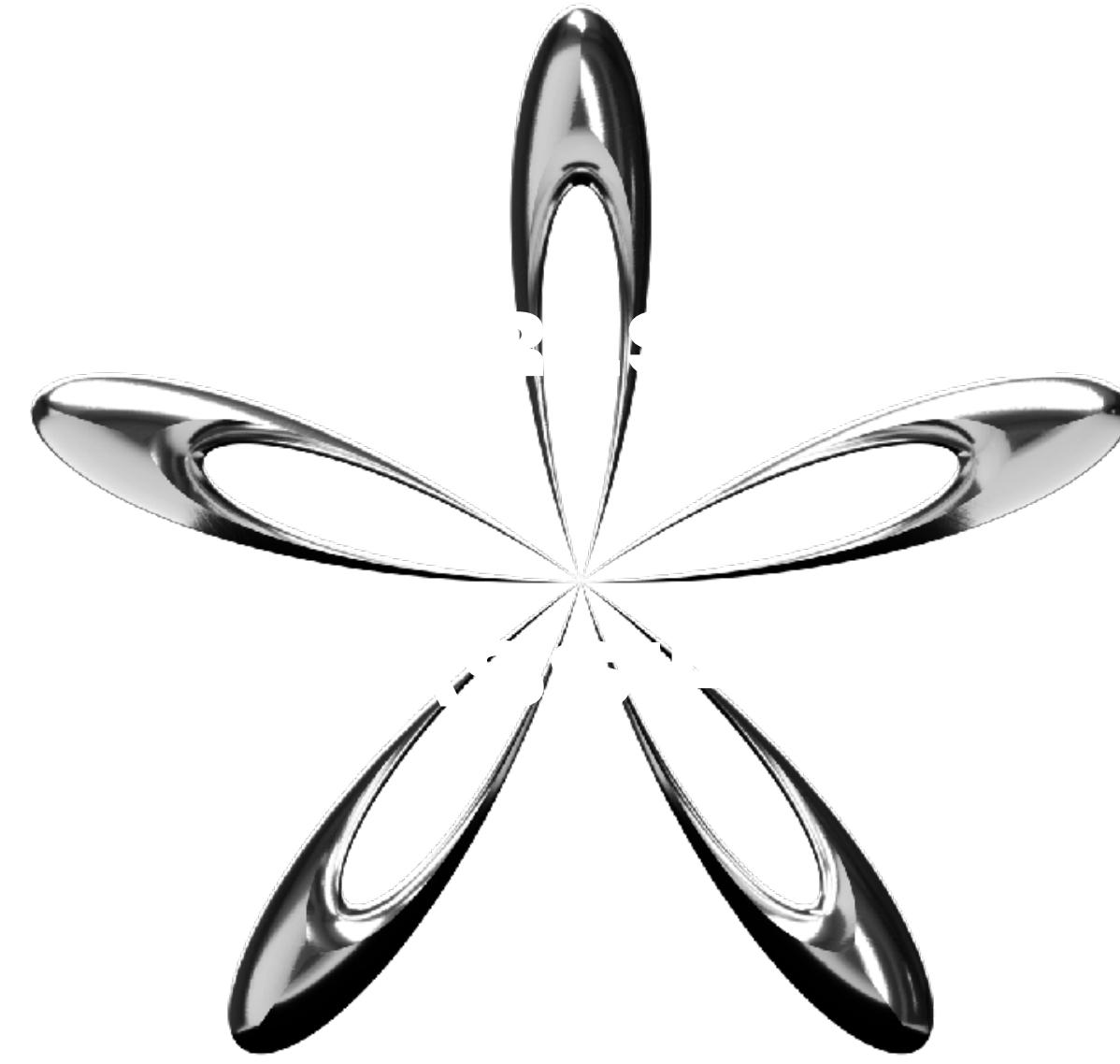
MACHINE LEARNING

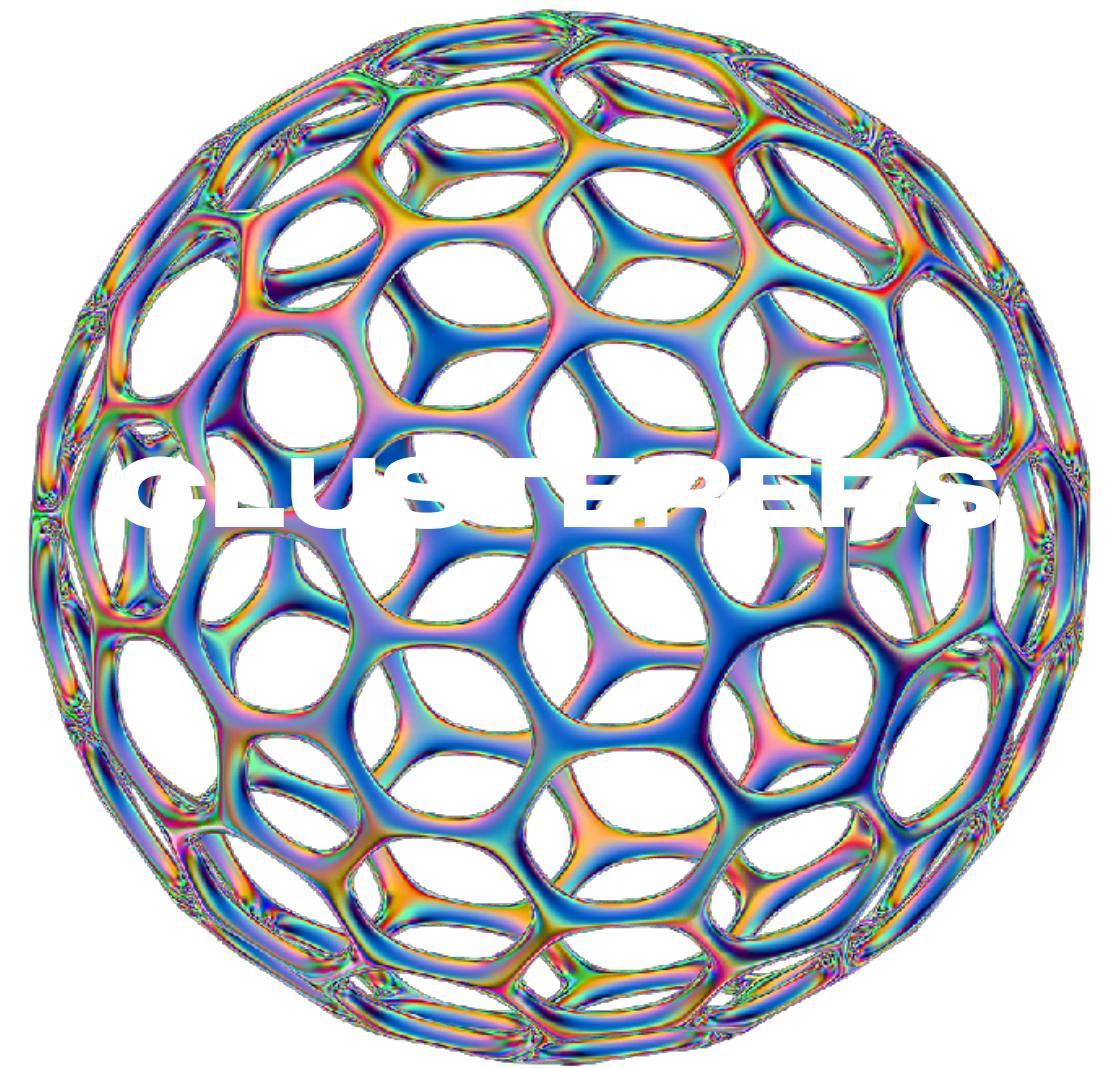
