A brief mostly complete history of Artificial Intelligence

starting around the cybernetics movement

From cybernetics to AI

The idea that humans and machines are essentially the same gives rise to a project where scientists began to seriously consider what it would take to develop machines with human-like intelligence.

verum esse ipsum factum

The "birth of AI" in the wake of the cybernetics movement Bringing together the functioning of machines and organic beings

1942: Accelerated code breaking Alan Turing used the Bombe machine to decode messages encrypted using the Enigma machine at an accelerated pace during WWII

1948: "Cybernetics" the study of control and communication in the animal and the machine by Norbert Wiener

1949: "The Manchester Baby" runs its first program

1948: Mark 1 Prototype The first stored program computer also known as the "Manchester Baby" A proof of concept to test the first electronic random-access memory (RAM) device Built by Tom Kilburn & Freddie Williams

1949: "Giant Brains: Or Machines That Think" Edmund Berkeley compares machines to human brains if it were made of "hardware and wire instead of flesh and nerves."

1943: Machines and behavior "Behavior, Purpose, and Teleology" by Rosenblueth, Wiener, & Bigelow

1943: "Artificial Neurons" A Logical Calculus of the Ideas Immanent in Nervous Activity by McCulloch & Pitts

The birth of neural networks

1955: "Artificial Intelligence"

Introduced into the nomenclature by John McCarthy

"The construction of computer programs that engage in tasks that are currently more satisfactorily performed by human beings because they require high-level mental processes such as: perceptual learning, memory organization and critical reasoning." - Marvin Minsky

1950: THESEUS Robotic, maze-solving mouse that could "remember" its path. Claude Shannon, Bell Labs

1950: The Imitation Game Computing Machinery and Intelligence by Alan Turing

1952: Program that can play Checkers is developed by Arthur Samuel*

1955: First AI Workshop Proposed to be held at Dartmouth in 1956 McCarthy, Minsky, Rochester, Shannon

1956: "AI will beat a human at chess within the next 10 years" -Herbert Simon

1956: The first AI program Logic Theorist - prove theorems in symbolic logic from Whitehead and Russell's Principia Mathematica Created by Newell & Simon

1957: The Perceptron learns to identify shapes; an early form of machine learning Created by Frank Rosenblatt

1957: General Problem Solver Means-End Problem Solving Newell, Simon, & Shaw

1958: LISP (List Processing) First Programming Language Created by: John McCarthy

1959: "Machine Learning" Introduced into the nomenclature by Arthur Samuel at IBM

1961: SAINT (Symbolic Automatic INTegrator) heuristic problem-solving program for symbolic integration in calculus Created by James Slagle

1961: "The Stanford Cart" first autonomous vehicle created by James Adams

1961: UNIMATE First Industrial Robotic arm available commercially Created by George Devol

1963: RAND First tablet and stylus created RAND Corporation

1964: STUDENT Lisp-based program that solved algebra word problems Created by Daniel Bobrow

1964: ELIZA Chatbot Natural Language Processing Created by Weizenbaum

1964: Facial Recognition Used "landmarking" techniques to identify facial features Created by Bledsoe, Wold, & Bisson

1965: DENDRAL Expert System: hypothesis formation and science Inferences & Logical Conclusions Feigenbaum & Lederberg

1966: SHAKEY First robot to perceive its surroundings, navigate, plan a route, adjust for errors, and improve its abilities using English language communication Stanford Research Institute

1968: The concept now known as "deep learning" is first introduced by Alexey Ivakhnenko in "Group method of data handling"

1968: SHRDLU Natural language processing program that controlled a block world using English language instructions created by Terry Winograd

1968: Artist Vera Molnar uses punch card instructions to create digital art using the Fortran program- the first "dehumanized art"

1970: "From three to eight years we will have a machine with the general intelligence of an average human being" -Marvin Minsky

1972: WABOT-1 The first "android" Walked, communicated in Japanese and gripped objects Waseda University

