AI HISTORY
2025

IAN RITCHIE

Artificial Intelligence

ritchie*studio recognises AI can be an assistant to our conceptual and technical thinking.

100 years of AI history: 1920s to 2020s – with references to design.

1920 Rossumovi Univerzální Roboti – the 1920 science-fiction play 'R.U.R.' by Karel Čapek.

1929 Gakutensoku – a giant pneumatic.

1949 Computer scientist Edmund Callis Berkley published the book *"Giant Brains, or Machines that Think"* which compared the newer models of computers to human brains.

Birth of AI: 1950-1956

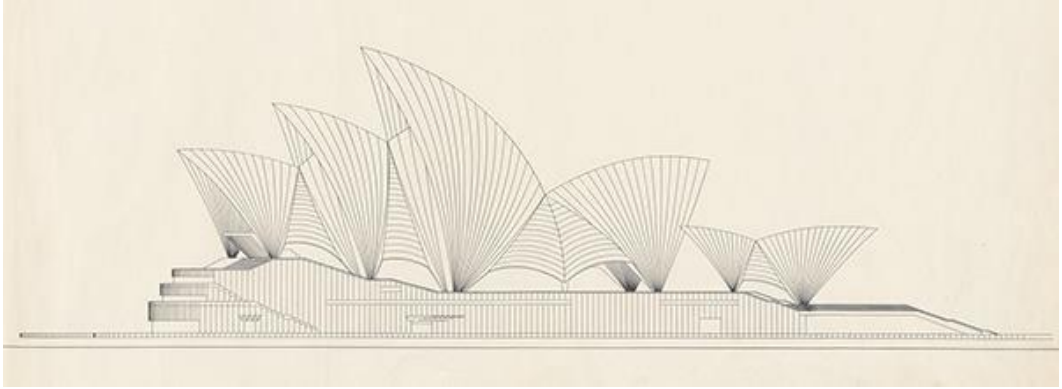
Alan Turing published his work *"Computer Machinery and Intelligence"* which eventually became The Turing Test, which experts used to measure computer intelligence. The term "artificial intelligence" was coined and came into popular use.

Dates of note:

- **1950:** Alan Turing published *"Computer Machinery and Intelligence"* which proposed a test of machine intelligence called The Imitation Game.
- **1952:** A computer scientist named Arthur Samuel developed a program to play checkers, which is the first to ever learn the game independently.
- **1955:** John McCarthy held a workshop at Dartmouth on "artificial intelligence" which is the first use of the word, and how it came into popular usage.

AI matures: 1957-1979

1957 The Ferranti Pegasus Mark 1 computer was the first computer used by Ove Arup on the Sydney Opera House project. Ferranti were based in Manchester, and Arup hired the computer at Ferranti's London HQ in Newman St and also accessed another at Southampton University.
Estimates of the computer hours used on the project up to 1962 reveal that if done manually, the calculation work would have taken Arup engineers a further ten years.



Yellow Book/New South Wales Government State Records

- **1958:** John McCarthy created LISP (acronym for List Processing), the first programming language for AI research, which is still in popular use to this day.

- **1959:** Arthur Samuel created the term “machine learning” when doing a speech about teaching machines to play chess better than the humans who programmed them.

- **1960:** LISP (an abbreviation of "list processing"). It quickly became a favoured programming language for artificial intelligence (AI) research. John McCarthy began developing Lisp in 1958 while at MIT, but implemented by Steve Russell on an IBM 704 computer using punched cards - Russell had read McCarthy's paper.

- **1961:** The first industrial robot ‘Unimate’ started working on an assembly line at General Motors in New Jersey, tasked with transporting die casings and welding parts on cars (which was deemed too dangerous for humans).

