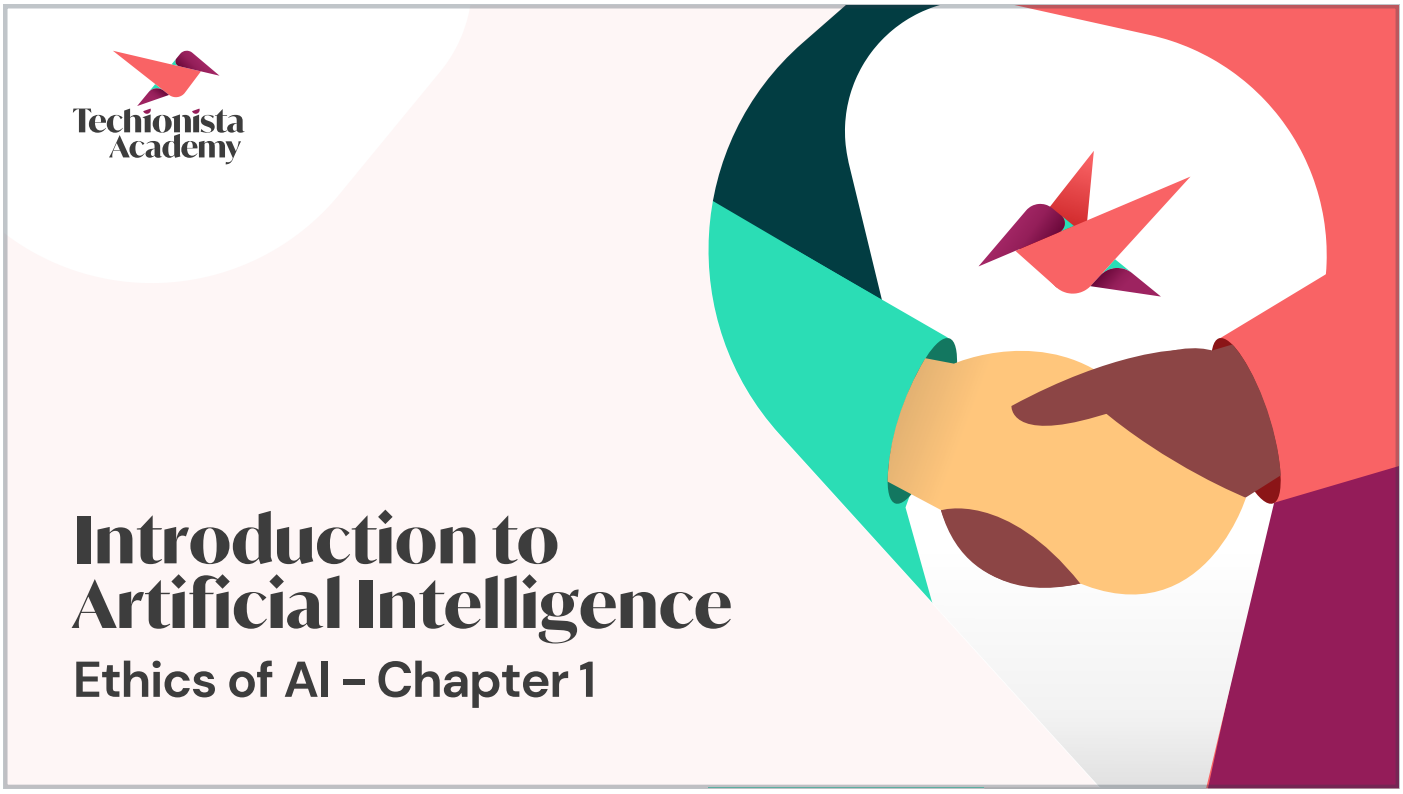
