جامعة سطيف 1 - فرحات عباس
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Introduction to Artificial Intelligence

Chapter 02

The History and Evolution of Artificial Intelligence

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01 – Foundation Phase

The concept of Artifical Intelligence dates back to 1950s, and more specifically to 1950, by the scientist Alan Turing, who defined Artifical intelligence and proposed the Turing Test, which is a method for determining whether a computer or program is capable of demonstrating human intelligence.



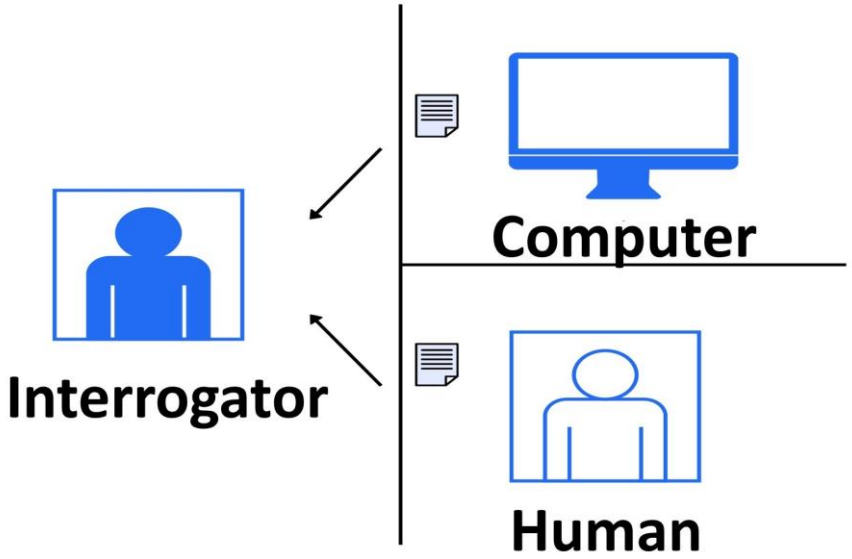


Figure 01: Turing Test

A year after the emergence of this test, Christopher Strachey created the first program to utilize artificial intelligence; he succeeded in running and developing a game of checkers on a computer.

Subsequently, Anthony Oettinger measured a computer's ability to learn, marking the first successful experiment in what is known as machine learning.

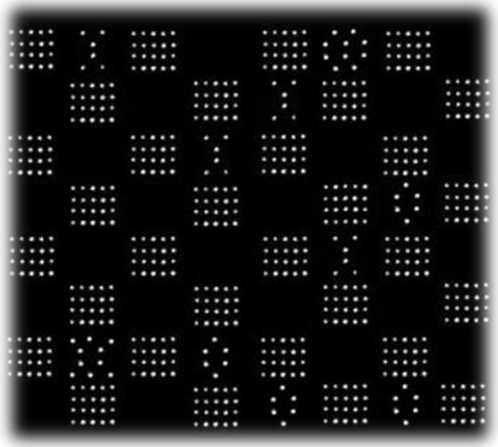


Figure 02: Image of checkers game developed by Christopher Strachey.

As for artificial intelligence, it officially emerged for the first time in 1956, driven by a group of computer science researchers who succeeded in solving algebraic problems and proving logical theorems.

Leading this group was John MC Carthy, who was the first one to use the term “Artificial Intelligence”.

02 – The Era of Optimism 1956 – 1970

This period witnessed the development of numerous programs, as well as many additions and discoveries in the field of artificial intelligence; the most significant of these include:

- 1958: John McCarthy invented LISP, a programming language for artificial intelligence.
- 1965: Joseph Weizenbaum created ELIZA, the first English-language chatbot. Also, in the late 1960s, the Perceptron model was developed—the first neural network model capable of learning from examples.

