Intro to AI and ML

_____

Data science combines math and statistics, specialized programming, advanced analytics, artificial intelligence (AI), and machine learning with specific subject matter expertise to uncover actionable insights hidden in an organization's data. These insights can be used to guide decision making and strategic planning.

DS is synonym for AI:
Analyzing and interpreting data. Generate data using statistics and other tools.
"Literally nothing new."

DS is not synonym for AI:
AI is a software? If you say that you're a biological engineer you aren't any engineer but bio one. No one thinks about DS when they hear AI but more about CS. For DS we make a conclusion, AI on the other hand does it by yourself (not a valid argument).

_____

Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision.

ML is synonym for AI:
Different tasks can fall into multiple cycles. Machine Learning is stated as a synonym (but they prove a negative point). These concepts have similarities such as threads. AI is also used to describe programs that are like humans.

Machine learning is a "key" part of AI. Most AI is based on it. ML is the most successful **part of** AI.

ML is not synonym for AI:

Tyler
Machine learning is not a synonym for artificial intelligence. It's similar to how squares are all rectangles but not all rectangles are squares and how machine learning is a subset of artificial intelligence but they are not synonyms of each other. There are other types of AI that aren't machine learning, for example rule based ai. This type of ai uses rules programmed into it by the designer such as in a tic tac toe, where the ai just goes down through a set of rules and

finds a rule that follows the situation. These types of AI work right away after development. After development you know exactly how the ai will react to certain moves in a game of tic tac toe.

Mikhail
In contrast, Machine Learning is just a tool for AI and can be compared to education process: while you can leave AI to self-education, which is good when you don't know what should I respond to certain things or you can put information in AI by yourself aka put it in "school" and it will learn how to do certain things the way you want to do them. AI approaches are a more extensive set of methods, which includes symbolic reasoning, planning and problem-solving and they aren't based on learning from data.

Mikhail
As you said that ML and AI are similar, but ML is just a subset of AI, it is like calling pillow and bed synonyms/similarities, while they did the same function: help you sleep, they are really different in their structure, bed can be used as coach, pillow cannot.

_____

Machine learning is a type of artificial intelligence focused on building computer systems that learn from data. The broad range of techniques ML encompasses enables software applications to improve their performance over time.

Machine learning is a part of **Artificial Intelligence**, and for them both, part of them is considered **Data Science**.

ML is synonym for DS:
ML is a significant component of DS, and many data science projects involve the application of machine learning algorithms to extract insights from data.
Both ML and DS often use common tools and libraries. For instance, Python with libraries like NumPy, Pandas, and Scikit-Learn is widely used in both domains.

ML is not synonym for DS:
While the goal of ML is to develop algorithms that enable computers to learn from data, the goal of Data Science is to extract meaningful insights from data to inform decision-making. ML is a tool within the toolkit of a data scientist.
Data Science encompasses a broader range of activities beyond machine learning. It includes data acquisition, cleaning, exploratory data analysis, statistical analysis, and the overall process of extracting insights from data. ML is just one part of this larger process.