AI + AI + AI

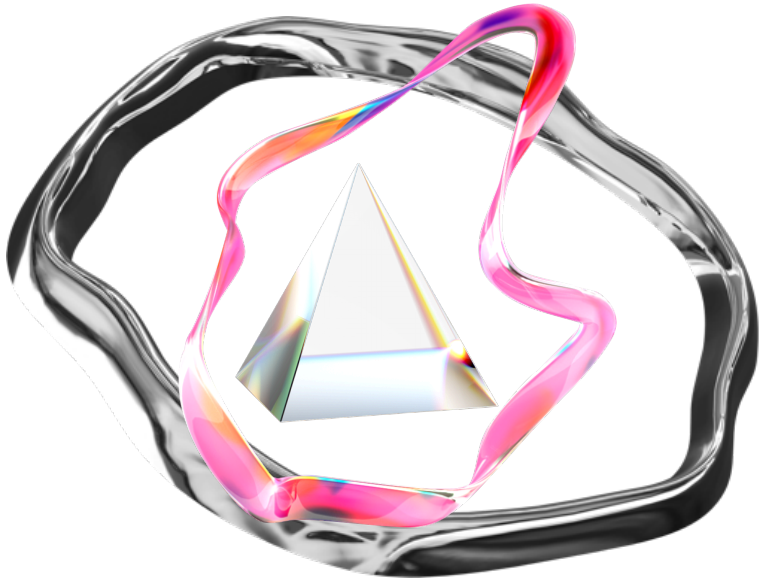
AI MODULE X SCREENS

enrique.encinas @aho.no

AIAIAINEWS

3 WEEKS

13th March -> 31st March



HTTPS://GITHUB.COM/ENRIQUEKI/AIAIAI

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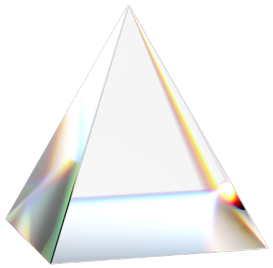
SLACK

