



Learn the basics of Artificial Intelligence



Ambassador
Presentation

The text "Ambassador Presentation" is centered within a white, three-dimensional, fan-like shape composed of several intersecting white lines. The background behind the text is a blurred image of a city skyline at night with lights reflecting in water.

www.zaka.ai

Who Are We



- We are a **community-driven** AI company
- We aim to democratize and advance AI in the MENA and abroad
- We offer education, consultancy & community building
- Our goal is to build the biggest Applied AI community in MENA!

www.zaka.ai

During this workshop

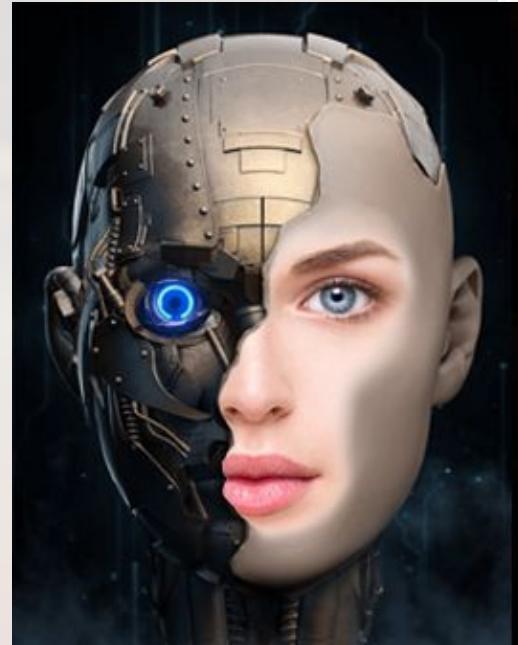
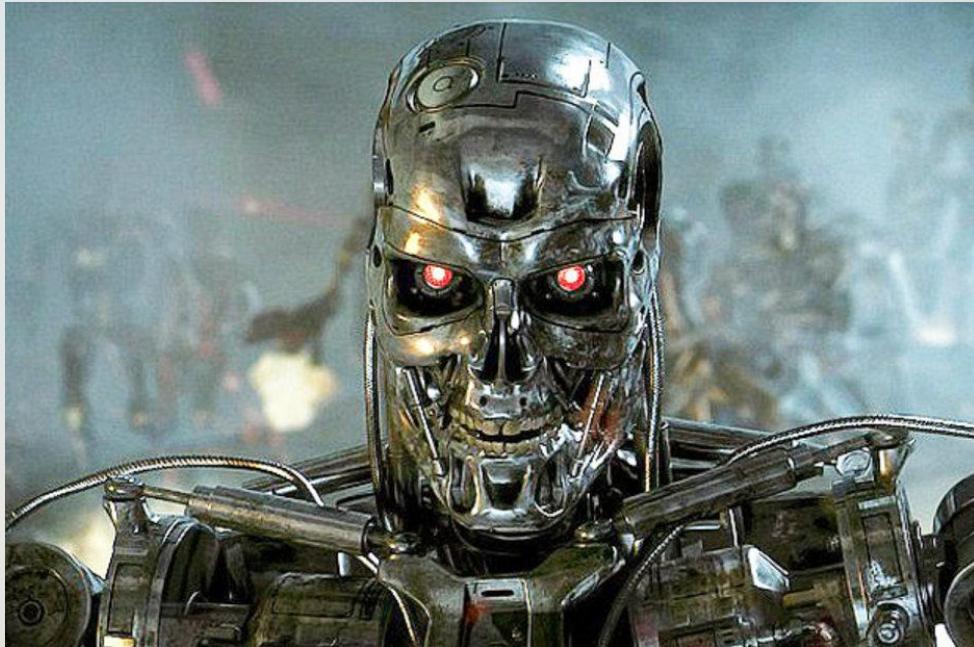
- Get introduced to the basic concepts of **Data Science**
- Learn how to explore data in a **hands-on** project
- Apply **Machine Learning** algorithms to build your first predictive model 



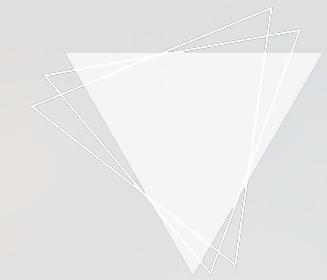
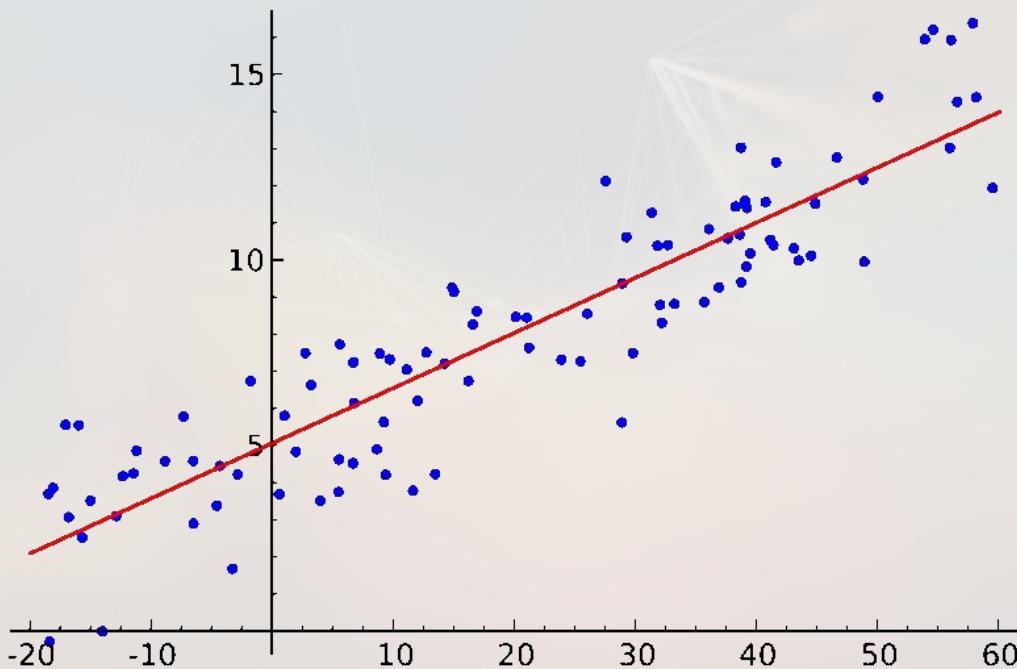
What is Artificial Intelligence?

