AI and education

A brief history of AI

700 BC



The myth describes Talos as a giant bronze man built by Hephaestus, the Greek god of invention and blacksmithing. Talos was commissioned by Zeus, the king of Greek gods, to protect the island of Crete from invaders.

1789



During medieval and early modern times, it was thought that homunculus, an artificial humanlike being, could be created through alchemy. The homunculus first appears in alchemical writings attributed to Paracelsus (1493–1541)

History of AI

Artificial intelligence is based on the assumption that the process of human thought can be mechanized.

1000 BC

Philosophers developed structured methods of formal deduction.

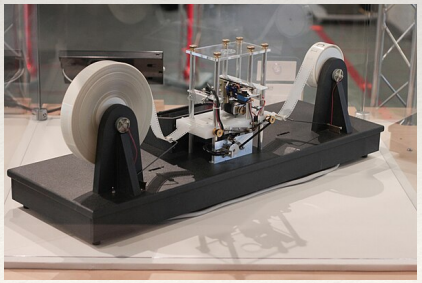
Deductive reasoning: Aristotle (syllogisms), Euclid…

1700…

Leibniz, Thomas Hobbes and René Descartes explored the possibility that all rational thought could be made as systematic as algebra or geometry.

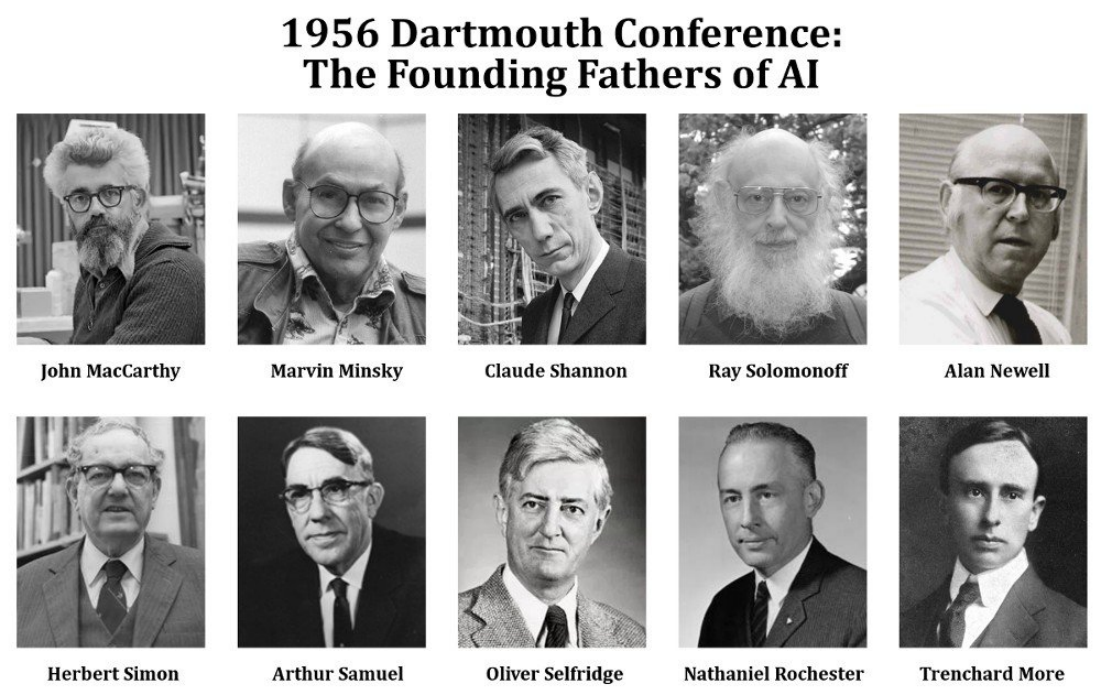
1850-1950

Mathematical logic:
- Boole, Russell, Hilbert, Goedel, Turing…



Turing machine

Dartmouth workshop: 1956



G(ood) O(old) F(ashioned) A(rtificial) I(ntelligence)

Symbolic AI: GOFAI uses symbols and explicit rules to represent knowledge. AI in this form operates by manipulating these symbols to perform logical operations and reasoning.

Logic-Based Systems: It relies on predefined rules, often in the form of "if-then" statements, and works well with structured, rule-based problems.

Human-Readable Rules: The rules and knowledge in GOFAI systems are transparent and interpretable by humans, making it easier to understand how the system reaches conclusions.

Examples: Early AI systems like **expert systems** in medical diagnostics and **rule-based chatbots** used GOFAI principles. These systems excelled at tasks like theorem proving, chess, and knowledge representation but struggled with real-world variability.