WEEK #1

13th March -> 20th March

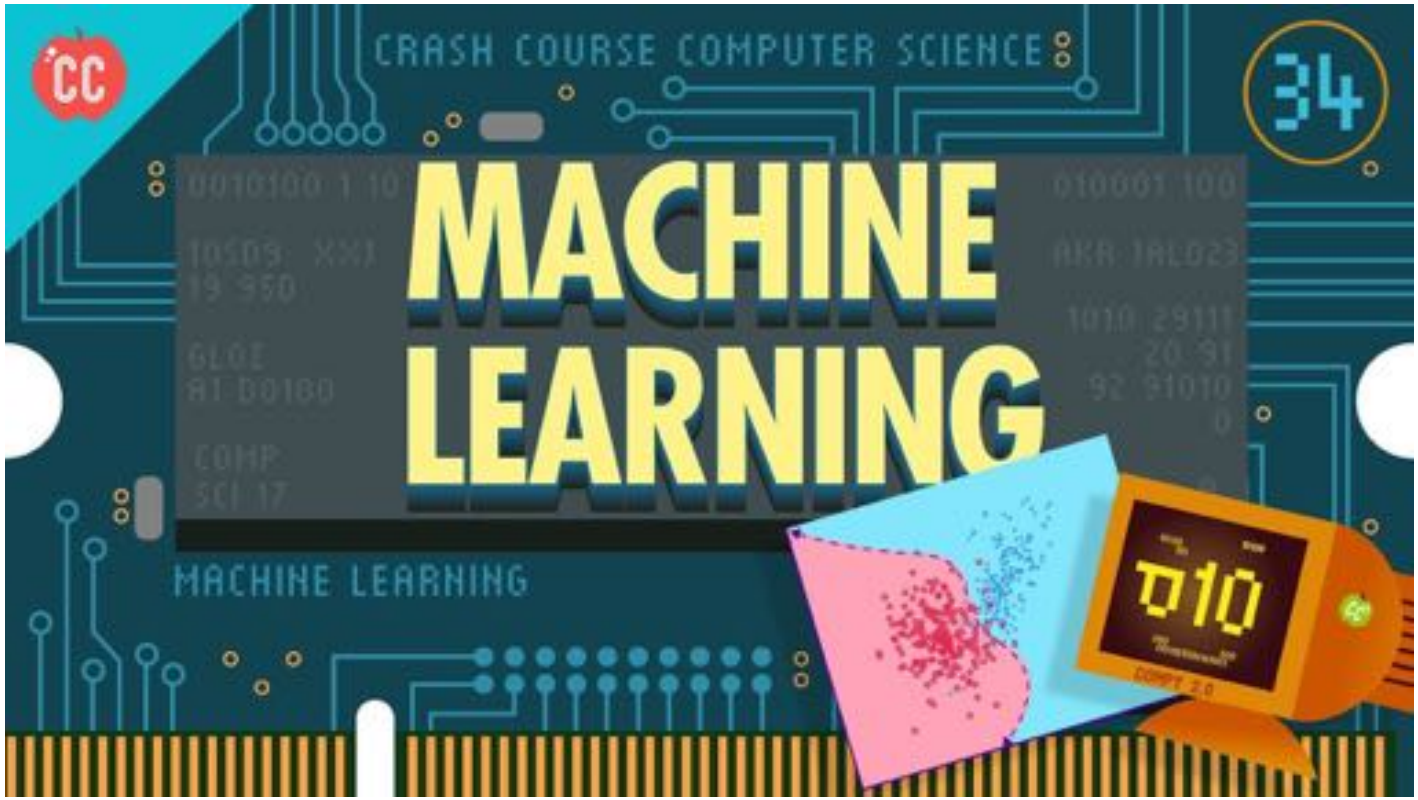


AI X LAST WEEK

:: P5.JS + AI BASICS


AI BASICS

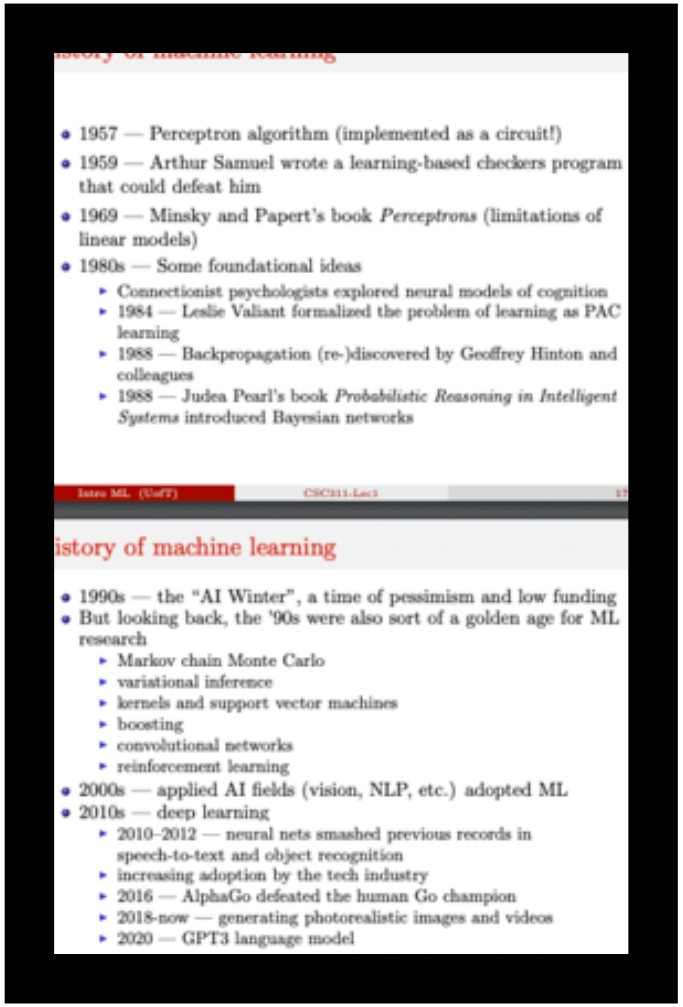
AI WHAT?


CRASH COURSE COMPUTER SCIENCE
34
MACHINE LEARNING
MACHINE LEARNING

WWW.AUTODRAW.COM

AI WHAT?

Super quick history :