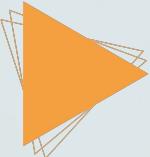


Is this AI?



Artificial Intelligence (AI)

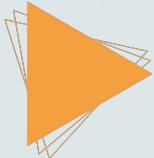




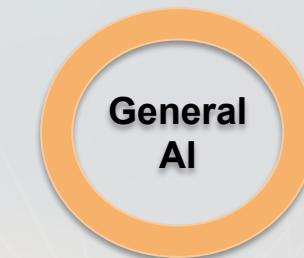
Artificial Intelligence (AI)

Building intelligent algorithms/agents which can:

- process large amounts of data
- recognize hidden patterns in the data
- perform human-like tasks (simulating human intelligence)
- learn from experience
- adjust to unseen data/input



Types of AI



Built for highly focused tasks

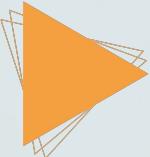
Built to improve the capabilities comparable humans

Built to exceeds human cognition by a great extent in every possible way



Main Components of AI



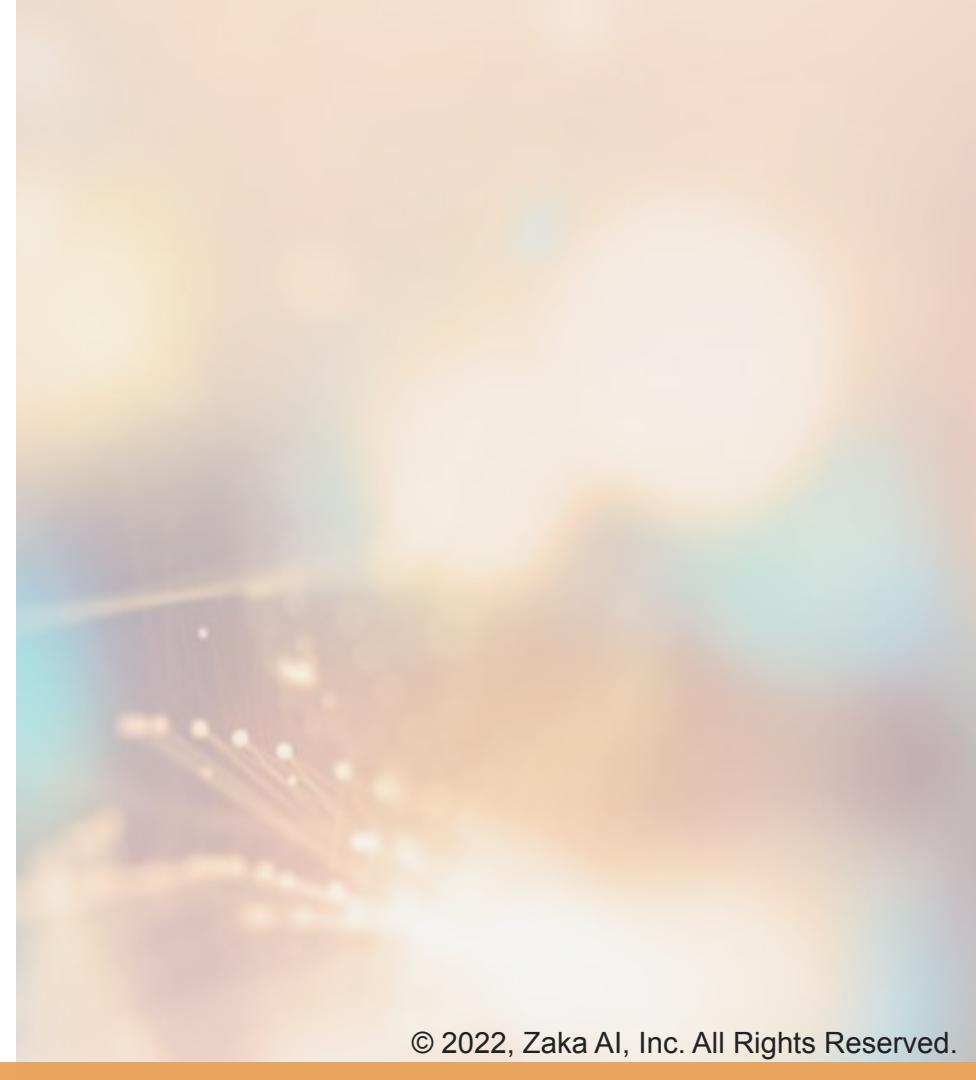


Why AI Today?

