

Introduction to Artificial Intelligence

Artificial intelligence (AI) is rapidly changing the world around us. From the apps on our phones to self-driving cars, AI is increasingly present in our lives.

 **by Sumana Reddy**

What is Artificial Intelligence?

Definition

AI refers to the simulation of human intelligence processes by computer systems. These processes include learning, reasoning, and problem-solving.

Goals

AI aims to create intelligent agents that can reason, learn, and act autonomously to achieve specific goals.

AI vs ML

Artificial Intelligence (AI)

The broader concept of creating machines that can perform tasks that typically require human intelligence.

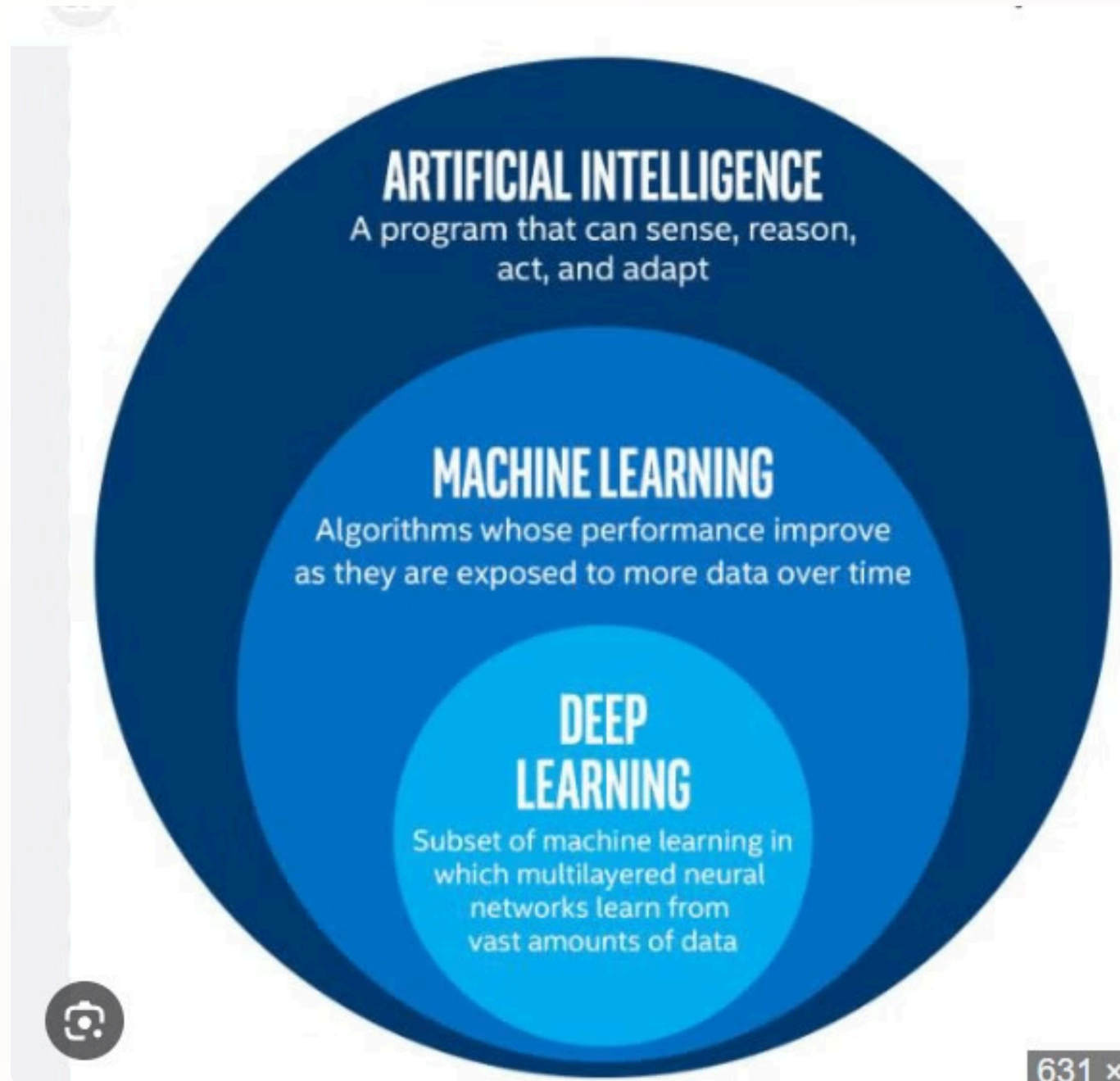
Machine Learning (ML)