Algorithms that use
statistical models to find patterns
and make predictions

DEEP LEARNING

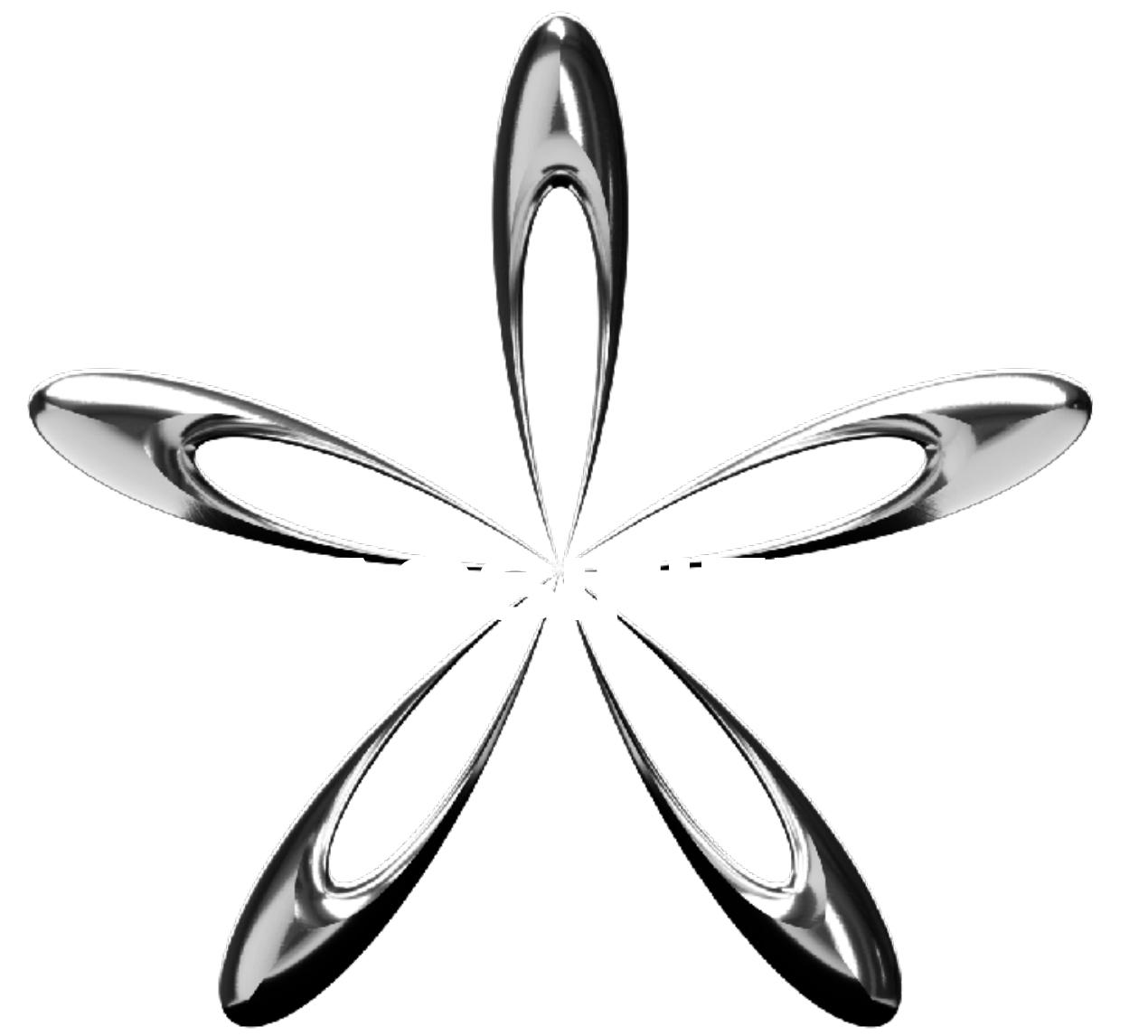
ML methods based on