- Increase amount of data available (advancement in IoT and Big Data)
- Increase usage of social media
- Huge amounts of new articles, videos,... published every day

→ Need for an automated way to process all this data and produce meaningful insights!

Applications of AI Today



Self-driving Cars

Company: Waymo

Technologies: Computer vision,
Deep Learning, Lidar

Description: Waymo's cars are
built for full autonomy with sensors
that give 360 degree views and
lasers that detect objects up to 300
meters away!





Virtual Assistants

Company: Amazon Alexa

Technologies: Natural Language

Processing/Understanding, Voice recognition,
Audio transcribing, Text-To-Speech

Description: Amazon Alexa has heralded a
new dawn in voice recognition software, using
extremely complex machine learning processes
to revolutionize the way we conduct everyday
tasks.

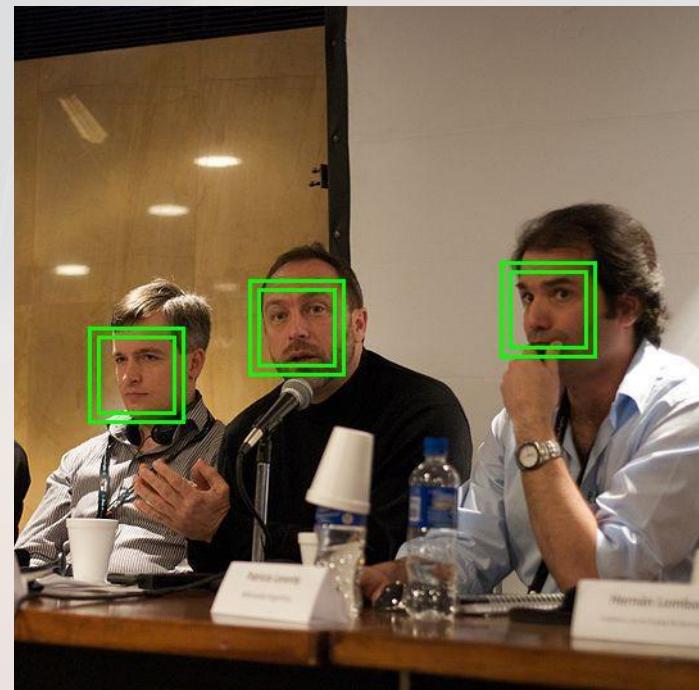


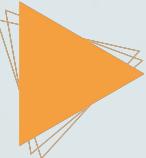
Person Identification

Company: Facebook

Technologies: Computer Vision, face detection, face recognition, Deep Learning

Description: Facebook can automatically find and identify friends in uploaded photos due to its highly efficient facial recognition systems.



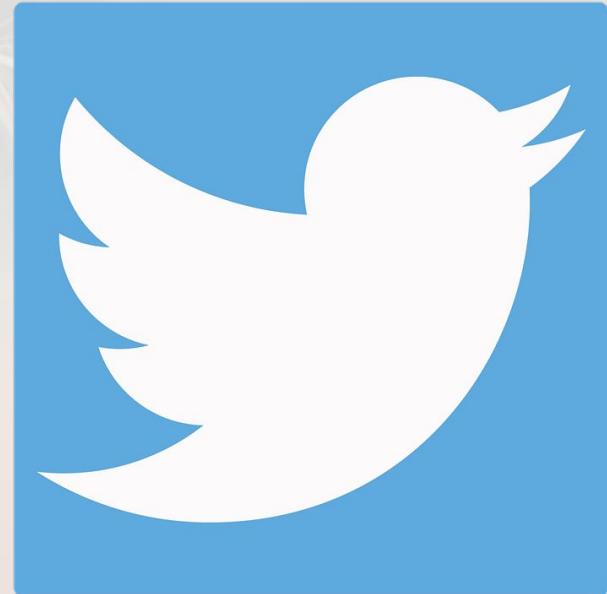


Ranking Tweets

Company: Twitter

Technologies: Deep Learning, ranking algorithms, Natural Language Processing

Description: Twitter gathers all your timeline's tweets and each is scored by a relevance model. The model's score predicts how interesting and engaging a tweet would be specifically to you. A set of highest-scoring Tweets is then shown at the top of your timeline, with the remainder shown directly below.