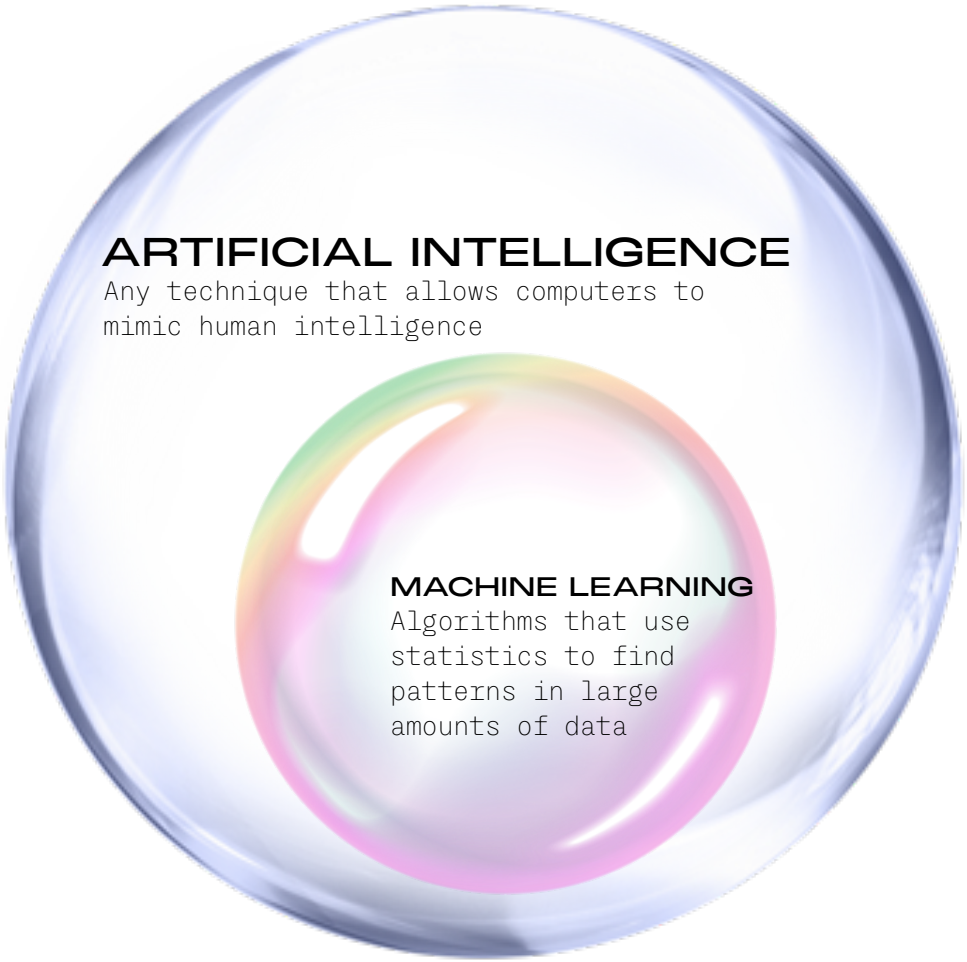
- 1957 — Perceptron algorithm (implemented as a circuit!)
- 1959 — Arthur Samuel wrote a learning-based checkers program that could defeat him
- 1969 — Minsky and Papert's book *Perceptrons* (limitations of linear models)
- 1980s — Some foundational ideas
  - Connectionist psychologists explored neural 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

Intro ML (UofT) CSC311-Lec1

istory 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

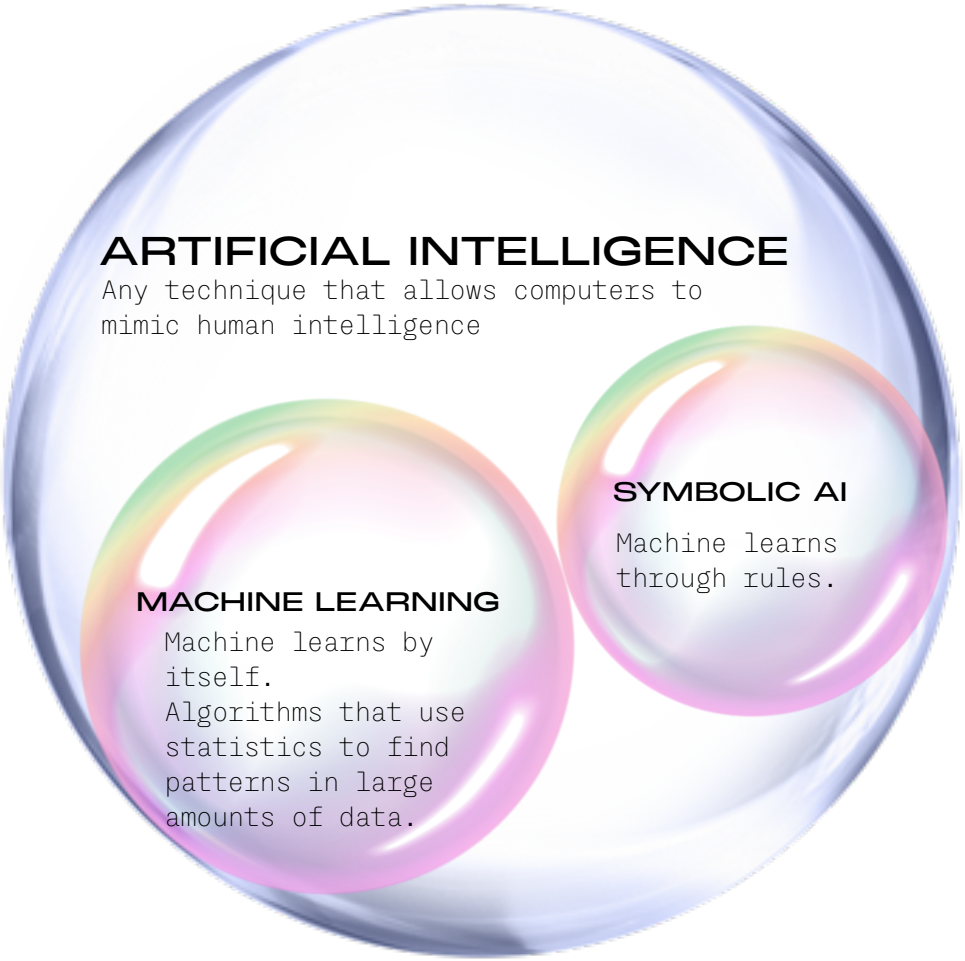
AI WHAT?