1972: MYCIN "The granddaddy of expert systems" - Newell Simon Expert System: Blood Disease Diagnosis with a 65% accuracy Rate

1973: Reduced funding for AI due to lack of promised progress in Britain

1975: SAM Program meant to "understand" stories run on scripts Created by Roger Schank

1976: Physical Symbol System Hypothesis "Computer science as empirical inquiry Symbols and Search" by Newell & Simon

1979: Gammanoid beats champion at back-gammon Created by: Hans Berliner

1979: The Stanford Cart successfully navigates a room without human assistance

1980-1987 AI Boom

1980: 1st National Conference on Artificial Intelligence Held at Stanford University, August 18-21

1980: XCON First expert system on the commercial market Used to configure customer orders and reduce shipping times

1981: 5th Generation Computer Project Japan spends $850 million to create computers that could translate and use human language + express human-level reasoning

1983: The problem of "knowledge acquisition" acknowledged as a barrier to AI progress

1984: "Winter is Coming" -Schank & Minsky

1985: RBX5 Using self-learning software the robot would advance from simple responses to making predictions about the future from past events RB Robot Corporation

1985: Teddy Ruxpin The World's First Animated Talking Toy. Created by Ken Forsse

1987: VPL Data Glove A VR glove that controlled a virtual hand

1987: A new architecture of cognition "Parallel Distributed Processing" Feldman, Hayes, McClelland, Rumelhart

1988: Eigenface Linear Algebra is used to advance facial recognition programs Sirovich & Kirby

1988: Shift from rule-based to probabilistic methods of machine translation IBM T.J. Watson Research Center

1988: JABBERWACKY Amusing chatbot Created by: Rollo Carpenter,

1988: WABOT-2 Humanoid robot that communicated with people, read music, and played music on an electronic organ Waseda University

1989: CYBERFACE VR glasses created LeepVR

1989: The "web" is invented by Tim Berners-Lee

1990: machine learning shifts from knowledge driven approaches to data-driven approaches

1990: WorldWideWeb The first web browser is launched Created by Tim Berners-Lee

1990 "AUGMENTED REALITY" Introduced into the nomenclature by Tom Caudell

1986: Back-Propogation for networks of neuron-like units "Learning representations by back-propogating errors" by Rumelhart, Hinton, & Williams

1986: First Driverless Car Could drive up to 55 mph Mercedes-Benz

1987-1994 2nd AI Winter Limitations of if-then reasoning apparent Expert systems based on if-then reasoning failed because software was hard to maintain and couldn't handle novel information

1987: Market for specialized LISP-based hardware collapses Low consumer, public, and private interest in AI

1989: First successful application of the backpropogation algorithm Used to recognize handwritten zip codes AT&T Bell Labs

1989: The terms "Hyperlink" and "hypertext" are coined by Tim Berners-Lee

1990: TD-Gammon Artificial Neural Net trained to play backgammon IBM

1993: FERET Program Developed to create algorithms for automatic face recognition software and to create a database of faces

1994: GPU 3D graphics introduced with the Play Station 1 home gaming console

1995: A.L.I.C.E. First chatbot that also collected data

1997: Six Degrees First social media platform

1997: LSTM RNN used for handwriting and speech recognition Created by Hochreiter & Schmidhuber

1997: Speech Recognition Software

1997: Deep Blue beats Grand Master at Chess IBM Expert System that used a systematic brute force system 41 years after Simon's prediction

1997: KISMET "Lifelike" social robot inspired by child developmental psychology that could recognize and display emotions

1998: COMPAS Software that assigns an algorithmic score for recidivism risk is used across several states to determine sentencing In 2016, it was shown that the algorithm was giving biased assessments based on race

1998: FURBY First pet robot By Caleb Chung

Internet Boom

"Deep Learning" 2006: coined by Geoffrey Hinton to explain new algorithms that can be trained to recognize objects and text in images and videos