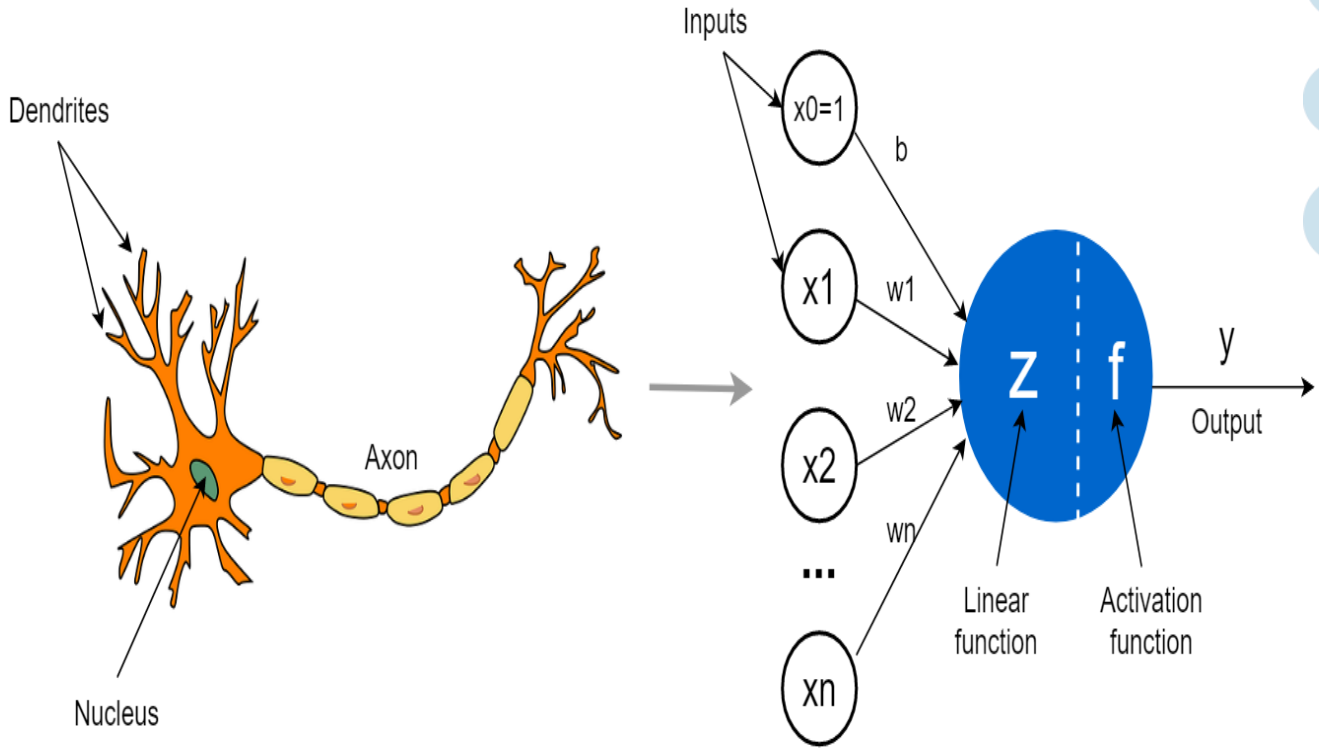
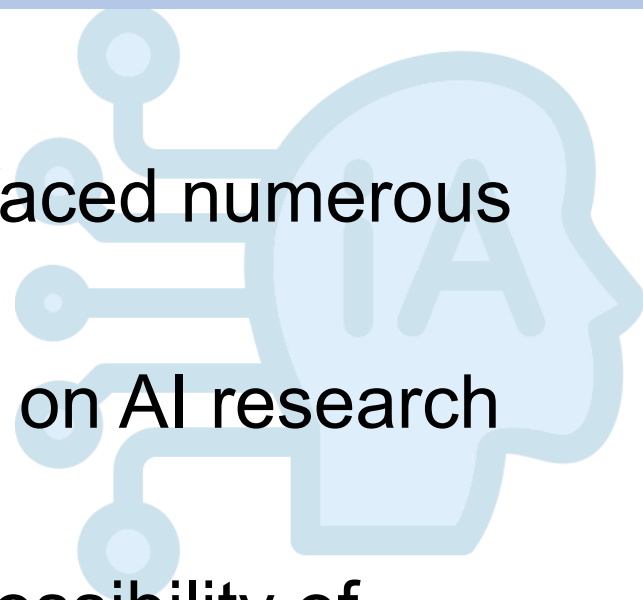


Figure 02: The Perceptron

03 – First AI Winter (1970s and 1980s)



Despite widespread optimism, artificial intelligence has faced numerous obstacles, including:

- Criticism of the US government's increased spending on AI research in 1973.
- Skepticism regarding the optimistic outlook and the possibility of achieving human-level capabilities.
- The cessation of funding for AI research by the British and American governments.

In addition to other problems and obstacles such as limited computing power and a lack of data.

Despite this setback, the 1980s saw a resurgence driven by "expert systems"—rule-based systems designed to emulate the decision-making of specialists across various fields, such as the MYCIN medical system (introduced in 1970).

While these systems achieved relative success, their utility was limited; they relied on manually written rules, lacked the ability to learn, and entailed high maintenance costs.

04 – The Return of Neural Networks and the Emergence of Machine Learning

From the 80s and 90s to the early 2000s, deep learning systems, or neural networks, saw a resurgence thanks to advancement in backwarding algorithm, increased computing power, and the availability of vast amounts of data.

Artificial intelligence has also undergone a major transformation with the emergence of machine learning, which has enabled AI systems to improve their performance through experimentation and learning.

This period also witnessed successes such as the application of AI in industry, medicine, and finance, and improvements in speech and image recognition systems.

05 – The Era of Deep Learning and Language Models

The 2010s witnessed an explosion in AI capabilities thanks to deep learning. Using artificial neural networks, deep learning models were able to process massive amounts of data and identify patterns with unprecedented accuracy.

AI systems began to surpass humans in areas such as image recognition, speech processing, and even creative writing.

Companies like Google, Microsoft, and OpenAI spearheaded advancements in computer vision, robotics, and language models, moving from natural language processing models to large-scale language models.

AI assistants and chatbots have become an integral part of our daily lives.



06 – Generative AI and the Modern Revolution

Today, AI has entered a new phase — the age of generative intelligence. Tools like ChatGPT, DALL·E, Midjourney, and others can create text, images, code, and even music with remarkable creativity.

These qualitative developments are reshaping vital sectors such as healthcare, education, finance, and the arts.





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