General ai - sentient and autonomous artificial intelligence (some argue this is impossible)

Narrow ai - ai that solves a particular problem

AI WHAT?



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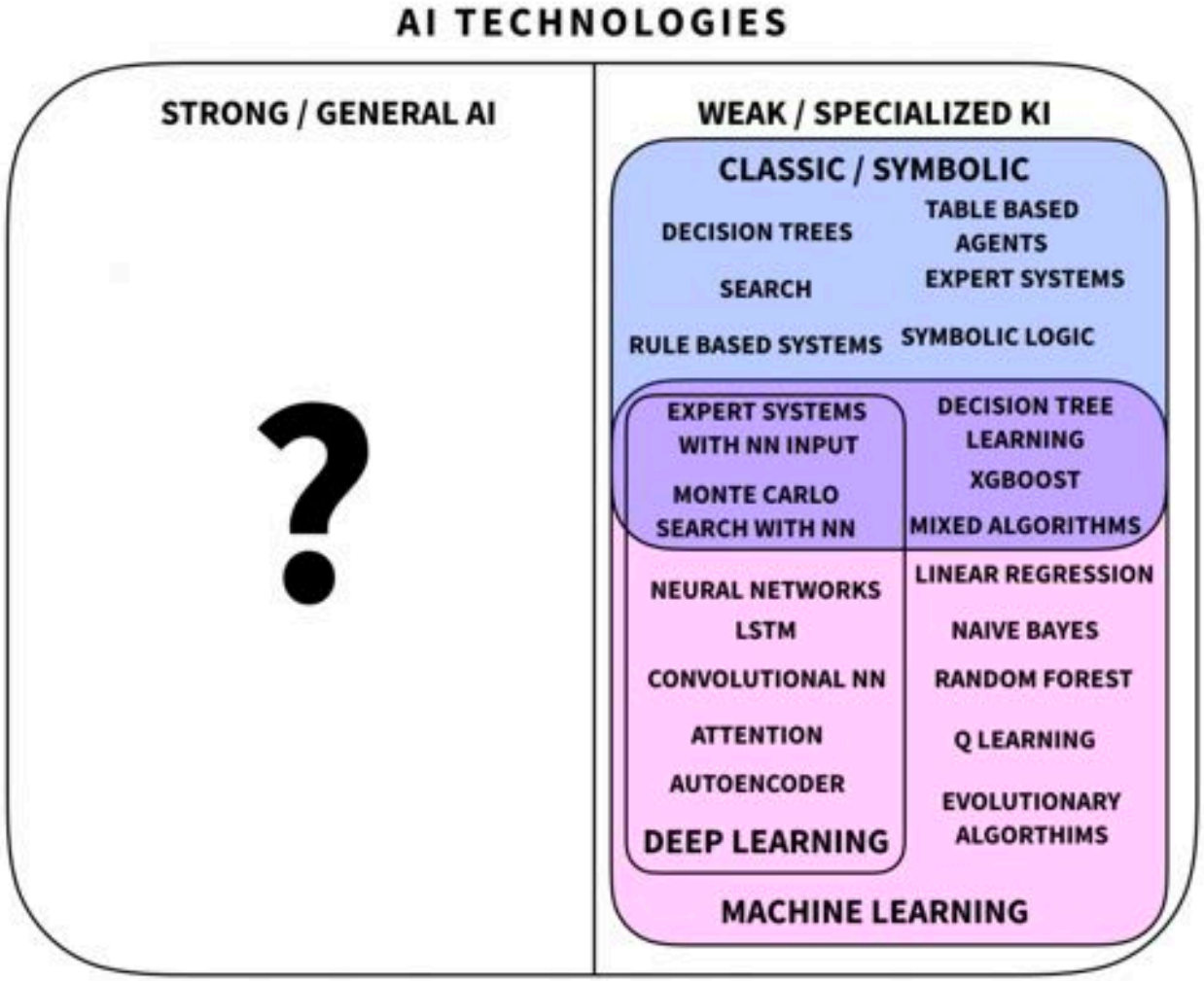
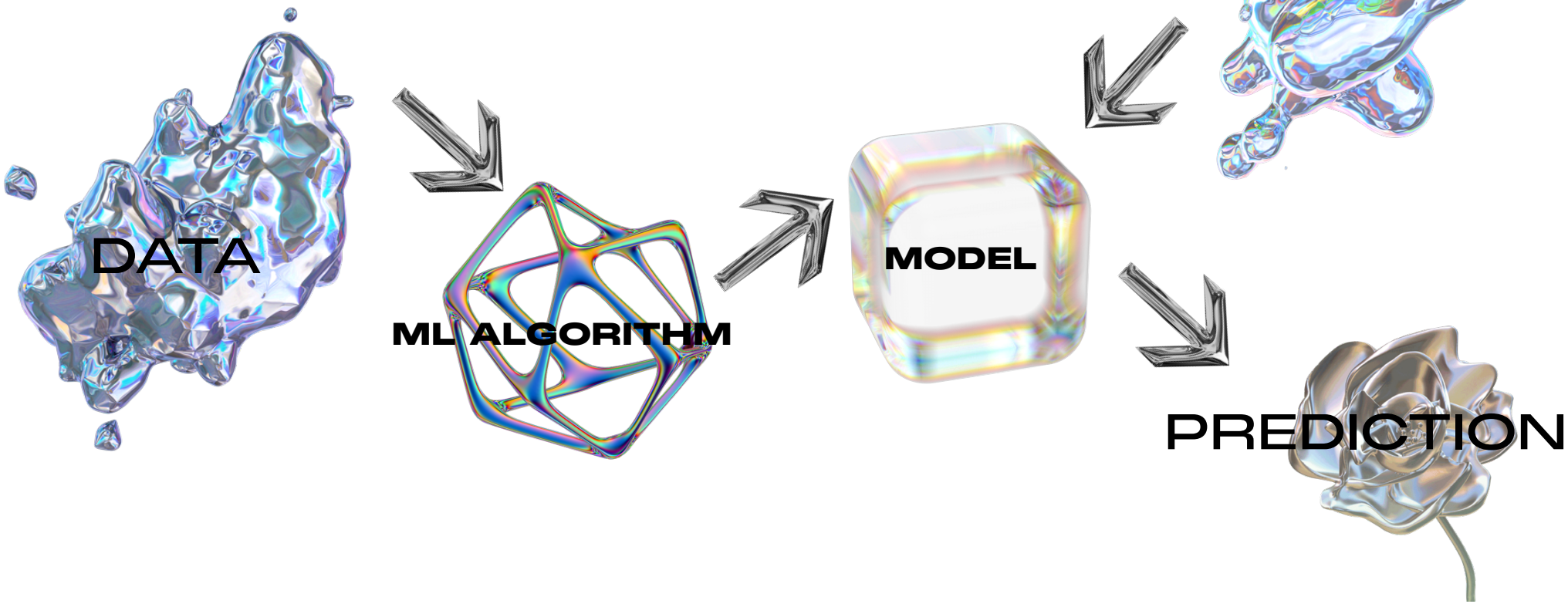
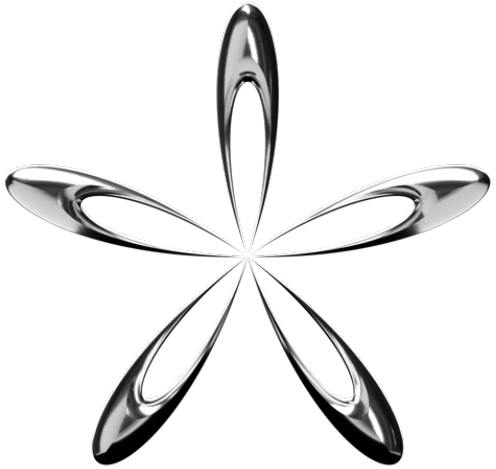

