Historical Evolutionary Development of Artificial Intelligence

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Abstract: this article analyzes the historical development of artificial intelligence, which revealed today's most technologically advanced era. It also touched on the initial ideas about artificial intelligence and the views of the Middle Ages and the Renaissance.

Today, along with economic globalization, intellectual property rights and their protection are also important in the development of our country. Because intellectual property protection, in addition to improving the state's own industry through innovation, is a unique "key" tool in the field of foreign technology transfer, investment, and employment of the population. In our country, consistent measures are being taken to improve the mechanisms of introducing innovations into economic sectors, to ensure its competitiveness, to create conditions aimed at the development of active entrepreneurship and innovative activities, and to ensure reliable legal protection of intellectual property.

Introduction

What is artificial intelligence?

Artificial intelligence means an intelligent artificial system that performs logical and creative human functions. The term can also be applied to any technology that exhibits characteristics associated with the human mind, such as learning and problem solving. The ideal characteristic of artificial intelligence is the ability to evaluate and take actions that have the best chance of achieving a specific goal. Currently, artificial intelligence consists of algorithms and software systems designed to perform various actions, and it can cope with a number of tasks that the human mind can perform. While scientists are eager to experiment with artificial intelligence, many people are wary of the phenomenon. Even Tesla CEO Elon Musk has called it a "major threat" to humanity and a possible source of war and unemployment.

History of artificial intelligence, stages of development?

The history of artificial intelligence (AI) began in antiquity with myths, stories, and rumors about artificial beings with intelligence or consciousness created by skilled craftsmen. The seeds of modern artificial intelligence were planted by philosophers who tried to describe the human thought process as a mechanical manipulation of symbols. This work culminated in the invention of the programmable digital computer in the 1940s, based on the abstract nature of mathematical reasoning. This device and the ideas behind it have inspired several scientists to begin seriously discussing the possibility of creating an electronic brain.

Alan Turing was the first person to do major research in what he called Machine Intelligence.

The field of AI research was established in the summer of 1956 at a seminar held on the campus of Dartmouth College, USA. Many of them predicted that a machine as intelligent as a human would not be more than a generation away, and they were given millions of dollars to make this vision come true.

In the end, it became clear that the researchers had grossly underestimated the difficulty of the project. In 1974, in response to criticism from James Lighthill and continued pressure from Congress, the US and British governments stopped funding undirected research into artificial intelligence, and the difficult years that followed would later be known as the "AI Winter". Seven years later, a visionary initiative by the Japanese government inspired governments and industry to provide billions of dollars in artificial intelligence, but by the late 1980s investors were disillusioned and pulled back again.In the 2020s, investment and interest in AI has surged as machine learning has been successfully applied to many problems in academia and industry thanks to new methods, the use of powerful computing hardware, and the collection of massive data sets.

Myths and legends about artificial intelligence.

In Greek mythology, Talos was a bronze giant who was the guardian of the island of Crete. He threw stones at the ships of the invaders and made 3 rounds around the perimeter of the island every day. According to Pseudo-Apollodorus' Bibliotheke, Hephaestus created Talos with the help of the Cyclops and presented the automaton (here suggested a self-regulating weapon) as a gift to Minos.

In the Argonautica, Jason and the Argonauts defeated him with a single cork near his leg, which, when removed, allowed the lifeblood to drain from his body, leaving him lifeless.Pygmalion is a legendary king and sculptor from Greek mythology, made famous by Ovid's Metamorphoses. In Book 10 of Ovid's narrative poem, Pygmalion hates women when he witnesses the Propoetides whoring themselves. Nevertheless, he makes sacrifices at the temple of Venus, asking the goddess to bring him a woman like the statue he carved.

Myths about artificial creatures in the Middle Ages

In The Nature of Things, written by the Swiss alchemist Paracelsus, he describes a procedure by which he could create an «artificial man.» If you put «man's sperm» in horse manure and feed it with «Arcanum of Man's blood» after 40 days, this mixture will turn into a living child.The oldest written information about making a golem can be found in the writings of Eleazar ben Yehuda of the Kurds at the beginning of the 13th century. In the Middle Ages, it was believed that golem animation could be achieved by inserting a piece of paper with the names of God into the clay figure's mouth. Unlike legendary automatons such as Brazen Heads, the Golem could not speak.

