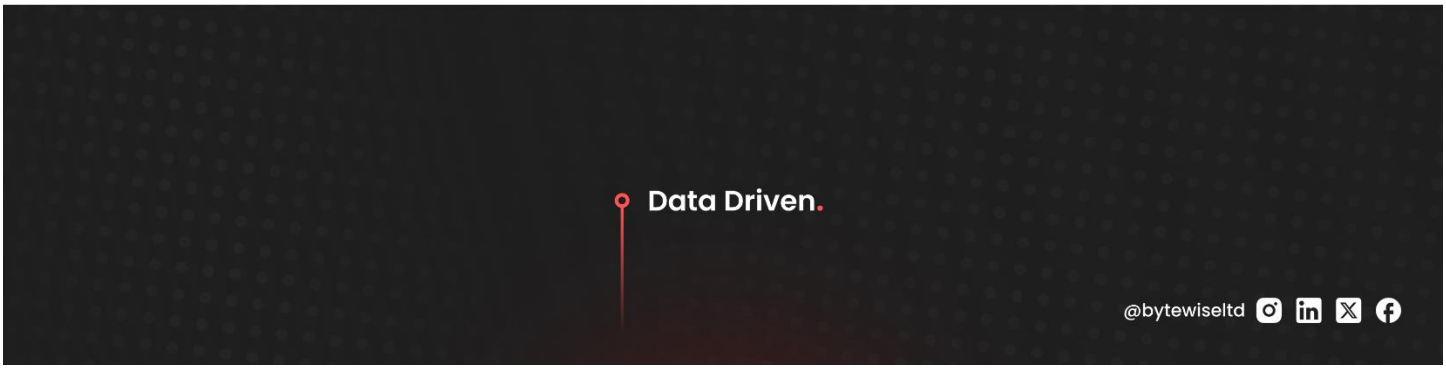

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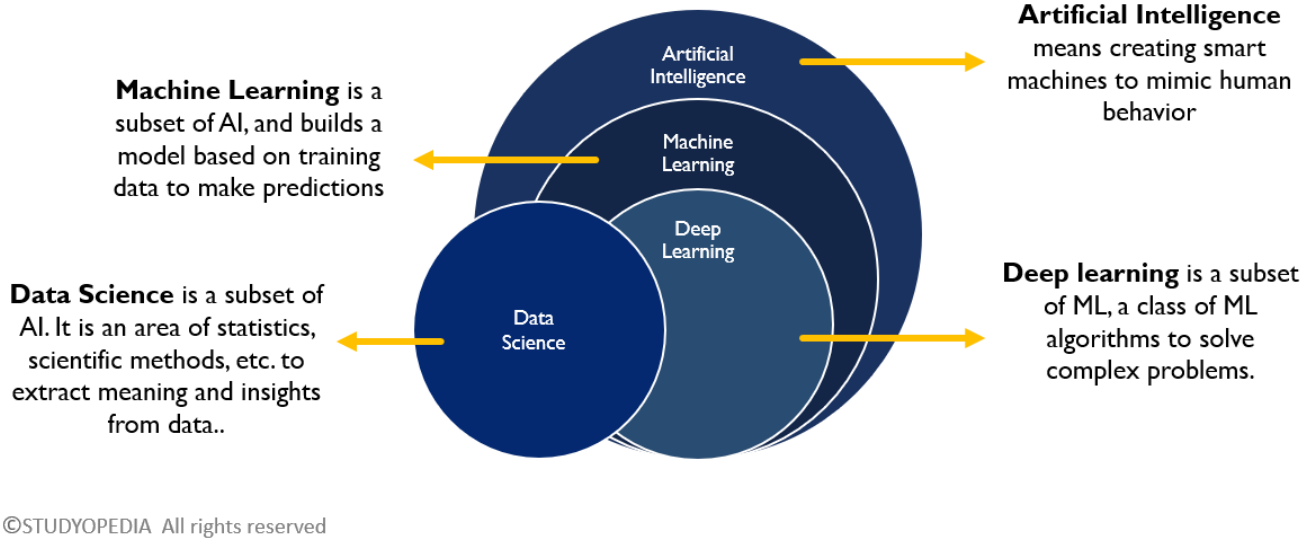
BWT: Machine Learning Task