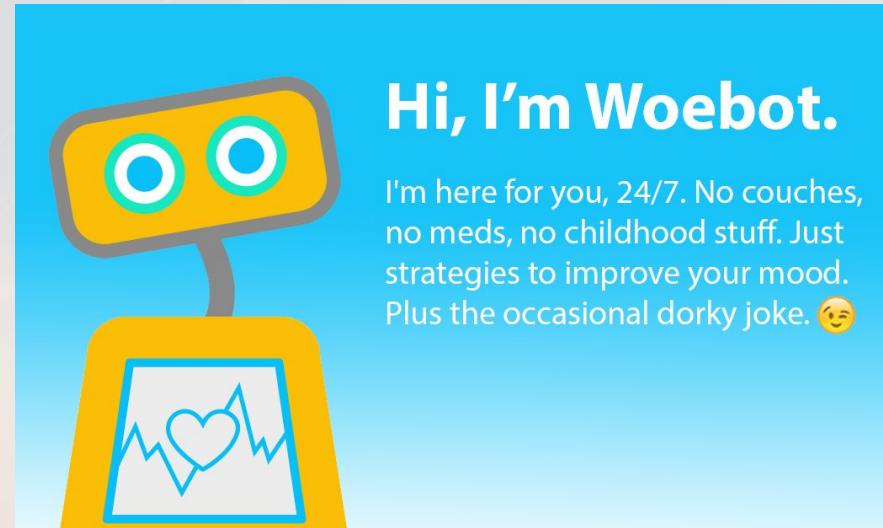
Mental Health Assistants - Chatbots

Company: Woebot

Technologies: Natural Language

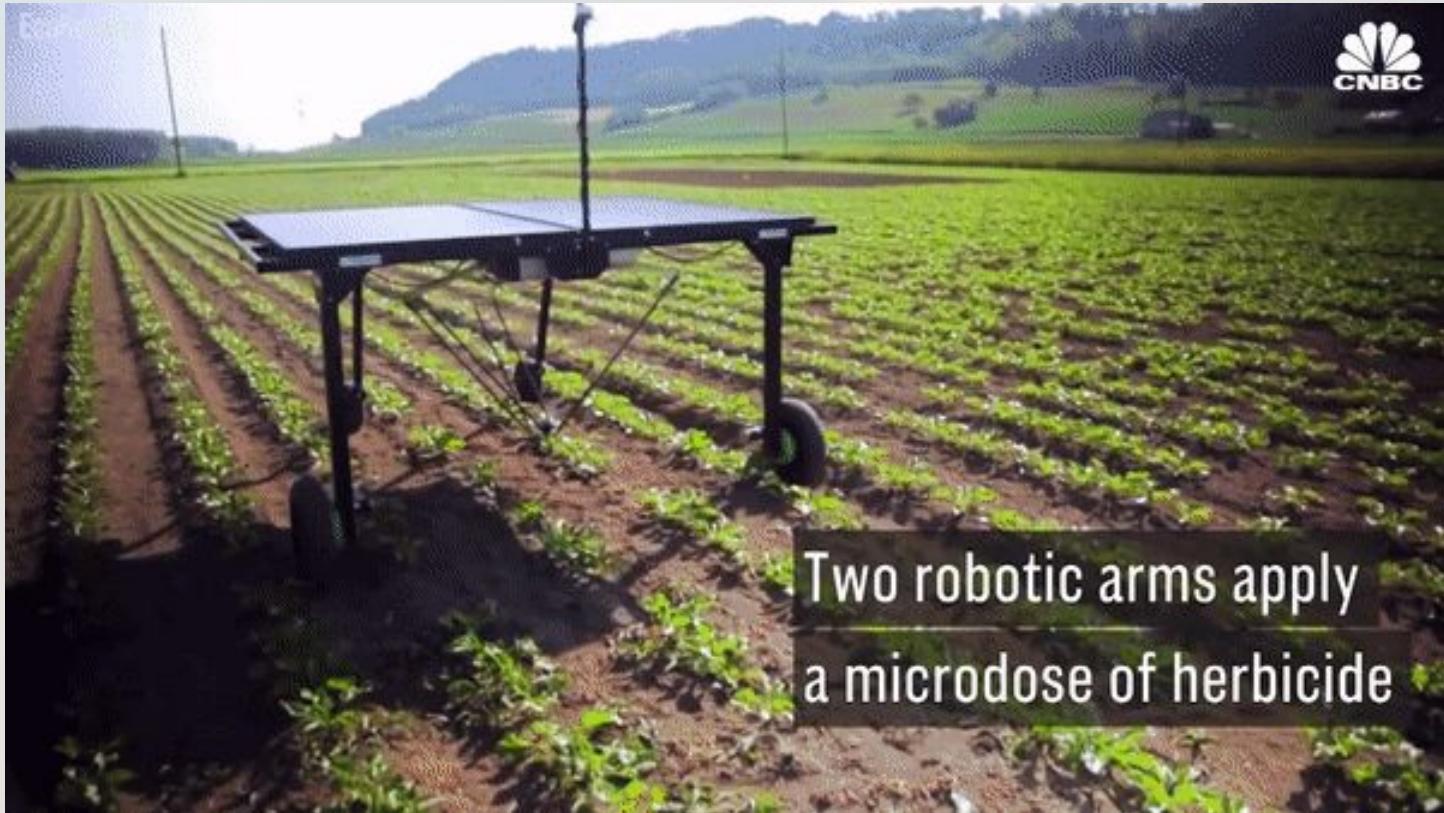
Processing, Deep Learning, Chatbots

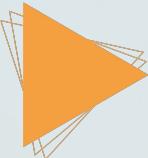
Description: Woebot monitors daily, one-on-one interactions with users using natural language processing (NLP) to deliver a self-guided version of cognitive behavioral therapy (CBT), which is the most effective treatment for mental health problems.