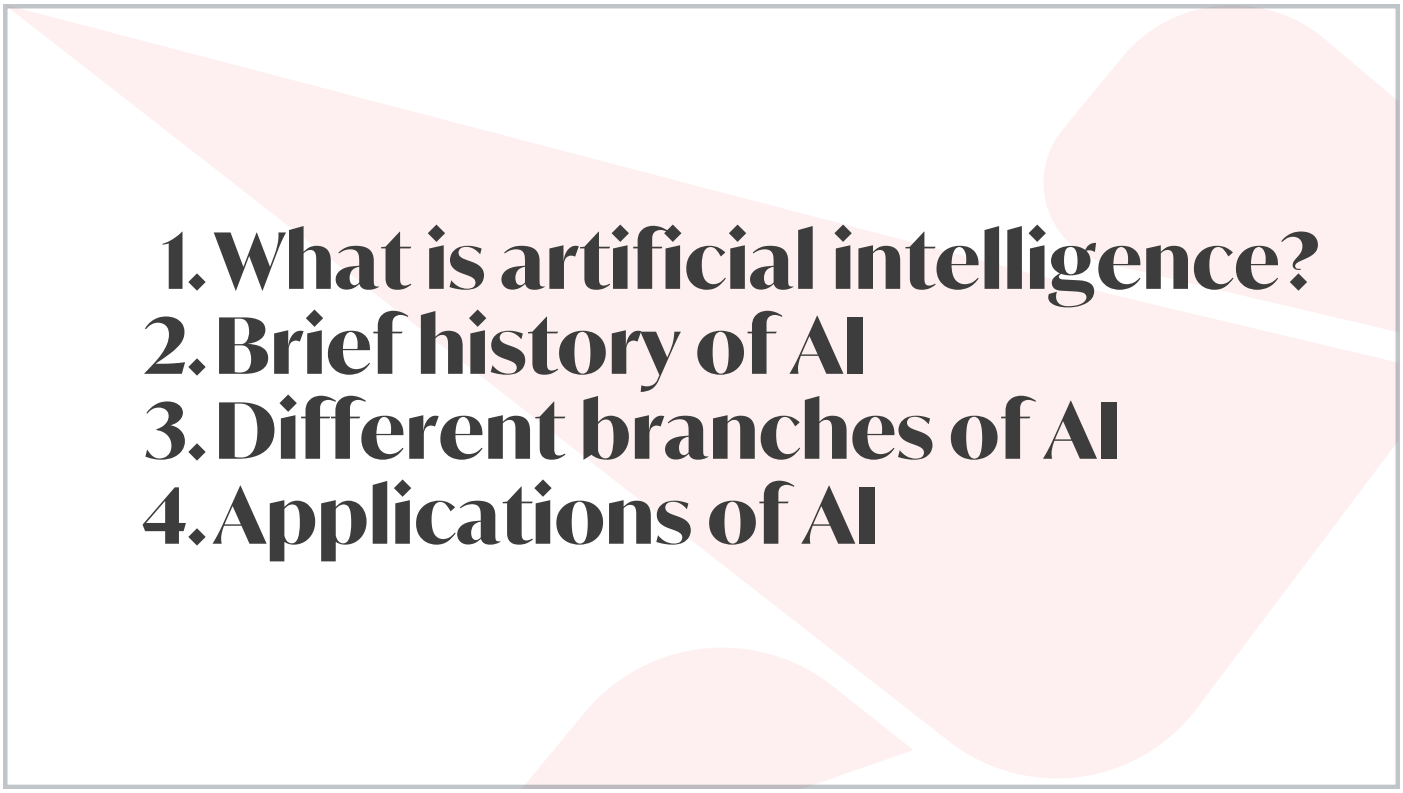