Deep Learning
(Learning-based Artificial Intelligence)

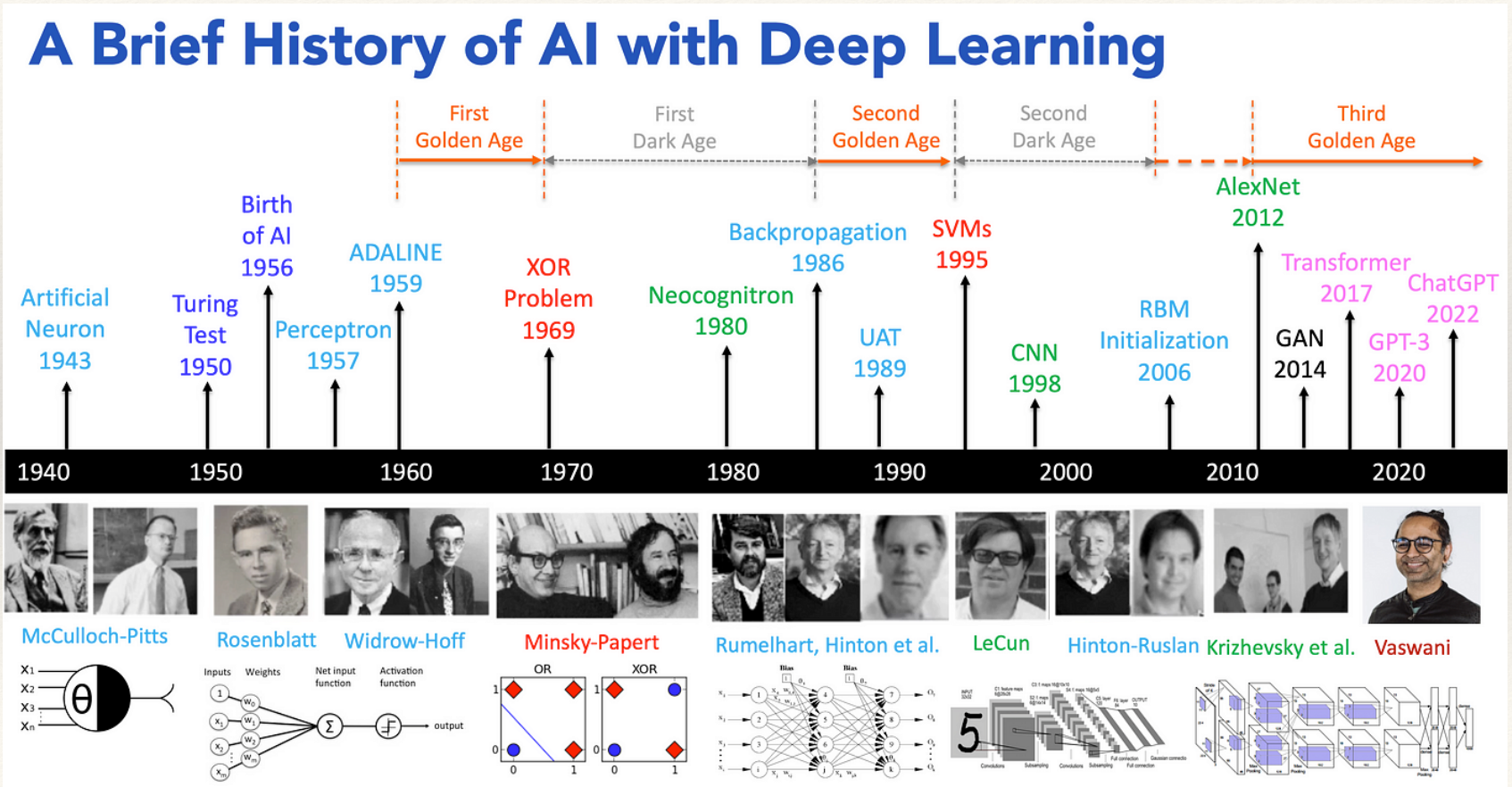
Neural Network-Based: Deep learning uses multi-layered neural networks that mimic aspects of the human brain to process data. These networks have layers of interconnected nodes (neurons) that transform and analyze data in complex ways.

Data-Driven Learning: Deep learning models learn from large datasets through pattern recognition rather than predefined rules. They adjust based on patterns in data rather than explicit programming.