SOCIAL MEDIA

2000: da Vinci First robot surgical system

2002: ROOMBA i-Robot

2002: Digital information storage surpasses non-digital information storage

2003: Mars Rover Navigates Mars without human intervention

2004: BigDog Boston Dynamics creates dynamically stable quadruped military robot

2004: STANLEY first autonomous vehicle to win the Defense Advanced Research Projects Agency's 'Grand Challenge' by successfully navigating a 132-mile course in the Mojave Desert on it's own Stanford AI Lab

"BIG DATA" Introduced into the nomenclature

2005: Mechanical Turk Service that recruited humans to hand label over 3 million images across 5k categories for computer vision tasks

2007: ImageNet Visual Database designed to use in visual recognition software research 20,000 categories

2007: UX Algorithms Used to enhance advertising and user experience

2010: "AlexNet" Convolutional Neural Network achieves 15.3% error rate with image recognition using deep learning In 2015 it was discovered that the AI mislabels images featuring people with dark skin as "Gorrila" As a solution, Google+ removes the Gorilla label entirely. As of 2023, the label is still removed from the database

2010: MASSIVE DATA Access to massive volumes of data made training systems on image classification and recognition possible

2010: XBOX 360 Kinect First gaming hardware to track body movements and translate it into gaming directions

2011: Video Recognition Google X uses a neural network of 16,000 computer processors with 1 billion connections to browse YouTube. The AI identifies cats as a common image.

2011: WATSON created & wins on Jeopardy!

2011: SIRI Apple releases virtual assistant

2011: WildCat Boston Dynamics creates the fastest quadruped robot on Earth

2013: Word2Vec program that converts language into math is created by Google In 2015 it was discovered that the model produced biased results such as refusing to categorize women as doctors generating concerns about biased training data

2013: Atlas First iteration of the humanoid robot is created for search and rescue tasks Boston Dynamics

2014: Generative Adversarial Networks produce completely new images for the first time rather than working on pre-existing images. developed by Ian Goodfellow

2015: DeepDream Convolutional Neural Net that using deep learning produced hallucinogenic imagery

2015: SWARM AI A real-time online tool that makes predictions based on converging information from various sources within a network predicted the winning horse at the Kentucky Derby Unanimous AI

2016: Google AI's AlphaGO beats Lee Sedol at GO

2016: SOPHIA Humanoid Robot becomes the first "robot citizen" Created by David Hanson Jr.

2016: The Next Rembrandt Deep learning algorithm creates realistic portrait style painting using 3D printing

2017: Google Deep Mind AI avatar teaches itself how to walk

2017: Dialog Agents Chatbots programmed in English and designed to negotiate with each other invented their own language Facebook AI Research Lab

2017: AlphaGo Zero beats AlphaGo using a self-training model

2018: BERT First bidirectional unsupervised learning model for natural language tasks Created by GOOGLE

2018: Language processing AI beats human intellect on a Stanford reading and comprehension test for the first time Created by e-commerce giant Alibaba

2019: AlphaStar Beats Grandmaster at StarCraft2

2020: AlphaFold OpenAI deep learning system identifies three-dimensional structures of proteins

2020: GPT-3 Uses deep learning to create code, poetry, and other language writing tasks. OpenAI

2021: DALL-E OpenAI's diffusion model generative AI that can process images to create accurate captions

2023 The Rise Of GENERATIVE AI

2023: GEMINI First AI to outperform humans at massive multi-task language understanding tasks. Google DeepMind

2023: GPT-4 The next iteration of OpenAI's GPT system A large multimodal model that accepts images and texts as inputs. Passed the Bar Exam scoring in the top 10%

2023: Alibaba's limproved AI Updated version that can interpret images, carry on complex conversations, and answer open ended questions

1940's | 1950's | 1960's | 1970's | 1980's | 1990's | 2000's | 2010's | 2020's

*some sources report the checkers program was developed in 1959

Information collected and poster designed by Danielle J. Williams, PhD | Washington University in St. Louis

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