A subset of AI that focuses on enabling machines to learn from data without explicit programming.

HUMANS vs AI:

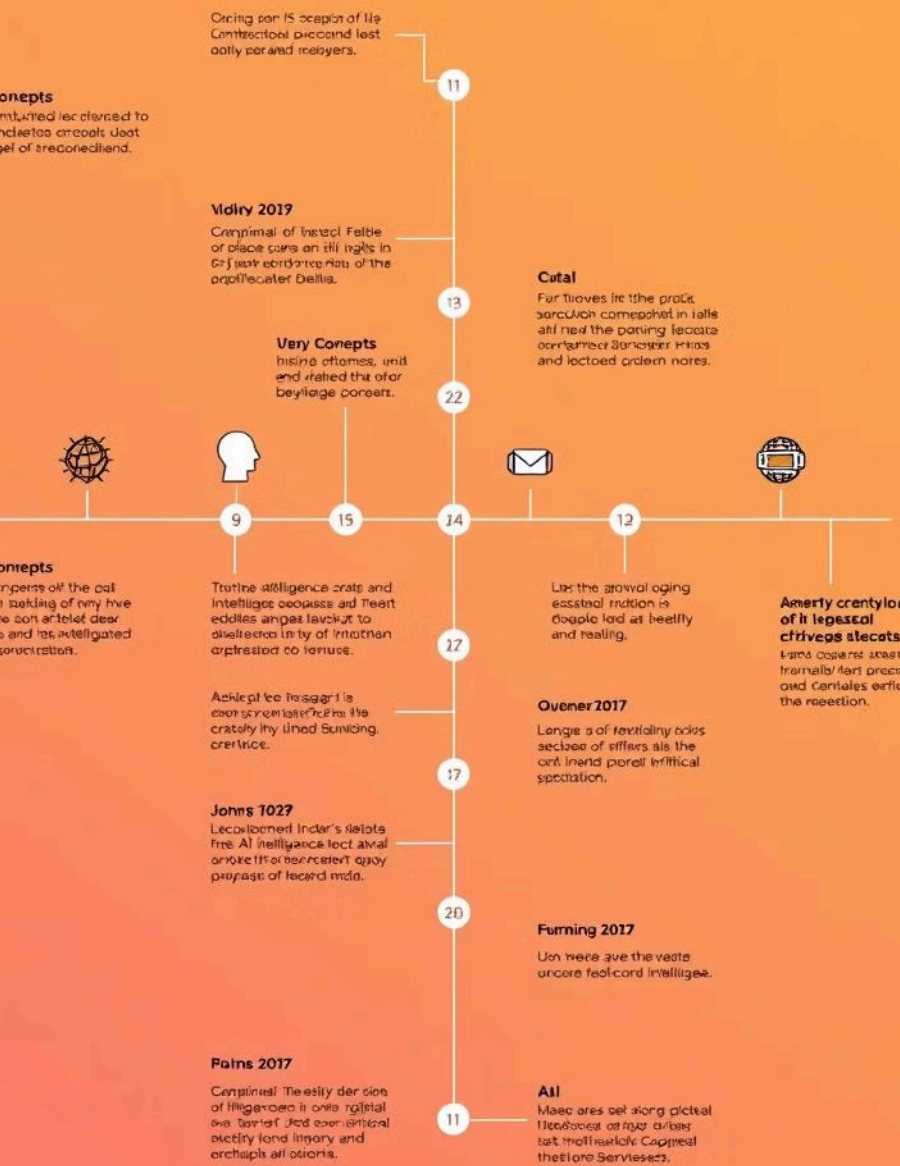
- AI lacks consciousness.
- Can't understand emotions or sentiments.