artificial neural
networks

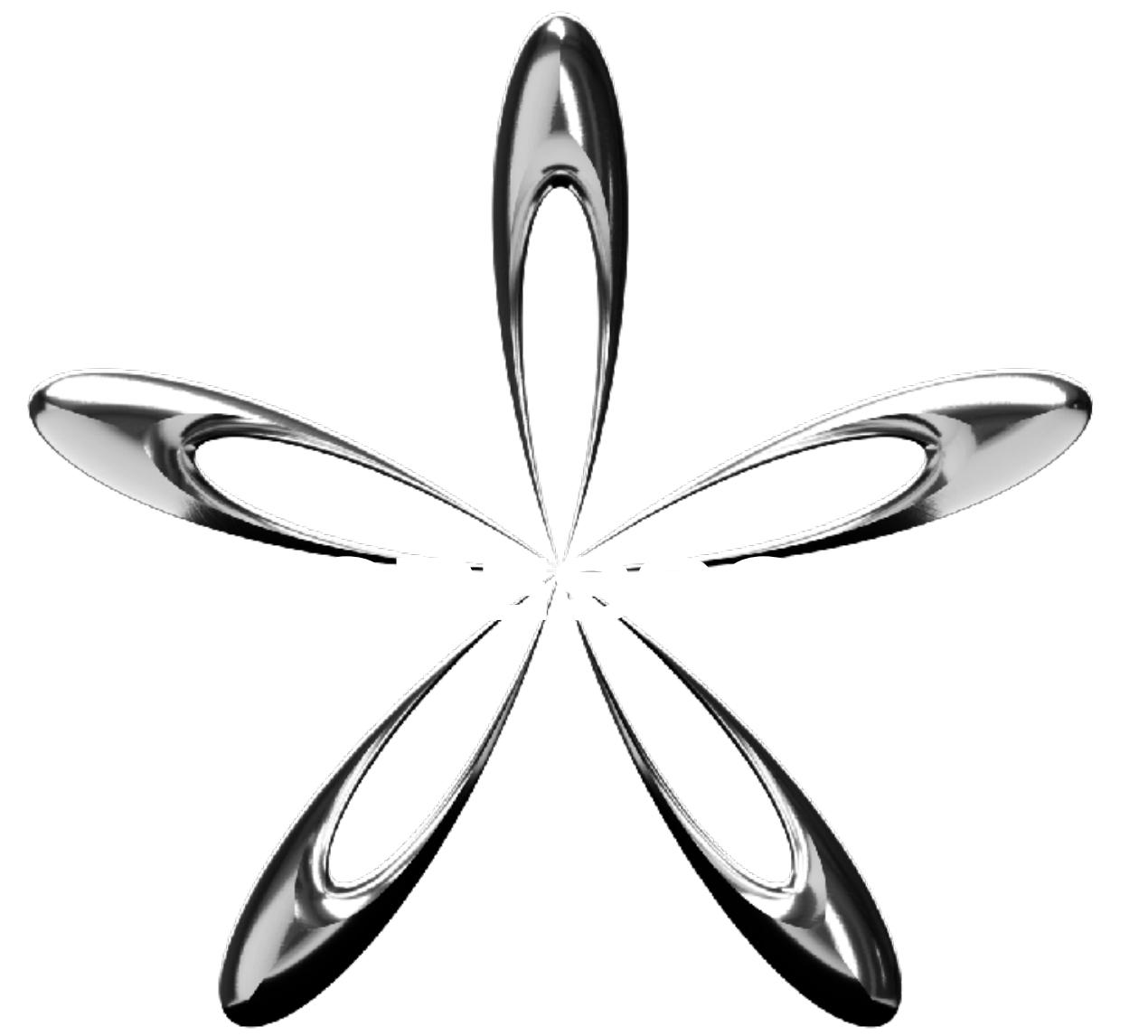