Taqwin, the artificial creation of life, the manuscripts of Ismaili chemistry, especially the manuscripts attributed to Jabir ibn Hayyan. Islamic alchemists tried to create a wide range of life from plants to animals through their work.

In Faust: Part Two of the Tragedy, Johann Wolfgang von Goethe, a chemically engineered homunculus, aspires to be born in a fully human body, destined to live forever in a flask of his own creation. However, when this transformation begins, the tube disintegrates and the homunculus dies.

Artificial intelligence is based on the assumption that the human thinking process can be mechanized. The study of mechanistic or «formal» thinking has a long history. Chinese and Greek philosophers all developed structured methods of formal deduction in the first millennium BCE.

Their ideas were developed over the centuries by the philosophers Aristotle (who formally analyzed the syllogism), Euclid (whose elements were a formal model of thought), al-Khwarizmi (who developed algebra and called it «algorithm»), and European scholastic philosophers such as William Ockham and Duns Scotus.

The Spanish philosopher Ramon Llull (1232–1315) developed several logical machines dedicated to the production of knowledge by logical means. Described as mechanical beings that produce all possible knowledge produced by. Llull's work greatly influenced Gottfried Leibniz, who reworked his ideas.In the 17th century, Leibniz, Thomas Hobbes, and René Descartes explored the possibility of systematizing all rational thought, like algebra or geometry. Hobbes famously wrote in Leviathan, «Reason is nothing but calculation.» Leibniz envisioned a universal language of reasoning, characteristica universalis, which would reduce argumentation to calculation so that «there is no need for a debate between two philosophers and two calculators.» Because it is enough to take their pens in hand. To their sheets and to each other (with friends as witnesses if they like): Let's count. These philosophers began to articulate the physical sign system hypothesis, which would become a leading belief in artificial intelligence research.

In the 20th century, the study of mathematical logic provided an important breakthrough that made artificial intelligence seem plausible. Works such as Buhl's «Laws of Thought» and Frege's «Begriffsschrift» were founded. Based on Frege's system, Russell and Whitehead presented a formal approach to the foundations of mathematics in their masterpiece Principia Mathematica in 1913. Inspired by Russell's success, David Hilbert challenged mathematicians in the 1920s and 30s to answer this fundamental question. «Can all mathematical thinking be formalized?» His question was answered by Gödel's incompleteness proof, Turing machine and Church's Lambda calculus.

Their response was surprising in two ways. First, they proved that there are limits to what mathematical logic can achieve. But secondly (and more importantly for AI), their work has shown that any form of mathematical reasoning can be mechanized within these limits.

The Church-Turing thesis suggested that a mechanical device that shuffled simple symbols like 0 and 1 could mimic any mathematical deduction process. The main concept was the Turing machine – a simple theoretical construct that contained the essence of manipulating abstract symbols. This invention inspired several scientists to start discussing the possibilities of thinking machines.

Computer Science

Calculating machines have been designed or built by many people in antiquity and throughout history, including Gottfried Leibniz, Joseph Marie Jacquard, Charles Babbage, Percy Ludgate, Leonardo Torres Quevedo, Vannevar Bush, and others. Ada Lovelace speculated that Babbage's machine was a «thinking or … reasoning machine,» but warned that «it is advisable to guard against the possibility of exaggerated ideas of the machine's powers.»

The first modern computers were the giant machines of World War II (eg Konrad Zuse's Z3, Alan Turing's Heath Robinson and Colossus, Atanasoff and Berry, ABC and ENIAC at the University of Pennsylvania). ENIAC was based on the theoretical framework laid down by Alan Turing and developed by John von Neumann and proved to be the most influential.

The Birth of Machine Intelligence (before 1956)

In the 1940s and 1950s, a handful of scientists from various fields (mathematics, psychology, engineering, economics, and political science) began to discuss the possibilities of creating an artificial brain. Alan Turing was the first person to do major research in what he called

Machine Intelligence. The field of artificial intelligence research was established as an academic science in 1956.

In conclusion,

First of all: artificial intelligence did not appear today or yesterday, and ideas and views about it were created several thousand years ago;

Secondly: in the course of historical periodization, it was created as a result of man's ability to imitate and his consciousness – thinking, as a result of man's attempts to repeat himself;Thirdly: as a result of the passage of time, myths and legends, as a result of human thinking, the aspirations to create artificial intelligence, that is, artificial thinking, continue even today.

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