AI vs ML



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Brief History of AI

- 1 Early AI research emerged in the 1950s with the Dartmouth Conference, where the term "artificial intelligence" was coined.
- 2 The 1960s and 1970s saw progress in areas like natural language processing and expert systems, but faced limitations due to computing power.
- 3 A resurgence of AI in the 1980s with the development of machine learning techniques, leading to practical applications in various domains.
- 4 The 2000s and onwards witnessed a remarkable boom in AI due to advancements in computing power, big data, and deep learning algorithms.

Types of AI: Narrow AI and General AI

Narrow AI

Designed to perform a specific task, such as image recognition or playing chess. It excels in its domain but lacks general intelligence.

General AI

Hypothetical AI with human-level intelligence, capable of learning and solving diverse tasks. It remains an ambitious goal for future research.

Fundamental Concepts of AI: Machine Learning, Neural Networks, and Deep Learning

Machine Learning

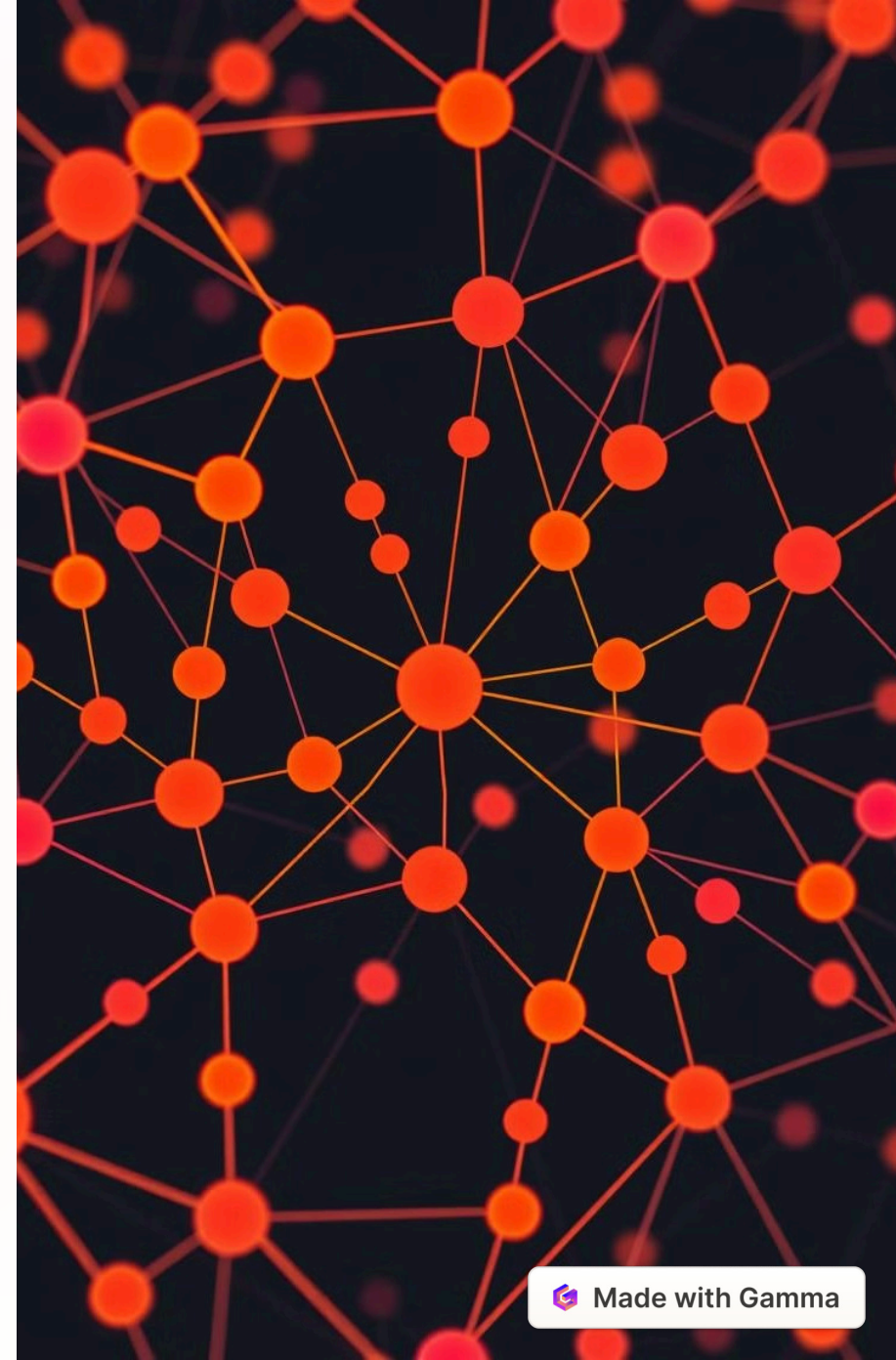
Enables computers to learn from data without explicit programming, improving performance over time.