Automated Agriculture

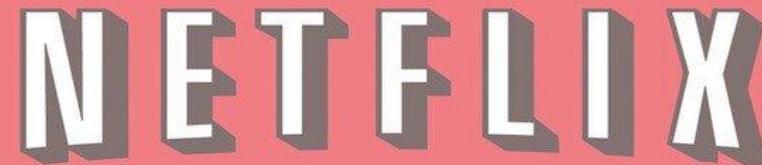




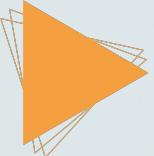
Recommendation engines



**35% OF AMAZON'S REVENUE ARE GENERATED
BY IT'S RECOMMENDATION ENGINE.**



**75% OF USERS SELECT MOVIES BASED ON
NETFLIX'S RECOMMENDATIONS.**



Sentiment Analysis



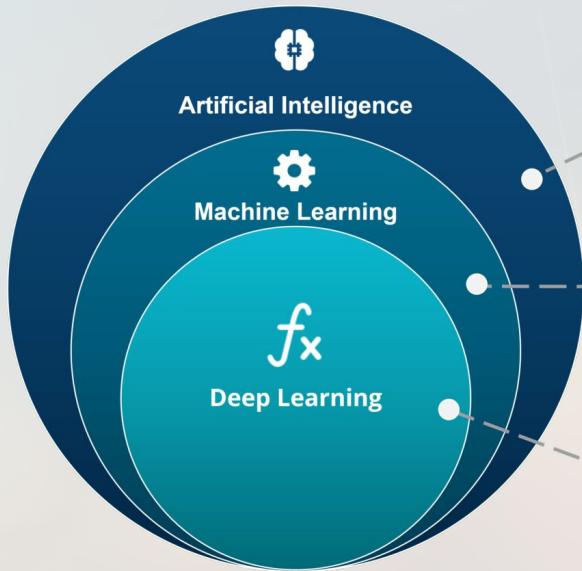
Demystifying Terms



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Demystifying Terms



ARTIFICIAL INTELLIGENCE

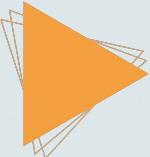
A technique which enables machines to mimic human behaviour

MACHINE LEARNING

Subset of AI technique which use statistical methods to enable machines to improve with experience

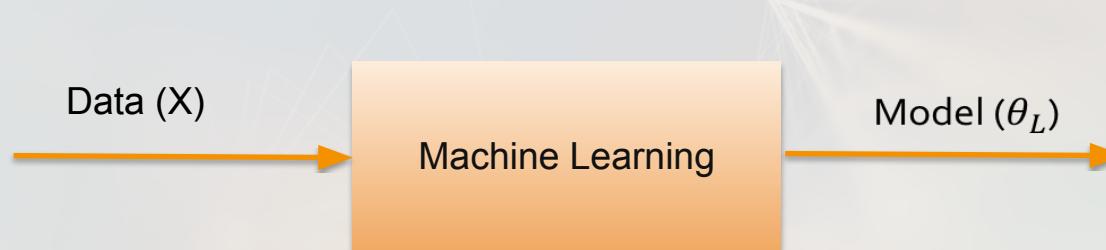
DEEP LEARNING

Subset of ML which make the computation of multi-layer neural network feasible

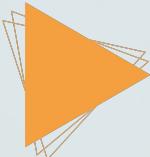


Machine Learning

- Machine learning aims at developing algorithms and models for machines to perform predictions or learn to perform human tasks.

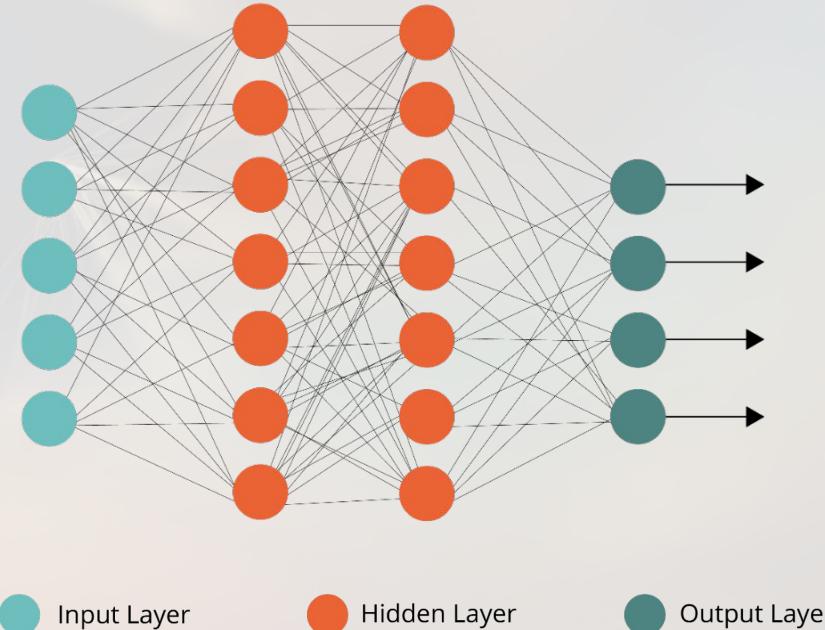


- Once the model is learned, it can be used for desired prediction of new unknown data.