AI TECHNOLOGIES
STRONG / GENERAL AI
?
WEAK / SPECIALIZED KI
CLASSIC / SYMBOLIC
DECISION TREES
TABLE BASED AGENTS
SEARCH
EXPERT SYSTEMS
RULE BASED SYSTEMS
SYMBOLIC LOGIC
EXPERT SYSTEMS WITH NN INPUT
DECISION TREE LEARNING
XGBOOST
MONTE CARLO SEARCH WITH NN
MIXED ALGORITHMS
NEURAL NETWORKS
LINEAR REGRESSION
LSTM
NAIVE BAYES
CONVOLUTIONAL NN
RANDOM FOREST
ATTENTION
Q LEARNING
AUTOENCODER
EVOLUTIONARY ALGORTHIMS
DEEP LEARNING
MACHINE LEARNING

ML MODELS

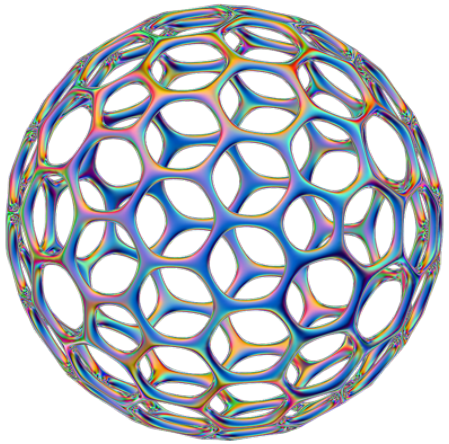


TYPES OF ML

SUPERVISED LEARNING

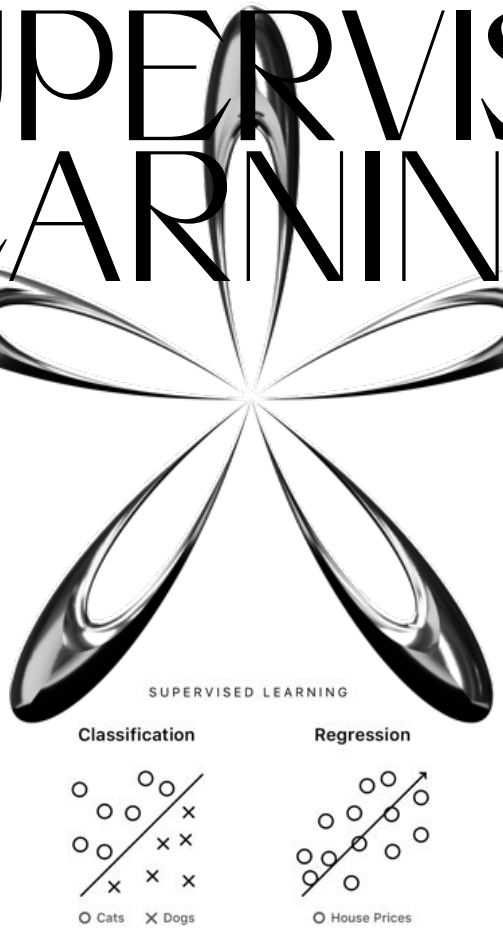


UNSUPERVISED LEARNING



REINFORCEMENT LEARNING

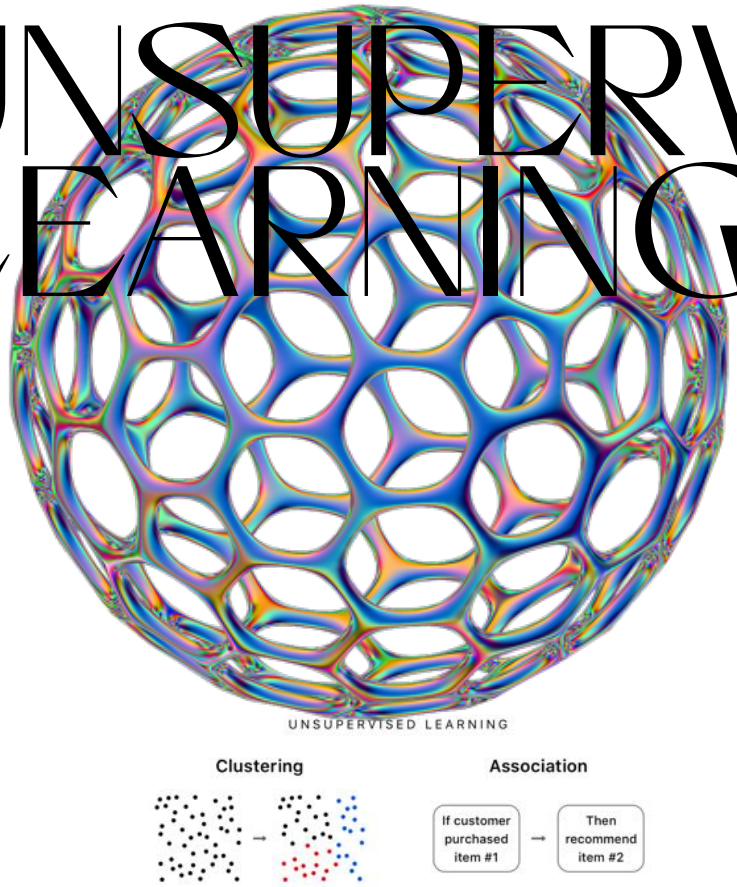
SUPERVISED LEARNING



Supervised learning allows us to make predictions using correctly labeled data. Labeled data is a group of examples that has informative tags or outputs. For example, photos with associated hashtags or a house's features (eq. number of bedrooms, location) and its price.