PLUS APPS



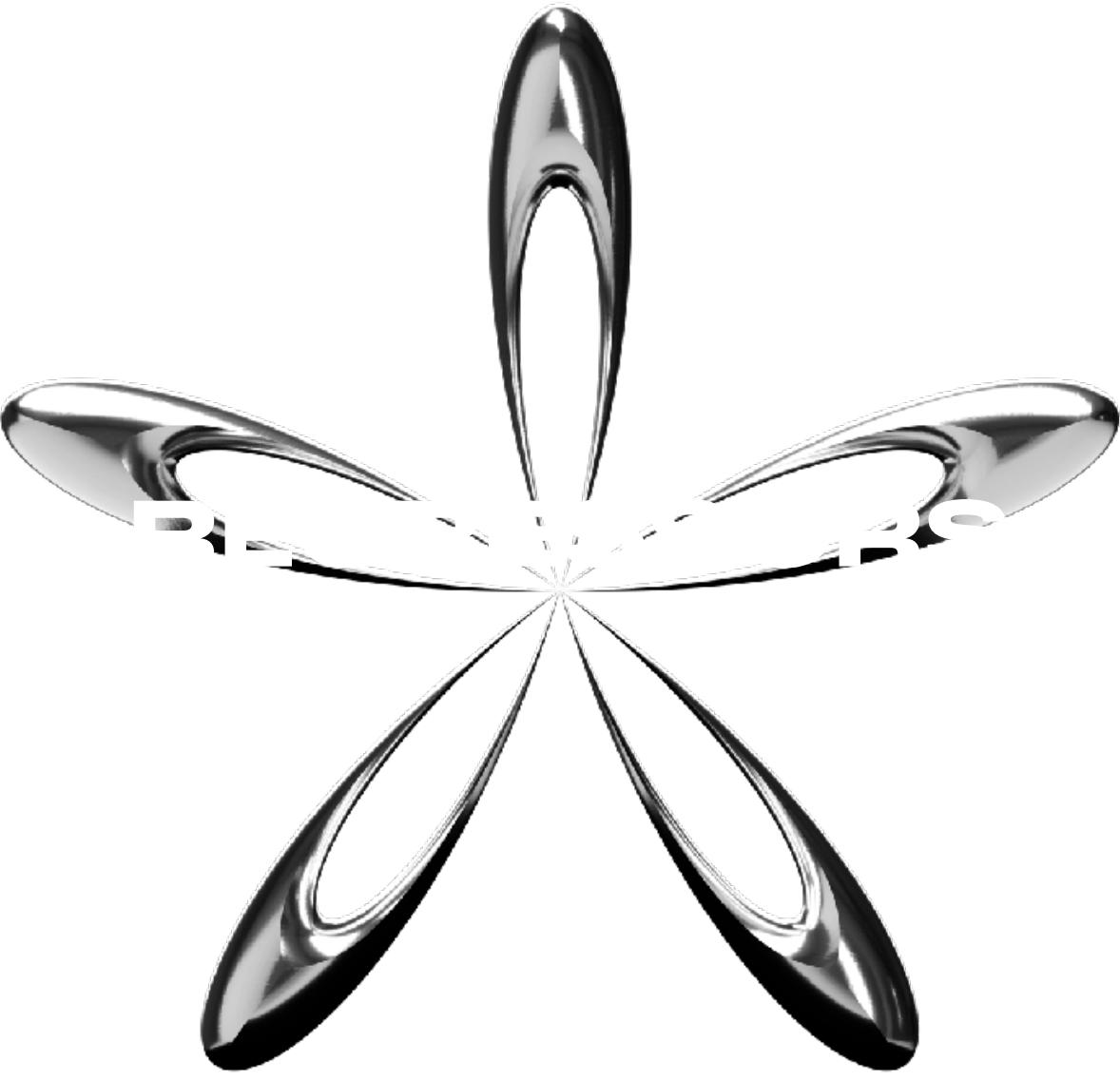
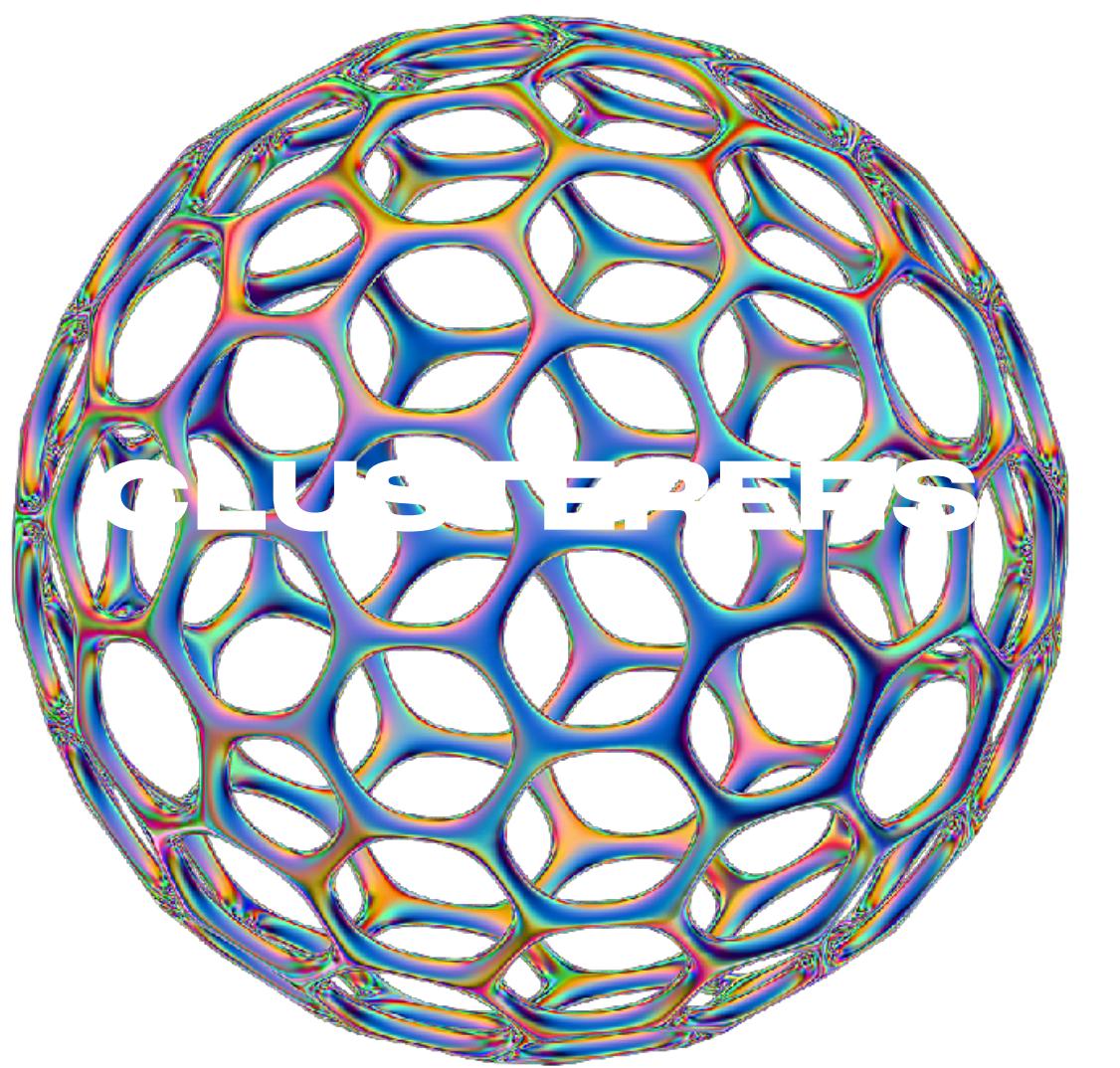