Welcome to the first video of the Ethics of AI course. I'm Lelia Erscoi and I am a Data and AI mentor at Techionista Academy. Today I will walk you through the 101's of AI. If you're watching this, you're probably curious about how AI is changing our world, and especially what are the ethics behind this very hot field.

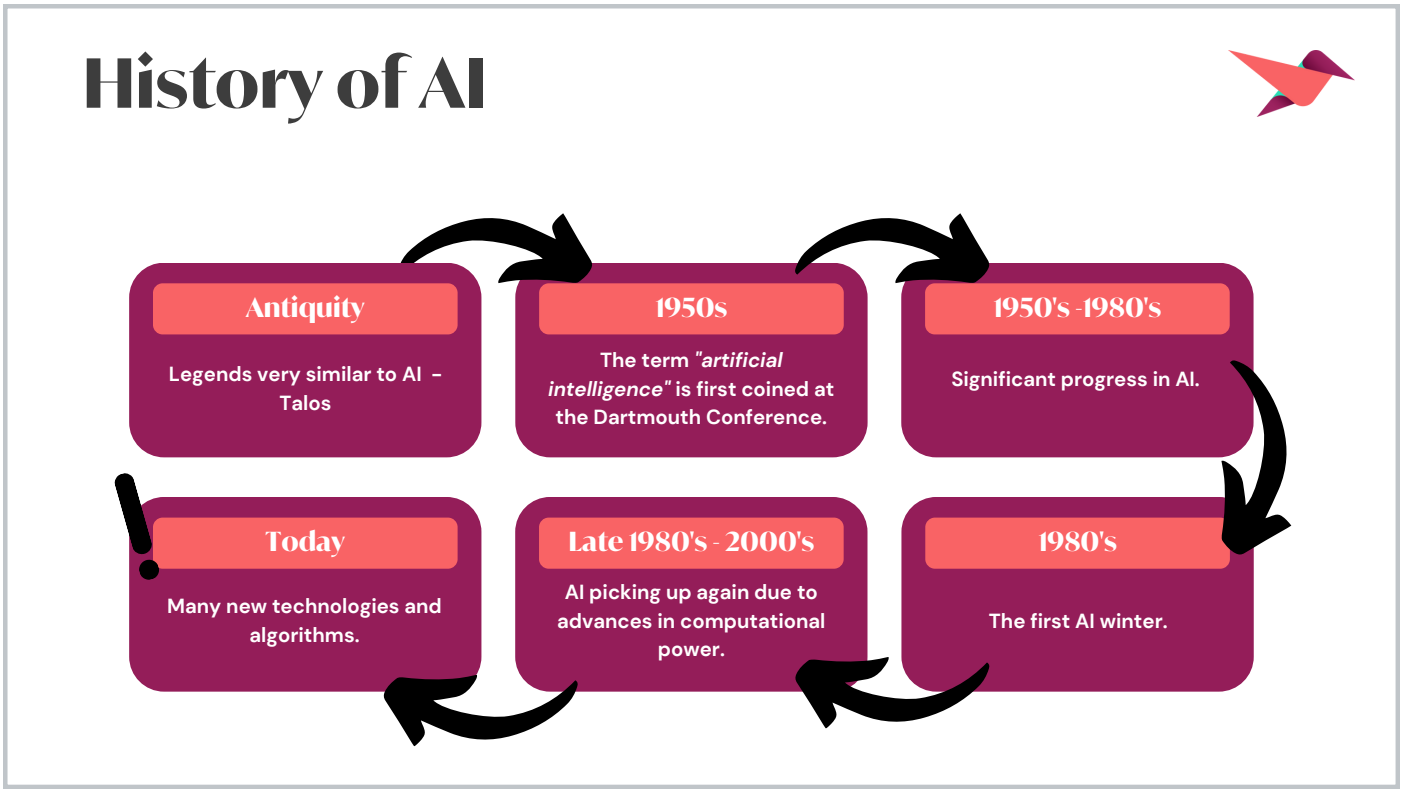


In this video, we will discover what artificial intelligence is, what is its timeline so far, as well as different sub-fields of AI and their real-life applications.

What is AI?

"...the science and engineering of making intelligent machines."
— *John McCarthy, 1955*

To start, we can explore the definition of AI proposed by the person who invented the term: John McCarthy. In his words, artificial intelligence is the science and engineering of making intelligent machines. In general terms, we can describe as AI - technology that attempts to perform a task better than humans can.



We will also explore a short timeline of AI development. While most breakthroughs were achived in modern times, we can trace the idea of AI all the way back to antiquity. Many legends have elements related to AI, such as the mythical conscious robot Talos.

1950s: As we saw before, John McCarthy is the person who coined the term AI. This happened at the Dartmouth Conference, which is often considered to be the birth of AI as a field of study. Researchers at this conference proposed tried creating a machine that could "think" like a human.