https://uxdesign.cc/an-intro-to-machine-learning-for-designers-5c74ba100257

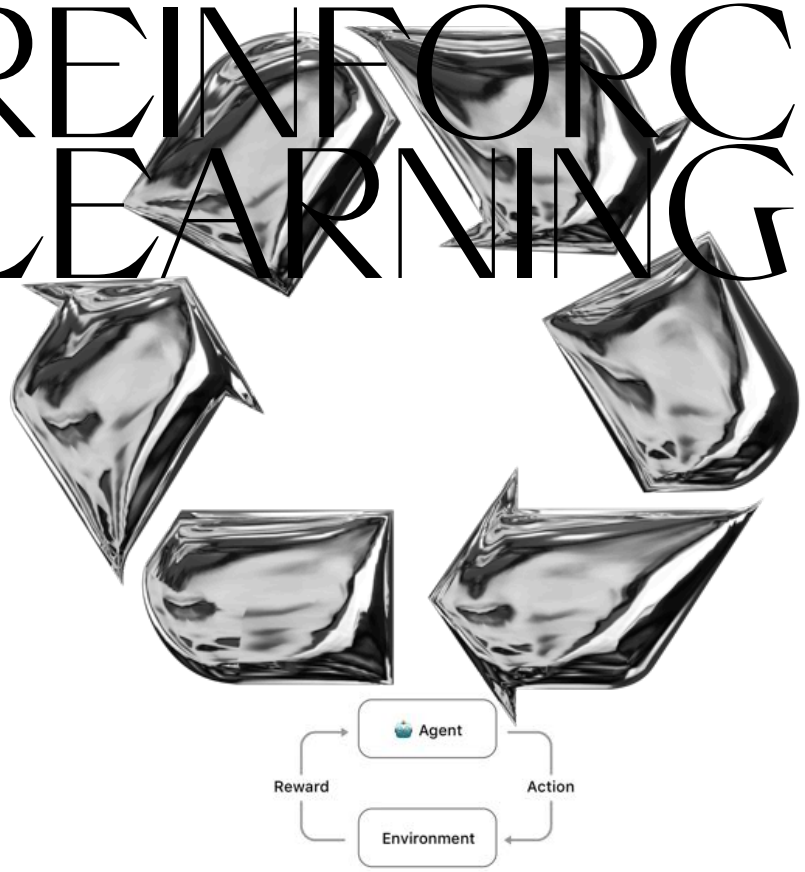
UNSUPERVISED LEARNING



Unsupervised learning is helpful when we have unlabeled data or we are not exactly sure what outputs (like an image's hashtags or a house's price) are meaningful. Instead we can identify patterns among unlabeled data. For example, we can identify related items on an e-commerce website or recommend items to someone based on others who made similar purchases.

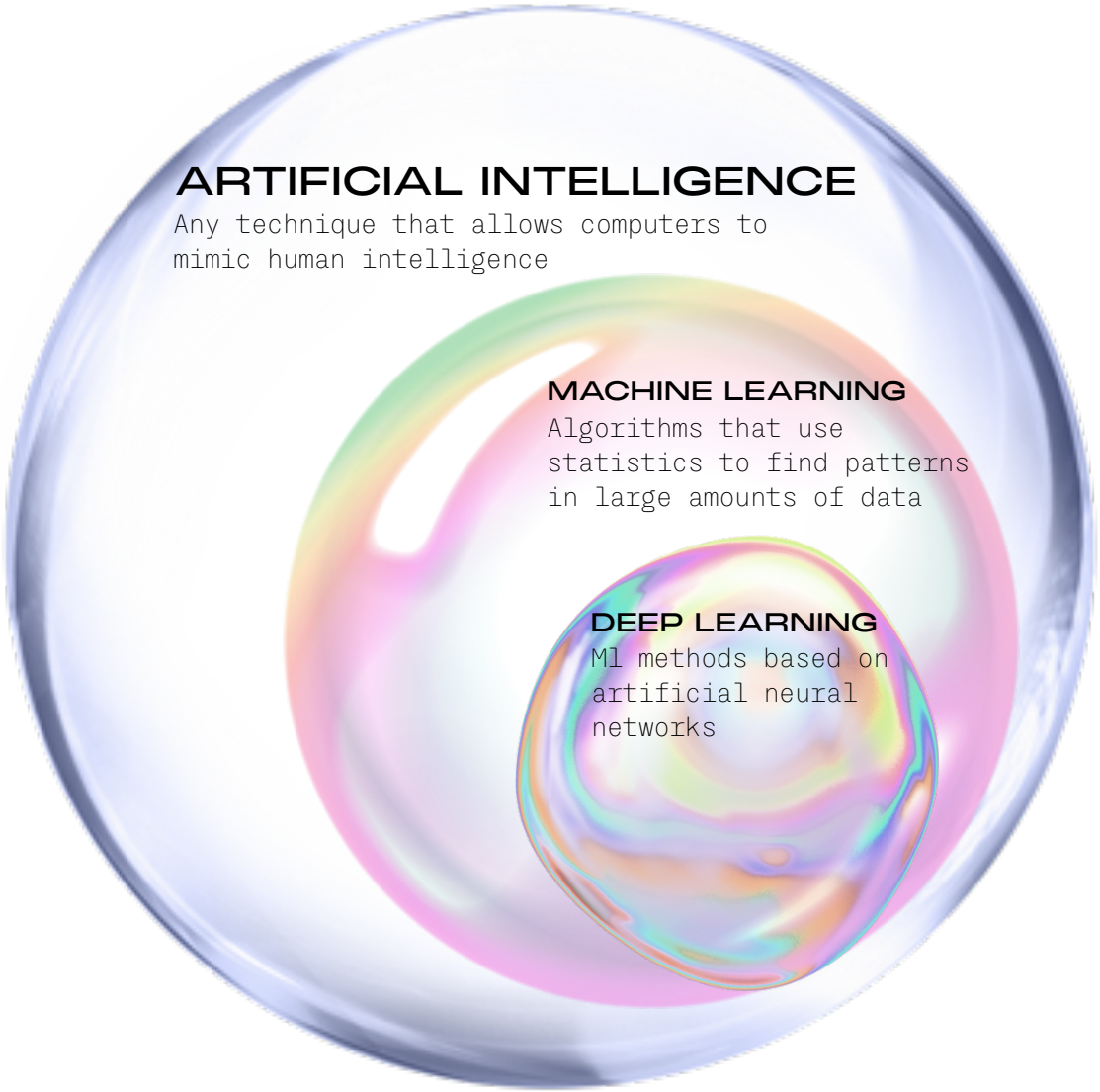
https://uxdesign.cc/an-intro-to-machine-learning-for-designers-5c74ba100257