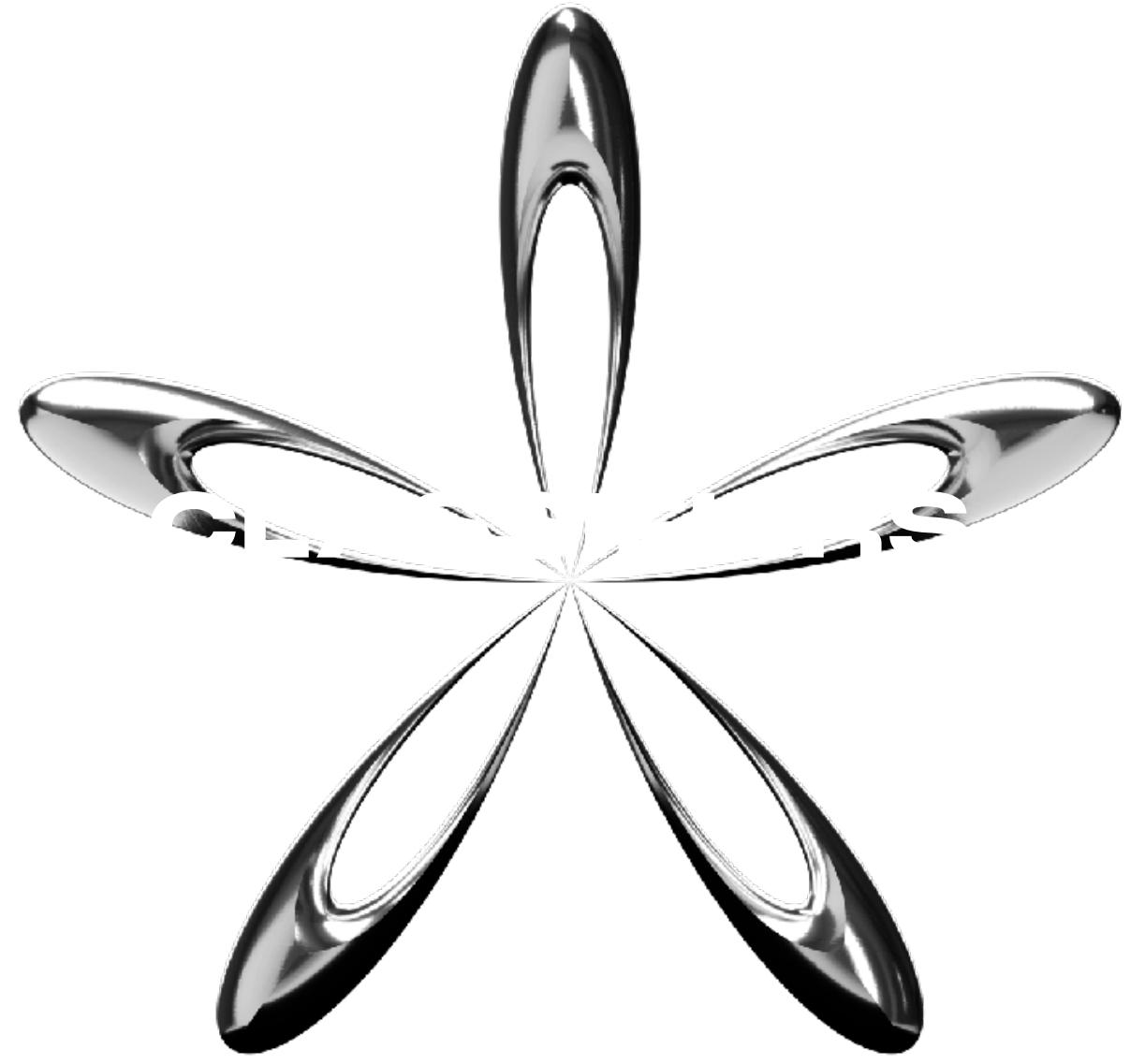




GENERATOR



HAND&CO



AI + AI + AI
AI MODULE X SCREENS

TAKK!

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