Submission Date: 16/05/2024

AI vs ML vs DL vs DS



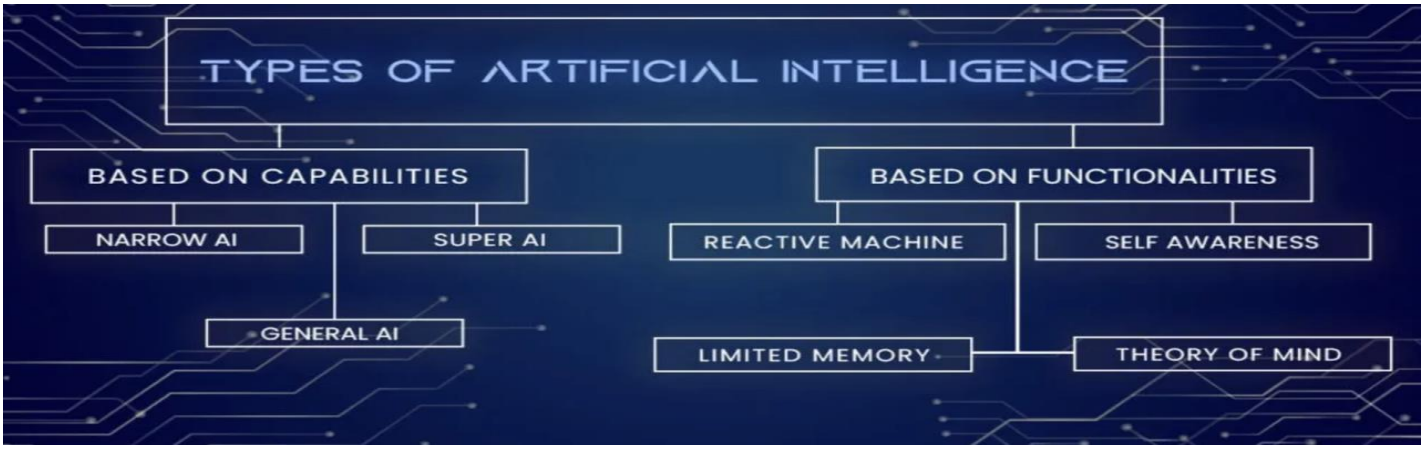
What is AI?

Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems.

In more basic terms, AI is all about machines or software that can perform tasks that typically require human intelligence.

These tasks can include things like understanding natural language, recognizing patterns, making decisions, interacting with an environment, learning from experience, solving problems, and even exercising creativity.

Types of AI



Popular Applications/ Use Cases of AI

- Virtual Assistants: AI-powered virtual assistants like Siri (Apple), Alexa (Amazon), and Google Assistant (Google)
- Recommendation Systems: Companies like Netflix and Amazon use AI to recommend content and products to users based on their preferences and behavior.
- Autonomous Vehicles: Tesla, Waymo (Alphabet), and Uber are developing self-driving cars using AI.
- Chatbots: Many companies, including Facebook, use AI chatbots for customer support and engagement.

What is Machine Learning?

ML or Machine Learning as a branch of artificial intelligence (AI) and computer science that focuses on the use of data and algorithms to imitate the way humans learn.

In simpler terms, ML is a subset of AI that focuses on creating algorithms and models that can learn from data. Instead of explicitly programming a machine to do something, you feed it data, and it learns how to do it on its own.

A few algorithms used in Machine Learning include Linear regression, decision trees, Naive Bayes, and K-means clustering and many more.

Popular Applications/ Use Cases of Machine Learning

- Fraud Detection: PayPal and Square employ ML algorithms to detect fraudulent transactions and prevent financial losses.
- Natural Language Processing (NLP): Google's BERT and OpenAI's GPT-3 are ML models powering various NLP applications, such as language translation and sentiment analysis.
- Image Recognition: Companies like Facebook and Pinterest use ML for image recognition in photo tagging and content recommendations.
- E-commerce Forecasting: Alibaba and Amazon use ML to predict customer demand, optimize inventory, and improve sales forecasting.

What is Deep Learning?

Deep learning is a subset of ML that involves the use of neural networks to solve complex problems. And these neural networks are simply algorithms inspired by the human brain.