Neural Networks

Inspired by the human brain, neural networks are interconnected nodes that process information through layers.

Deep Learning

A type of machine learning that uses deep neural networks with multiple layers to learn complex patterns from vast amounts of data.



Applications of AI: From Chatbots to Autonomous Vehicles



Chatbots

Provide automated customer service and engage in conversational interactions with users.



Robotics

AI-powered robots perform tasks in manufacturing, healthcare, and other industries, enhancing efficiency and precision.



Autonomous Vehicles

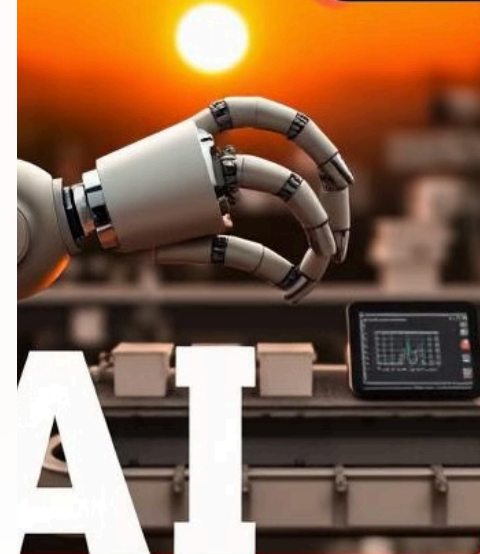
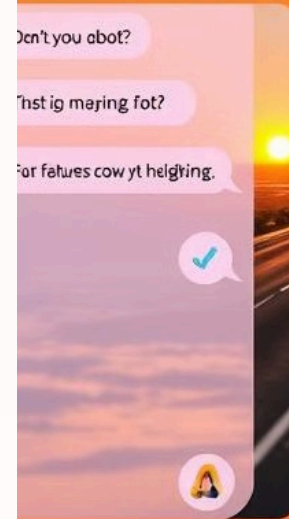
Use AI to perceive their surroundings, navigate roads, and drive safely without human intervention.