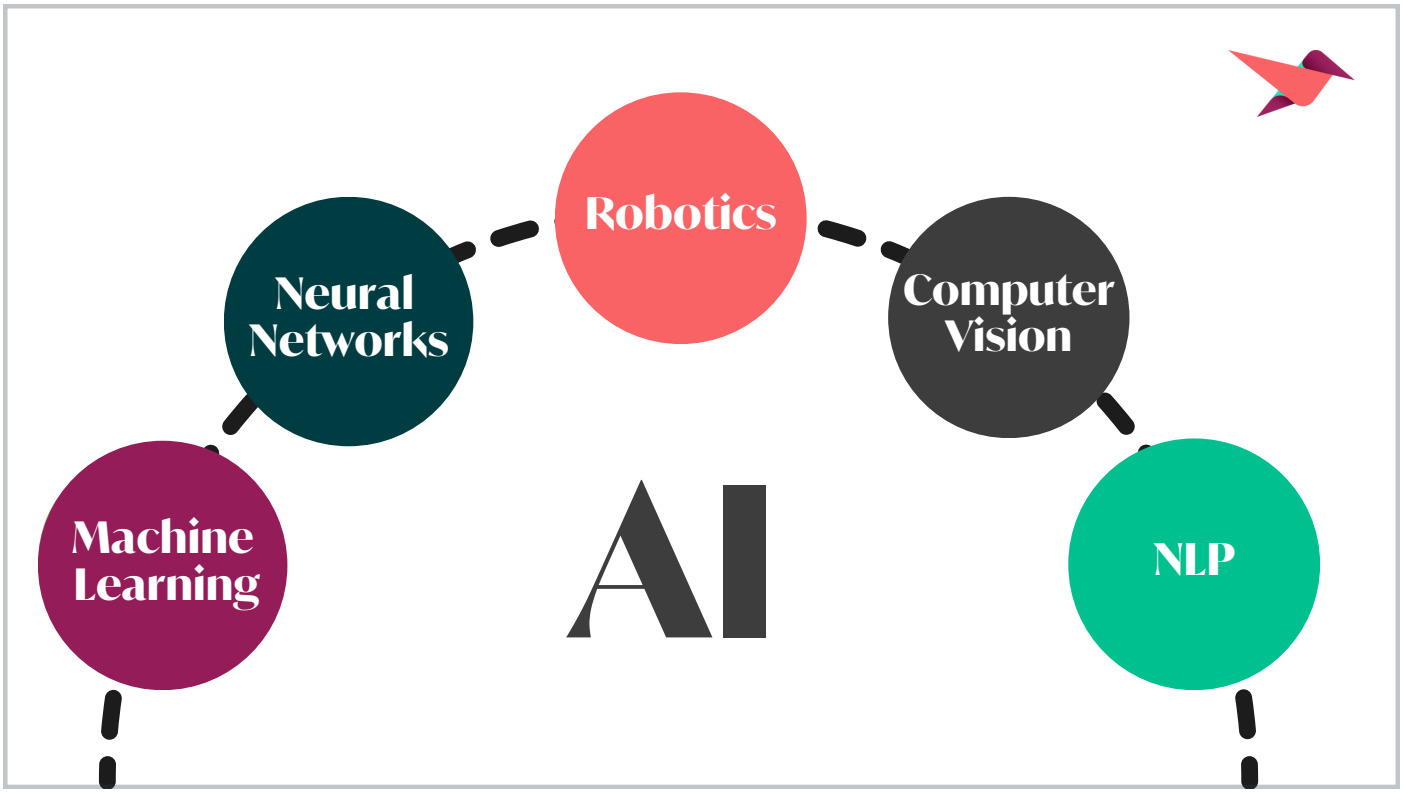
1950s-1980;s: The field of AI saw significant growth and development during this period. More and more people became interested in the potential of this field. The AI of this time is very narrow, often tackling a specific problem like translation from English to German.

1980s: The AI field experienced a period of decline, known as the "AI winter," . This was because of exaggerated expectations and a lack of progress in achieving true human-like intelligence. Funding for AI research decreased, and many AI labs closed.