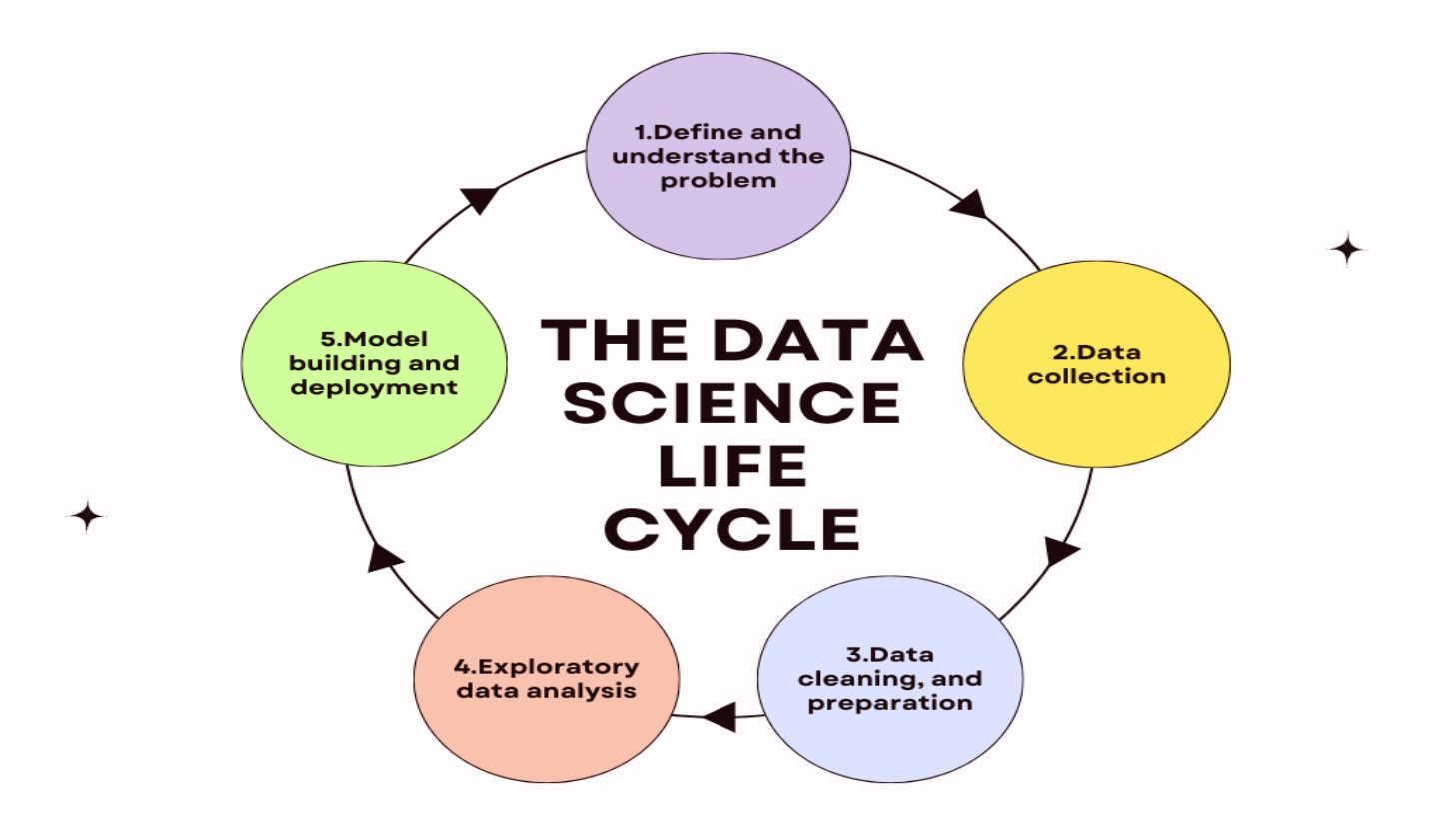
Deep learning models can recognize complex patterns in pictures, texts, sounds, and other data to produce accurate insights and predictions. You can use deep learning methods to automate tasks that typically require human intelligence, such as describing images or transcribing a sound file into text.

Popular Applications/ Use Cases of Deep Learning

- Computer Vision: Tesla's Autopilot system employs deep learning for advanced image recognition in autonomous driving.
- Speech Recognition: Amazon's Alexa, Apple's Siri, and Google's Assistant utilize deep learning for natural language understanding and voice commands.
- Image Generation: NVIDIA's GANs (Generative Adversarial Networks) create realistic images, while DeepDream creates psychedelic art.
- Language Translation: Google Translate uses deep learning models like Transformer to provide accurate translations across languages.

What is Data Science?

Data science combines math and statistics, specialized programming (Python, R, or SQL), 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.



Popular Applications/ Use Cases of Data Science

- Business Intelligence: Tableau and Qlik provide data visualization and analytics tools for businesses to make data-driven decisions.
- Finance: Companies like Goldman Sachs and JPMorgan Chase use data science for risk assessment, algorithmic trading, and fraud detection.
- E-commerce Analytics: Amazon and Walmart use data science for pricing optimization, inventory management, and customer behavior analysis.
- Marketing Analytics: Adobe Analytics and HubSpot use data science to analyze marketing campaigns, customer segmentation, and conversion rates.

Common Data Career Paths

1. Data Scientist
2. Data Engineer
3. Machine Learning Engineer
4. Business Intelligence Analyst
5. ML Product Manager
6. Computer Vision Engineer
7. NLP Engineer
8. Reinforcement Learning Engineer
9. AI Research Scientist
10. AI Product Manager
11. AI Consultant
12. AI Developer
13. Deep Learning Research Scientist
14. Computer Vision Specialist
15. Natural Language Processing Specialist

Resources: IBM , Medium and Studyopedia