REINFORCEMENT LEARNING



Reinforcement learning doesn't use an existing data set. Instead we create an agent to collect its own data through trial-and-error in an environment where it is reinforced with a reward. For example, an agent can learn to play Mario by receiving a positive reward for collecting coins and a negative reward for walking into a Goomba. Used for Go or Chess too.

https://uxdesign.cc/an-intro-to-machine-learning-for-designers-5c74ba100257

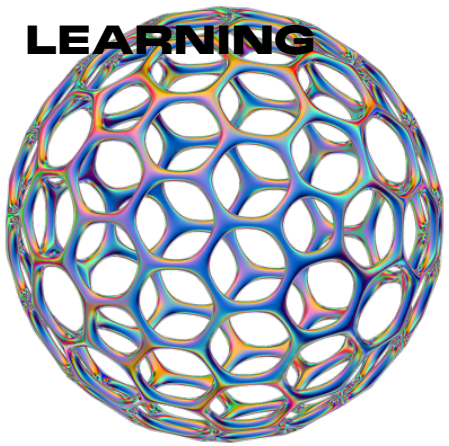

ARTIFICIAL INTELLIGENCE
Any technique that allows computers to mimic human intelligence
MACHINE LEARNING
Algorithms that use statistics to find patterns in large amounts of data
DEEP LEARNING
Ml methods based on artificial neural networks

AI WHAT?

ALL ML CAN USE NEURAL NETWORKS

SUPERVISED LEARNING

UNSUPERVISED LEARNING

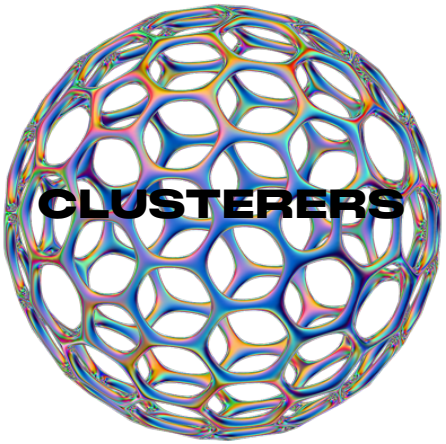


REINFORCEMENT LEARNING

A DIFFERENT ANGLE ON ML : USE CASES

USE CASES :

https://becominghuman.ai/a-primer-of-29-interactions-for-ai-866164ab12f0



Ai is Grouping Data

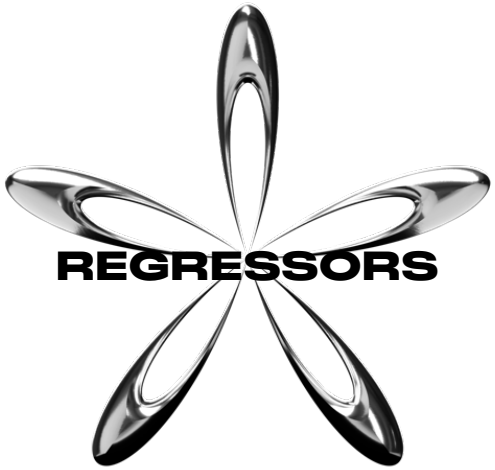
Grouping pictures of people based on similar features
Identifying genres of songs
Collaborative filters or recommenders (people like you liked...)

https://becominghuman.ai/a-primer-of-29-interactions-for-ai-866164ab12f0

Ai is about recognizing stuff/categories in data

Text recognition
Speech-to-Text
Computer vision
Song detection
Face detection
Spam Filters
Translation

https://becominghuman.ai/a-primer-of-29-interactions-for-ai-866164ab12f0



Ai is predicting/forecasting stuff from data

Weather predictions
Financial predictions
Health predictions

https://becominghuman.ai/a-primer-of-29-interactions-for-ai-866164ab12f0

Ai is generating stuff from data

These algorithms use some of the underpinnings of clusterers, classifiers, and regressors (and other things).

ChatGPT
Dalle2
Deepfakes

https://becominghuman.ai/a-primer-of-29-interactions-for-ai-866164ab12f0


HANDS ON

TODAY

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