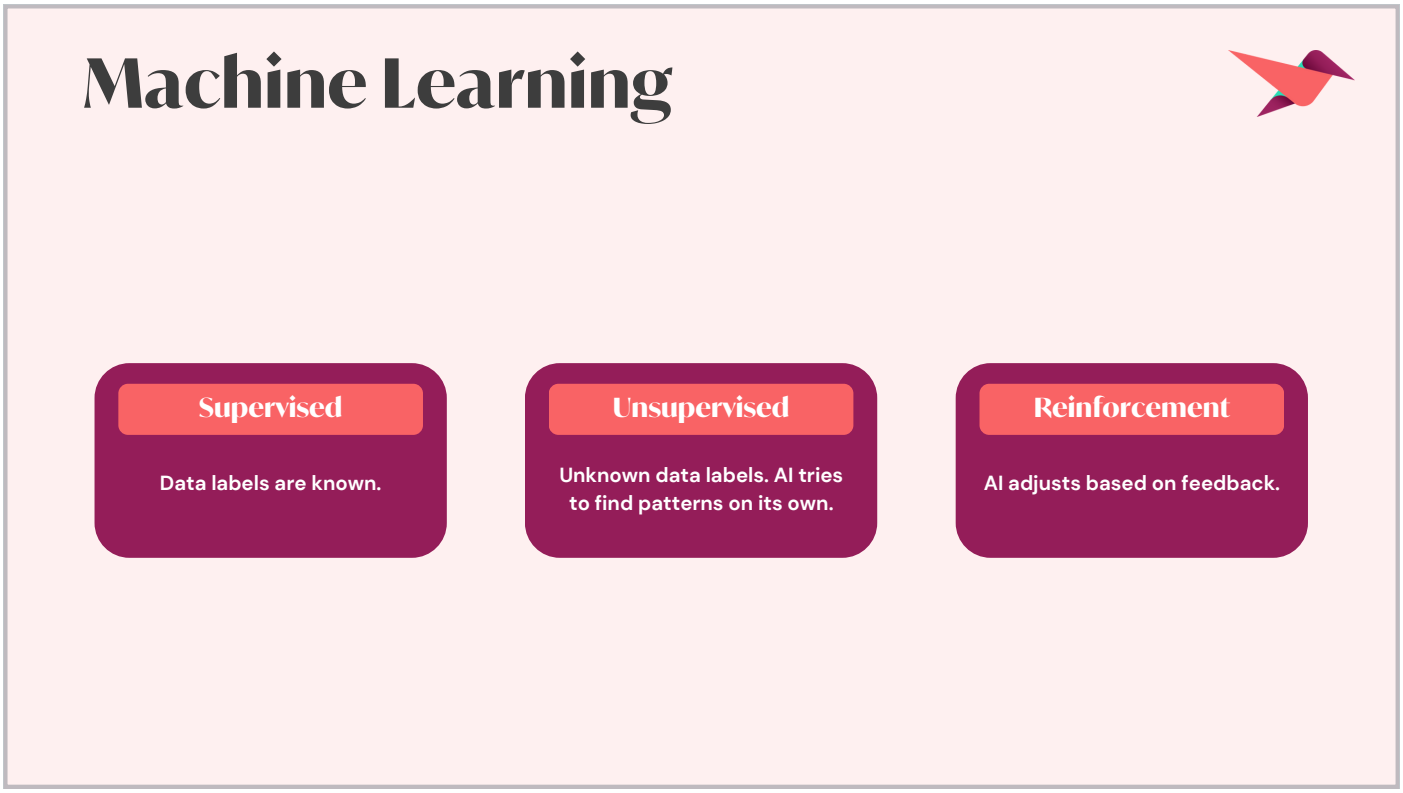
Late 1980s - Early 2000s: AI research and development began to pick up again. This was especially due to computational power. AI has become increasingly integrated into various industries and everyday life, with the development of virtual assistants, self-driving cars, and more.

Present: The continued growth of data and computation power has allowed AI to make significant progress. AI has been used in various new domains, such as medicine, economics, climate

modeling, and more.

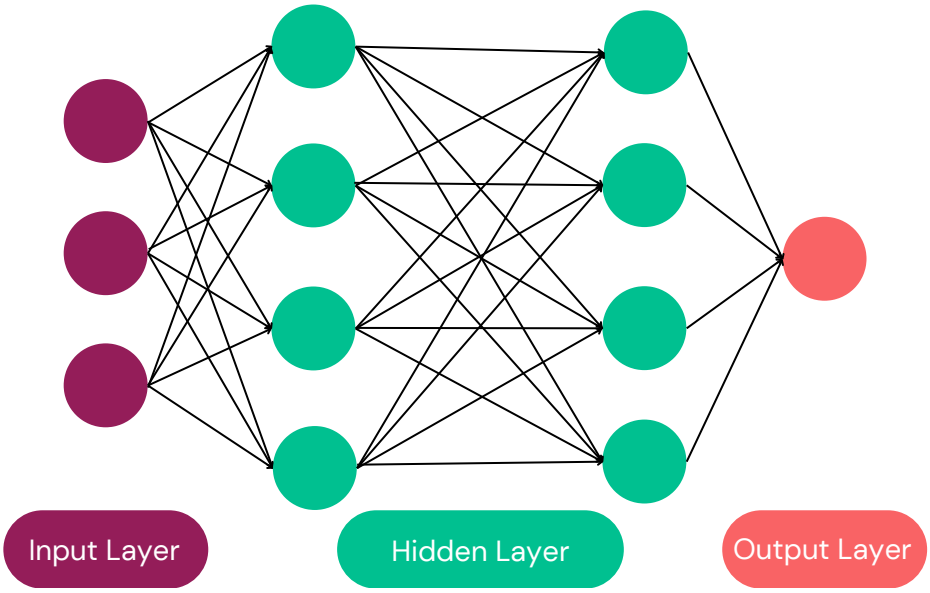


AI has different but interconnected branches. Some main ones are ML, NN, CV, Robotics, and NLP. We will dive deeper in each of these topics.