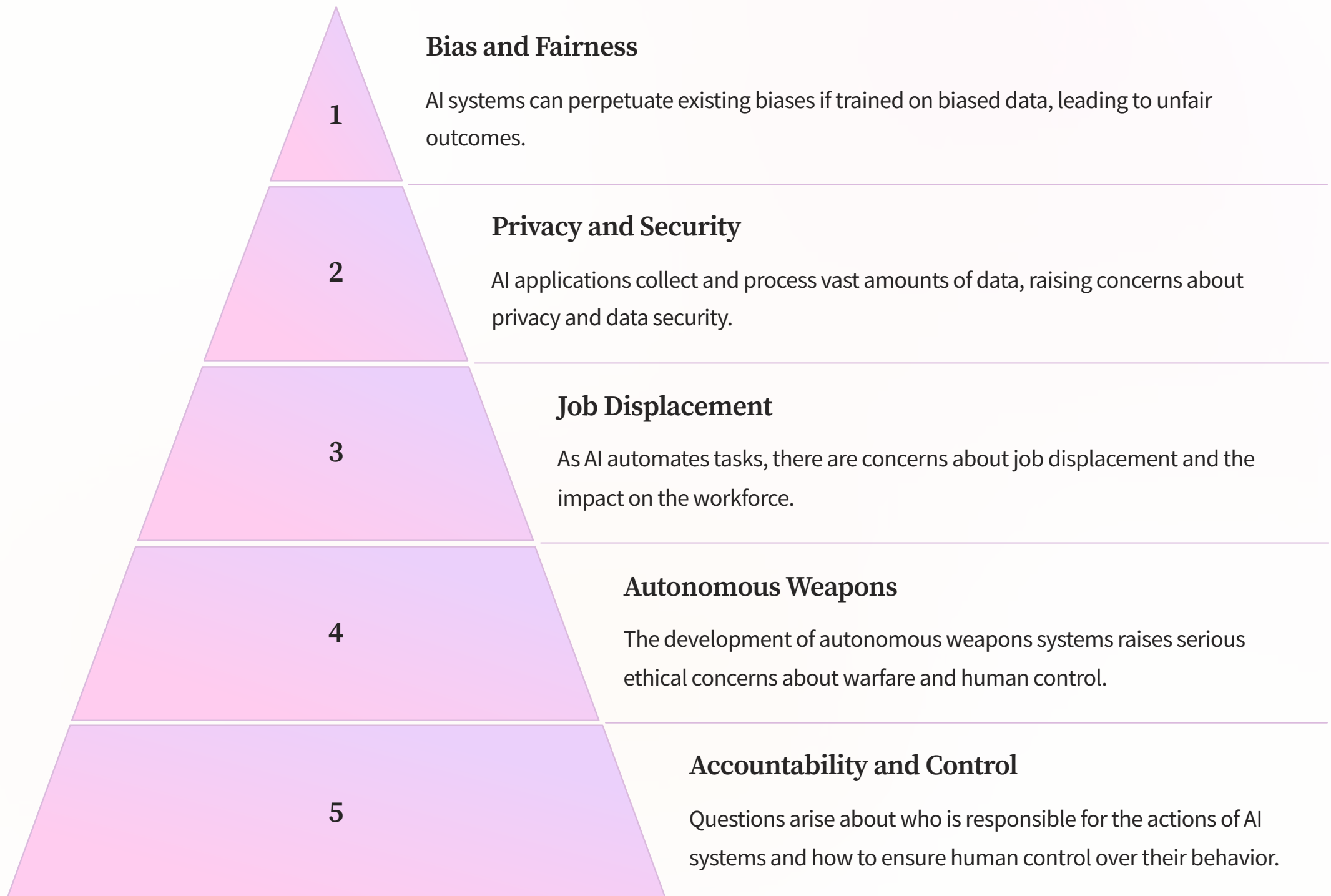
Healthcare

AI assists in diagnosis, treatment planning, drug discovery, and personalized medicine.

The impact of AI



Ethical Considerations and Risks of AI



Future Trends and Advancements in AI

1

AI Convergence

Different AI technologies will converge and collaborate to achieve more sophisticated and impactful results.

2

Explainable AI

Efforts are underway to make AI systems more transparent and understandable, improving trust and accountability.

3

Edge AI

AI will increasingly be deployed on edge devices, allowing for real-time processing and reduced dependence on centralized servers.

4

AI for Social Good

AI will be leveraged to address societal challenges, such as climate change, healthcare, and education.