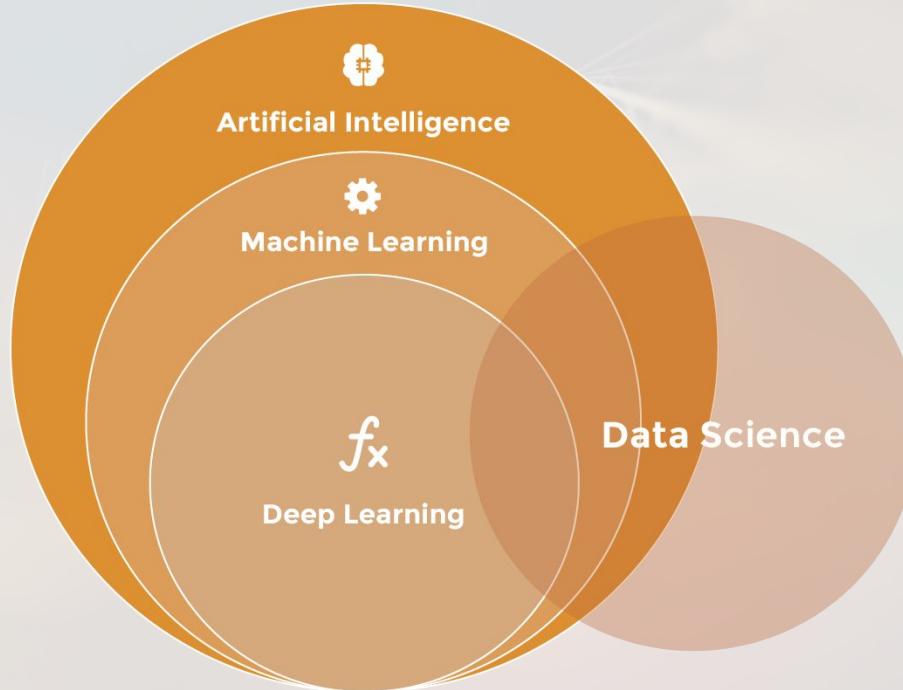
Deep Learning

- A group of Machine Learning algorithms directly inspired from human neural connections in the BRAIN.
- Our brain has lots of neurons connected together and **the strength of the connections** between neurons represents long term knowledge.