Machine learning is a type of AI that aims to learn from experience. It involves training a model or algorithm on data, in order to make predictions or decisions about new, unseen data. There are several different types of machine learning. The first one, Supervised learning involves training a model on labeled data, where the correct output is provided. In unsupervised learning, the model uses unlabeled data to find patterns or structure in the data, for example by grouping similar data points together. In reinforcement learning the model learns through trial-and-error, getting feedback in the form of rewards or penalties. The AI learns to make decisions that maximize the rewards over time.

Neural Networks



Neural networks are also a type of machine learning, but this time inspired by the structure and function of the human brain. A NN composed of layers of interconnected "neurons", or nodes, which process and transmit information. These nodes learn by adjusting the strength of connections between them, called weights. Each neuron in a neural network receives input, performs a simple computation on it, and then transmits the output to other neurons or the final output layer. A deep neural network is a NN composed of multiple layers. Deep NN can learn more complex features from the data. If you want to hear more about how NN works, I recommend checking out the resources provided after this video.

Robotics

AI plays a crucial role in robotics. With AI, robots can perceive and understand their environment, make decisions and execute tasks. AI can be also used in Human-Robot interaction, enabling robots to understand and respond more naturally to humans. A small fun fact is that these images were generated by AI! You can also try different prompts with the DALL-E 2 software to create your own images.

