Artificial Intelligence

Figure 1: Artificial Intelligence

Artificial Intelligence (AI) terms

AI-Powered Assistant

An AI-powered assistant is a virtual assistant that uses artificial intelligence (AI) technology to understand and respond to user requests. AI-powered assistants can be used to perform tasks such as scheduling appointments, setting reminders, providing information, and answering questions.

Artificial Intelligence

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to perform tasks that would typically require human intelligence, such as reasoning, learning, perception, and problem-solving.

> Artificial intelligence is everywhere and it's already making a huge impact on our lives. It's autocompleting texts on our cellphones, telling us which videos to watch on YouTube, beating us at video games, recognizing us in photos, ordering products in stores, driving cars, scheduling appointments, you get the idea. Today we're going to explain what AI can (and can't) do right now and explain how we got to where we are today.

Chatbot

A chatbot is an AI-powered computer program designed to simulate conversation with human users, typically through text messages or voice interactions. Chatbots can be used for customer service, sales, marketing, and other applications.

> By now most of us have interacted with a chatbot in one form or another, but exactly how do they work? Do chatbots only operate on websites, or are there other mediums that a chatbot can facilitate a conversation? And why would anyone want to use a chatbot?
>
> In this lightboard video, Morgan Carroll with IBM Cloud, answers these questions and many more as she walks through an example of Floral company using a chatbot and shows first hand what a chatbot is, how it works, and why you may want to use one for your business.
>
> Do you ever lay awake at night wondering what, exactly, a chatbot is? Or how chatbots work? Or even if bots will steal customer service representatives' jobs? Well, you can rest easy because we're going to answer all your questions.

Computer Vision

Computer Vision is a field of artificial intelligence that focuses on enabling machines to interpret and understand visual data from the world around them, such as images and videos.

> Today we're going to talk about how computers see. We've long known that our digital cameras and smartphones can take incredibly detailed images, but taking pictures is not quite the same thing. For the past half-century, computer scientists have been working to help our computing devices understand the imagery they capture, leading to advancements everywhere, from tracking hands and whole bodies, biometrics to unlock our phones, and eventually giving autonomous cars the ability to understand their surroundings.

Decision Tree

A decision tree is a graphical representation of a decision-making process that uses a tree-like model of decisions and their possible consequences. Decision trees are often used in machine learning and artificial intelligence applications.

> Decision tree organizes a series rules in a tree structure. It is one of the most practical methods for non-parametric supervised learning. Our goal in this video is to demonstrate how to create a decision tree that predicts the value of a target by learning decision rules inferred from the training data.

Deep Learning

Deep learning is a subset of machine learning that involves training artificial neural networks with large amounts of data to perform complex tasks, such as image and speech recognition.

Expert System

An expert system is an AI-powered system that uses a knowledge base and reasoning algorithms to simulate the decision-making abilities of a human expert in a particular domain.

Machine Learning

Machine learning is a subset of artificial intelligence that involves training computer programs to learn from data and improve their performance on specific tasks over time, without being explicitly programmed to do so.

> In this video, you'll learn more about the evolution of machine learning and its impact on daily life.

Narrow AI

Narrow AI refers to artificial intelligence systems that are designed to perform a specific task or set of tasks, rather than exhibiting general intelligence.

Natural Language Generation

Natural Language Generation is a field of artificial intelligence that focuses on using machine learning algorithms to automatically generate natural language text from structured data or other sources.

Natural Language Processing

Natural Language Processing is a field of artificial intelligence that focuses on enabling computers to understand, interpret, and generate human language.

> We're going to talk about how computers understand speech and speak themselves. As computers play an increasing role in our daily lives there has been an growing demand for voice user interfaces, but speech is also terribly complicated. Vocabularies are diverse, sentence structures can often dictate the meaning of certain words, and computers also have to deal with accents, mispronunciations, and many common linguistic faux pas. The field of Natural Language Processing, or NLP, attempts to solve these problems, with a number of techniques we'll discuss today. And even though our virtual assistants like Siri, Alexa, Google Home, Bixby, and Cortana have come a long way from the first speech processing and synthesis models, there is still much room for improvement.

Neural Network

A neural network is a type of artificial intelligence algorithm that is modeled after the structure and function of the human brain. Neural networks are often used in deep learning applications.

> We're going to combine the artificial neuron we created last week into an artificial neural network. Artificial neural networks are better than other methods for more complicated tasks like image recognition, and the key to their success is their hidden layers. We'll talk about how the math of these networks work and how using many hidden layers allows us to do deep learning. Neural networks are really powerful at finding patterns in data which is why they've become one of the most dominant machine learning technologies used today.

Reinforcement Learning

Reinforcement learning is a type of machine learning that involves training an algorithm to make decisions based on feedback it receives from its environment.

Supervised Learning

Supervised learning is a type of machine learning that involves training an algorithm using labeled data, where the desired output is known.

> Today we're going to teach John Green Bot how to tell the difference between donuts and bagels using supervised learning! Supervised learning is the process of learning WITH training labels, and is the most widely used kind of learning with it comes to AI - helping with stuff like tagging photos on Facebook and filtering spam from your email. We're going to start small today and show how just a single neuron (or perceptron) is constructed, and explain the differences between precision and recall. Next week, we'll build our first neural network.

Training Data

Training data is a set of data used to train machine learning algorithms. Training data typically consists of input data and corresponding output data, which is used to teach the algorithm how to make predictions.

Turing Test

The Turing Test is a test of a machine's ability to exhibit intelligent behavior equivalent to, or indistinguishable from, that of a human.

> What is consciousness? Can an artificial machine really think? For many, these have been vital considerations for the future of artificial intelligence. But British computer scientist Alan Turing decided to disregard all these questions in favor of a much simpler one: Can a computer talk like a human? Alex Gendler describes the Turing test and details some of its surprising results.
>
> Lesson by Alex Gendler, animation by Patrick Smith.

Unsupervised Learning

Unsupervised learning is a type of machine learning that involves training an algorithm using unlabeled data, where the desired output is unknown. The algorithm must find patterns and relationships in the data on its own.

> We're moving on from artificial intelligence that needs training labels, called Supervised Learning, to Unsupervised Learning which is learning by finding patterns in the world. We'll focus on the performing unsupervised clustering, specifically K-means clustering, and show you how we can extract meaningful patterns from data even when you don't know where those patterns are.