Rise and Fall of AI

The birth of AI: 1952–1956

Turing's test: Alan Turing proposes the Turing Test as a measure of machine intelligence

Game AI: First programs for playing games such as Chess and Checkers

Birth of term "AI": term artificial intelligence for the conference

Symbolic reasoning: Allen Newell and Herbert A. Simon created the "Logic Theorist",

The golden years: 1956 –1974

The money: AI research groups at MIT, Stanford, CMU received grants in millions by DARPA

Natural language: Joseph Weizenbaum (MIT) built ELIZA, an interactive program that carries on a dialogue in English language on any topic

Onset of winter: Marvin Minsky and Seymour Papert publish Perceptrons, demonstrating previously unrecognized limits of this feed-forward two-layered structure

Robotics: Japan's Waseda University completed the WABOT-1, the world's first full-scale intelligent humanoid robot

Boom: 1980 –1987

The rise of expert systems: A program that answers questions or solves problems about a specific domain of knowledge, using logical rules that are derived from the knowledge of experts.

The knowledge revolution: Knowledge based systems and knowledge engineering became a major focus of AI research in the 1980s.

The revival of connectionism: John Hopfield was able to prove that a form of neural network could learn and process information in a completely new way. Geoffrey Hinton and David Rumelhart popularized a method for training neural networks called "backpropagation"

Artificial neural network: The development of complementary MOS (CMOS) technology, enabled the development of practical artificial neural network (ANN) technology in the 1980s

The first AI winter: 1974 - 1980

The problems: Limited computer power, Intractability and the combinatorial explosion, common-sense knowledge and reasoning difficult to integrate into machines

Moravec's paradox: Proving theorems and solving geometry problems is comparatively easy for computers, but a supposedly simple task like recognizing a face or crossing a room without bumping into anything is extremely difficult.

End of funding: The agencies which funded AI research became frustrated with the lack of progress, eventually cut off almost all funding for undirected research into AI.

Frames: Marvin Minsky published article on Frames as a representation of knowledge, in which many ideas about schemas and semantic links are brought together.

The second AI winter: 1987 - 1993

A New and Different AI winter: Desktop computers from Apple and IBM had been steadily gaining speed and power and in 1987 they became more powerful than the more expensive Lisp machines

Over 300 AI companies had shutdown, gone bankrupt, or been acquired by the end of 1993, effectively ending the first commercial wave of AI

The importance of having a body: In the late 1980s, several researchers advocated a completely new approach to artificial intelligence, based on robotics. They believed that, to show real intelligence, a machine needs to have a body — it needs to perceive, move, survive and deal with the world. They argued that these sensorimotor skills are essential to higher level skills like common-sense reasoning

Steady progress: 1993 – 2011

Milestones and Moore's law: In 1997, Deep Blue became the first computer chess-playing system to beat a reigning world chess champion, Garry Kasparov. In 2005, a Stanford robot won the DARPA Grand Challenge by driving autonomously for 131 miles along an unrehearsed desert trail. in a Jeopardy! quiz show exhibition match, IBM's question answering system, Watson, defeated the two greatest Jeopardy! champions

Intelligent agents: is a system that perceives its environment and takes actions which maximize its chances of success.

AI behind the scenes: AI had solved a lot of very difficult problems and their solutions proved to be useful throughout the technology industry, such as data mining, industrial robotics, logistics, speech recognition, banking software, medical diagnosis and Google's search engine.

Big Data, Deep Learning Era: 2011 – present

Deep learning: Deep learning is a branch of machine learning that models high level abstractions in data by using a deep graph with many processing layers

Big Data: Availability of big data has enabled tremendous progress in vision, language and game playing abilities of machines. Apple's Siri, Google's Google Now and Microsoft's Cortana are smartphone apps that use natural language to answer questions, make recommendations and perform actions.

Google DeepMind's AlphaGo defeated 3 time European Go champion. Unlike previous versions, which learned the game by observing millions of human moves, an improved version AlphaGo Zero learned by playing only against itself.

Announcement of Google Duplex, a service to allow an AI assistant to book appointments over the phone.