Computer Vision

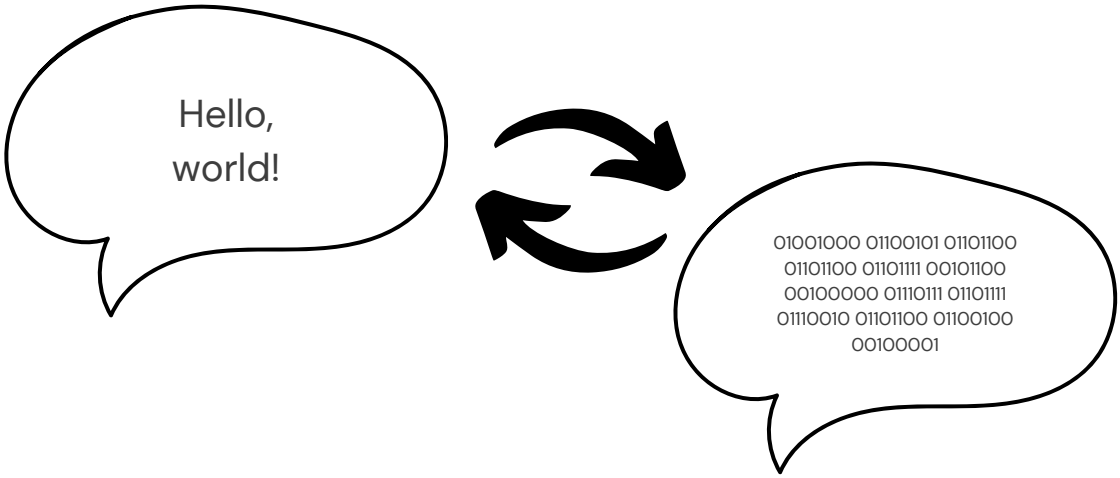
Image Recognition

Object Detection

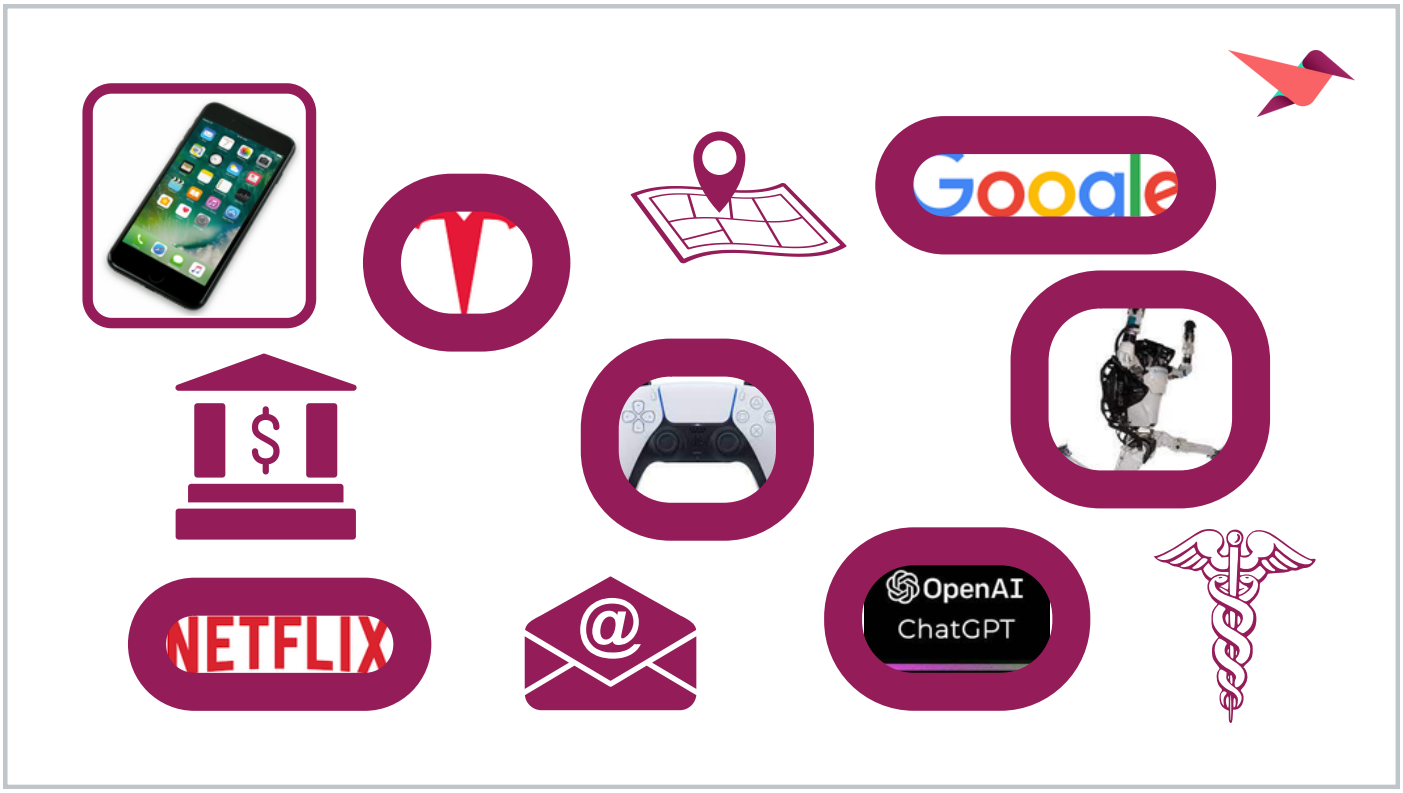
Facial Recognition

Computer vision focuses on enabling computers to understand and interpret visual information from the world. There are several ways to extract information from visual data, depending on task. We can have image or video recognition, object detection, or facial detection. The goal of computer vision is to enable computers to "see" and understand the world in a similar way to humans. Applications of computer vision include self-driving cars, surveillance systems, or medical image analysis.

Natural Language Processing



If CV aims to teach computers how to see like humans, Natural Language Processing (NLP) wants to teach computers how to “talk” like humans. NLP deals with processing and analyzing natural language data, such as speech and text. We can use NLP for translation, speech recognition, text-to-speech conversion, or even sentiment analysis, like in the case of product reviews. NLP is a rapidly growing field, which is becoming more accurate and sophisticated, with many applications in our day-to-day life.



Speaking of applications, here are just a few examples- recommendation systems as Netlix for movies and Google for internet searches. You also use AI through your phone in the form of facial recognition.When sending an email, opening a bank account, or adding an address in your GPS, you will probably also use some form of AI. Self driving cars as Tesla, or fun robots like the ones from Boston Dynamics are some exciting applications of AI. If you're interested in AI, you've probably also talked with chatGPT, and if not, I strongly encourage you to test this powerful software.

See you in the next episode!