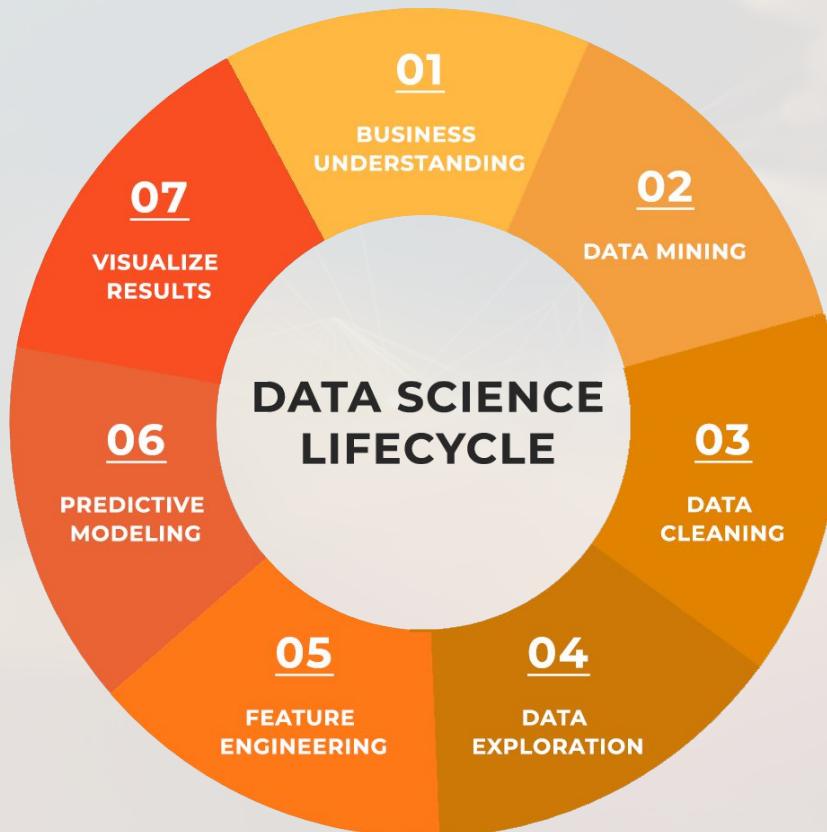


Notice the intersection





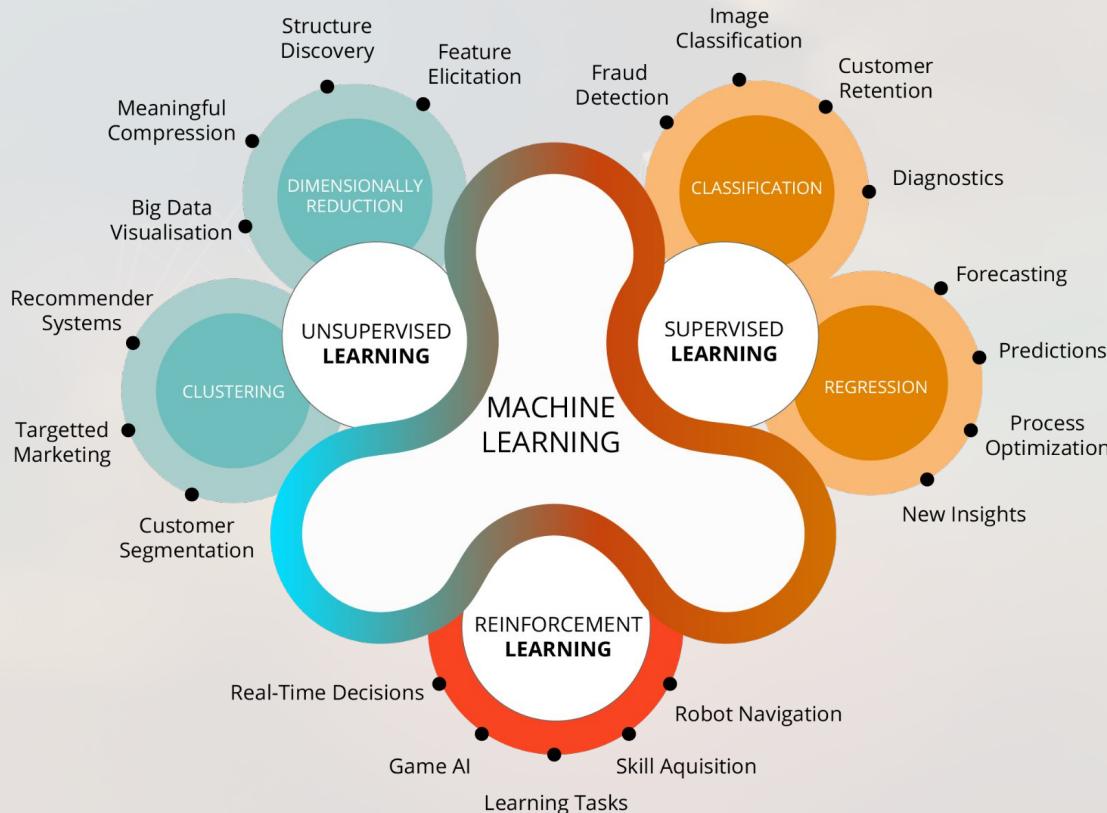
Data Science Lifecycle

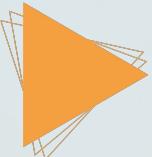


Types of Machine Learning



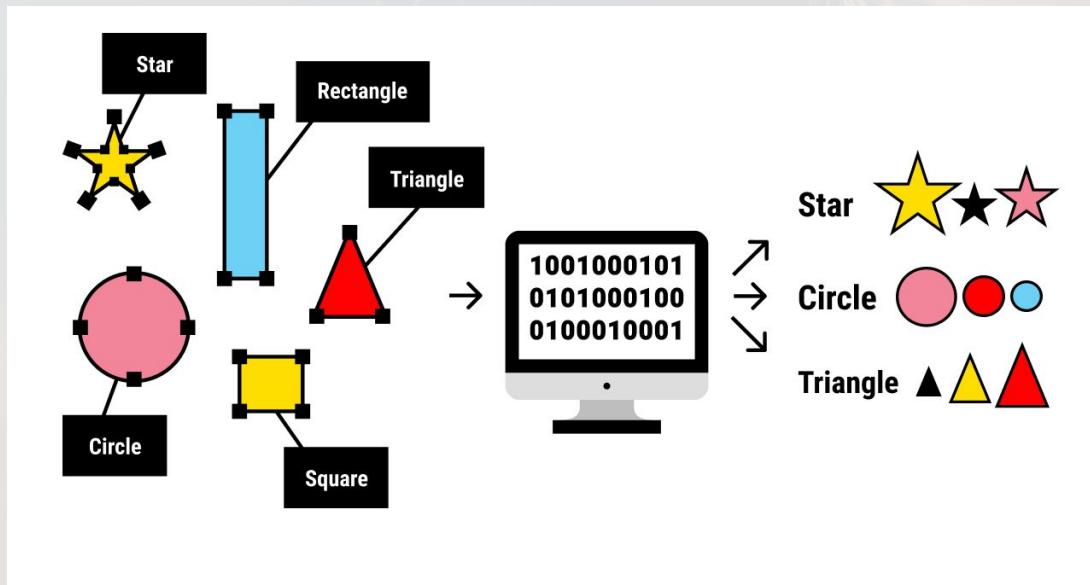
Types of Machine Learning





Supervised Machine Learning

- Output labels are known
- Learn the ML model that produces the prediction closest to the output