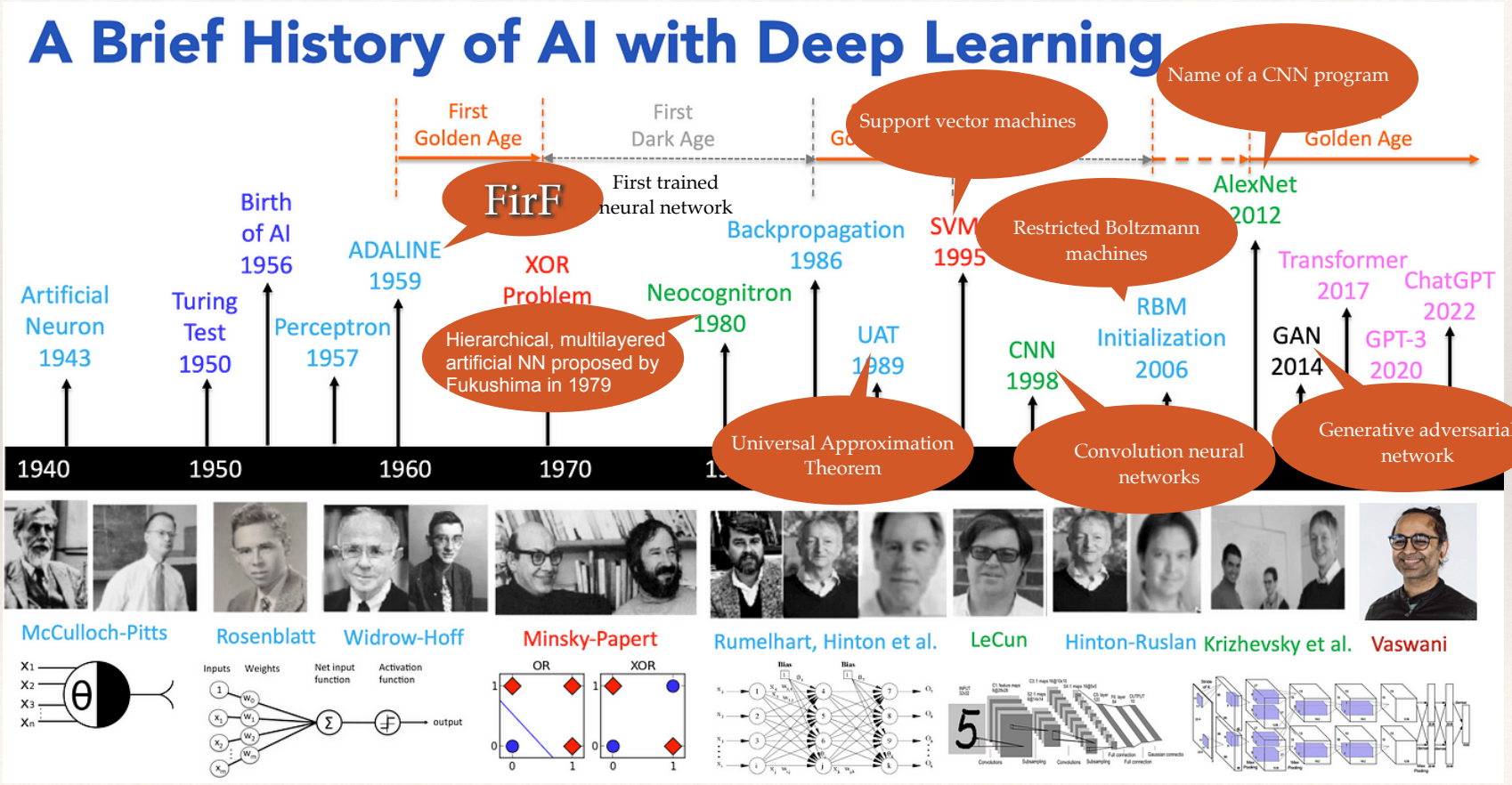
Lack of Explicit Reasoning: Unlike GAFAI, deep learning models are often seen as "black boxes" because the decision-making process isn't always interpretable.

Examples: Deep learning powers **image recognition systems**, **language translation**, and **speech recognition**. It is also foundational in technologies like **CLAUDE** or **ChatGPT**, autonomous driving systems, and facial recognition.

A brief history of AI



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AI

AI can be broadly categorized into three main types based on capabilities and complexity:

1. **Narrow AI (Weak AI)**: This is AI designed to perform a specific task or a set of tasks, often excelling in one domain but unable to operate outside of it. Examples include facial recognition, recommendation systems, and language translation.

2. **General AI (Strong AI)**: General AI refers to an AI system with the ability to understand, learn, and apply knowledge across various tasks at the level of human intelligence. It would be capable of reasoning, problem-solving, and adapting to new situations. General AI remains theoretical and doesn't yet exist

3. **Superintelligent AI**: This hypothetical type of AI would surpass human intelligence in all aspects, including creativity, problem-solving, and emotional intelligence. It could perform any intellectual task better than humans.