Supervised Learning

Classification

Categorical

Discrete Values

Predicting a class

Example: Predict
Spam/No-spam Email

Regression

Numerical

Continuous Values

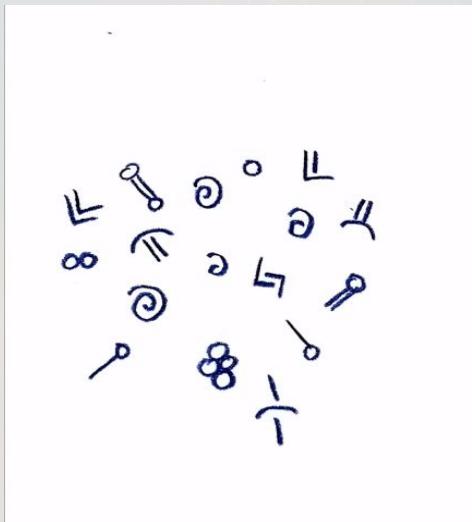
Predicting a
quantity/intensity

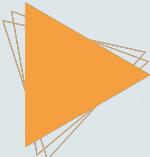
Example: Predicting GPA
of students



Unsupervised Machine Learning

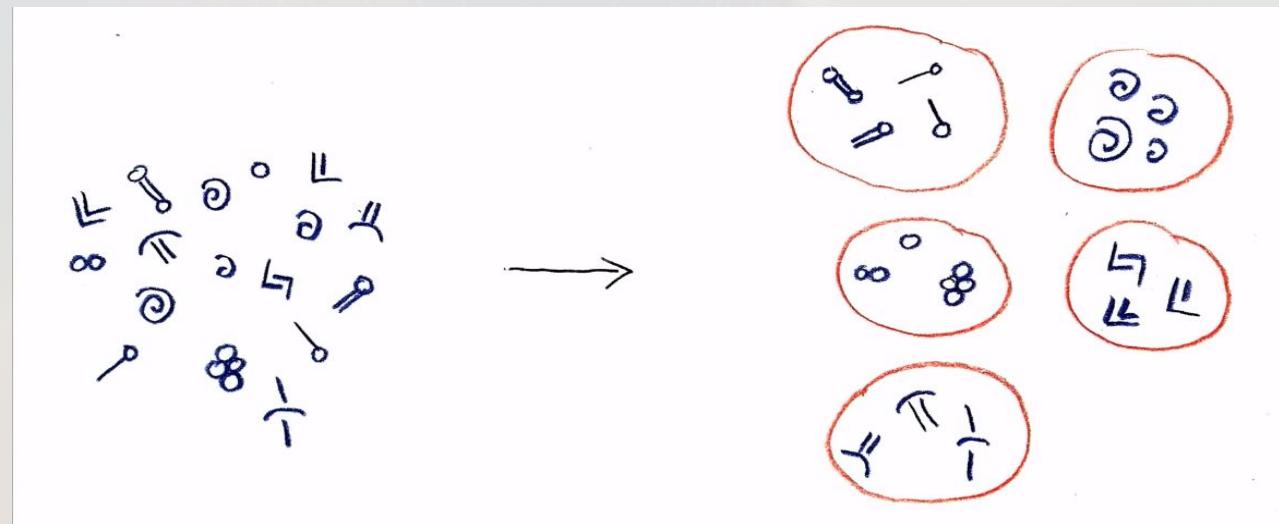
- Output labels are not known
- Divides data into clusters based on measured similarity, e.g. *Closest distance*

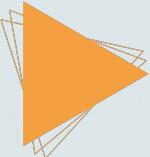




Unsupervised Machine Learning

- Output labels are not known
- Divides data into clusters based on measured similarity, e.g. *Closest distance*





Reinforcement Learning

- An agent interacts with an environment and performs action
- Learns through experience (reward mechanism)





Reinforcement Learning



Problems & challenges of AI



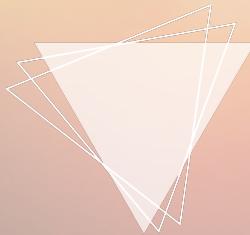


Problems & Challenges

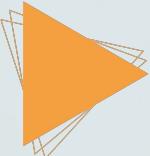
- Fake news and Deep Fake disinformation
- AI black box / transparency
- Algorithm bias
- Adversarial attacks
- Data privacy & security
- Data scarcity
- Ethical challenges



Hands-on Workshop



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Graduate Admissions - Prediction

Application: Graduate Admissions

- **Input:** Information about students (GRE scores, TOEFL scores, University Rating, Research Experience, etc ...)
- **Output:** Chance of admission of students for a Masters Program (score between 0 and 1)

Let's code the predictive model!

<https://github.com/zaka-ai/ai-ambassador-workshop>



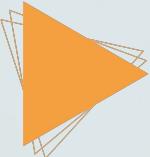
Let's talk about YOU!

AI Bootcamp by Zaka

- Spread over 4 weeks
- Self-paced learning
- 2 live sessions each week
- Topics covered:
 - Data Science
 - Machine Learning
 - Deep Learning
 - Computer Vision
 - Natural Language Processing
 - Time-serie Analysis

**When a beginner asks for
recommendations to learn AI**





What does the AI Bootcamp offer you?

- 3 weeks of technical training: 10+ hours of learning
- Dive intro 5 main areas of Artificial Intelligence
- Get familiar with Python libraries for Data Science & ML + main tools for building and training Deep Learning models
- Build a final project with teams
- Focused one-on-one mentoring for projects
- Access to Zaka's online learning platform
- Weekly live office hours with instructors

Send an email to
academy@zaka.ai
& mention “AI Bootcamp”



Let's Stay Connected



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Q&A



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