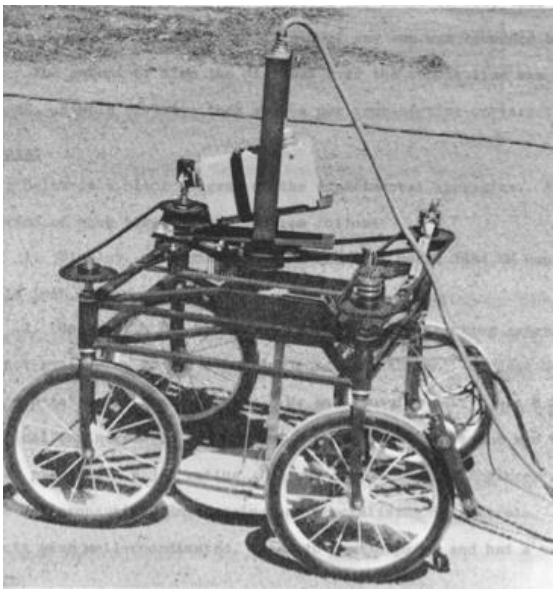
- **1963:** Stanford Artificial Intelligence Lab (SAIL) founded.

- **1965:** Edward Feigenbaum and Joshua Lederberg created “the first “expert system” which was a form of AI programmed to replicate the thinking and decision-making abilities of human experts.

- **1966:** Joseph Weizenbaum created the first “chatterbot” (later shortened to chatbot), ELIZA, a mock psychotherapist, that used natural language processing (NLP) to converse with humans.

- **1968**: Soviet mathematician Alexey Ivakhnenko published *“Group Method of Data Handling”* in the journal *“Avtomatika*”, which proposed a new approach to AI that would later become known as “Deep Learning.”

- **1979:** James L. Adams created The Standford Cart in 1961, which became one of the first examples of an autonomous vehicle. In ‘79, it successfully navigated a room full of chairs without human interference.



The Standford Cart

- **1979:** The American Association of Artificial Intelligence which is now known as the Association for the Advancement of Artificial Intelligence (AAAI) was founded.

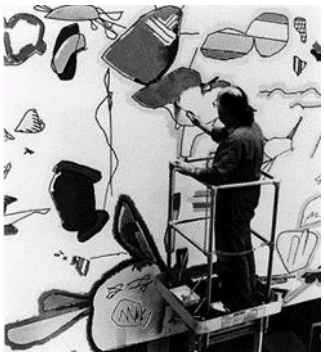
Notable dates:

- **1980:** First conference of the AAAI was held at Stanford.

- **1980:** The first expert system came into the commercial market, known as XCON (expert configurer). It was designed to assist in the ordering of computer systems by automatically picking components based on the customer's needs.

- **1981:** The Japanese government allocated $850 million (over $2 billion dollars in today's money) to the Fifth Generation Computer project. Their aim was to create computers that could translate, converse in human language, and express reasoning on a human level.

- **1985:** An autonomous drawing program known as AARON is demonstrated at the AAAI conference.



- Harold Cohen colouring the forms produced by the AARON drawing *"Turtle"* at the Computer Museum, Boston, MA, ca. 1982. Collection of the Computer History Museum, 102627459. He Graduated from University of London's Slade School of Fine Art in 1950.

- **1986**: Ernst Dickmann and his team at Bundeswehr University of Munich created and demonstrated the first driverless car (or robot car). It could drive up to 55 mph on roads that didn't have other obstacles or human drivers.

- **1987:** Commercial launch of Alacrity by Alactrious Inc. Alacrity was the first strategy
- managerial advisory system and used a complex expert system with 3,000+ rules.

AI winter: 1987-1993

- As the AAAI warned, an AI Winter came. The term describes a period of low consumer, public, and private interest in AI which leads to decreased research funding.

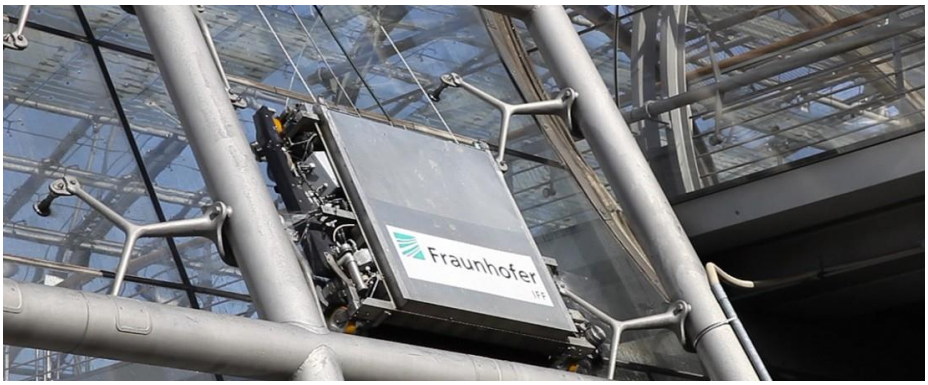
Notable dates:

- **1987:** The market for specialised LISP-based hardware collapsed due to cheaper and more accessible competitors that could run LISP software, including those offered by IBM and Apple.

- **1988:** A computer programmer named Rollo Carpenter invented the chatbot Jabberwacky, which he programmed to provide interesting and entertaining conversation to humans.

- **1989:** Ian Ritchie Architects integrated CAD computing in its studio.

- **1993:** Leipzig Glass Hall designed by Ian Ritchie Architects approached the Fraunhofer Institute in Magdeburg with the idea of robots cleaning 26,000m^2 of the glass vault exterior. Funded by the Leipziger Messe the world's first fully automatic cleaning system for vaulted glass halls in operation since 1997.



- **1994:** Predicting group behaviour using Virtual Reality to establish the frequency, width and the panic button locations for fire escape exits for the Leipzig Glass Hall.

Notable dates include:

- **1997:** Deep Blue (developed by IBM) beat the world chess champion, Gary Kasparov, in a highly-publicised match, becoming the first program to beat a human chess champion.

- **1997:** Windows released a speech recognition software (developed by Dragon Systems).

- **2000:** Professor Cynthia Breazeal developed the first robot that could simulate human emotions with its face, which included eyes, eyebrows, ears, and a mouth. It was called Kismet.

- **2002:** The first Roomba was released - robot vacuum cleaning floors in your home.

- **2003:** Nasa landed two rovers onto Mars (Spirit and Opportunity) and they navigated the surface of the planet without human intervention.

- **2006:** Companies such as Twitter, Facebook, and Netflix started utilising AI as a part of their advertising and user experience (UX) algorithms.

- **2010:** Microsoft launched the Xbox 360 Kinect; the first gaming hardware designed to track body movement and translate it into gaming directions.

- **2011:** Apple released Siri, the first popular virtual assistant.

AI developments since 2012 common-use AI tools, such as virtual assistants, search engines, Deep Learning and Big Data.

Notable dates include:

- **2012:** Two researchers from Google (Jeff Dean and Andrew Ng) trained a neural network to recognise cats by showing it unlabelled images and no background information.

- **2015:** Elon Musk, Stephen Hawking, and Steve Wozniak (and over 3,000 others) signed an open letter to the worlds' government systems banning the development of (and later, use of) autonomous weapons for purposes of war.

- **2016:** Hanson Robotics created a humanoid robot named Sophia, who became known as the first "robot citizen" and was the first robot created with a realistic human appearance and the ability to see and replicate emotions, as well as to communicate.

- **2017:** Facebook programmed two AI chatbots to converse and learn how to negotiate, but as they communicated, they ended up forgoing English and developing their own language, completely autonomously.

- **2018:** A Chinese tech group called Alibaba's language-processing AI beat human intellect on a Stanford reading and comprehension test.

- **2019:** Google's AlphaStar reached Grandmaster on the video game StarCraft 2, outperforming all but 2% of human players.

- **2020:** OpenAI started beta testing GPT-3, a model that uses Deep Learning to create code, poetry, and other such language and writing tasks. While not the first of its kind, it is the first that creates content almost indistinguishable from those created by humans.

- **2021:** OpenAI developed DALL-E, which can process and understand images enough to produce accurate captions, moving AI one step closer to understanding the visual world.

Now

- **Multimodal AI** processing multiple types such as text, images and sound – i.e. processing diverse sensory information.

- **Agentic AI** marks a significant shift from reactive to proactive AI. AI agents are advanced systems that exhibit autonomy, proactivity and the ability to act independently. Unlike traditional AI systems, which mainly respond to user inputs and follow predetermined programming, AI agents are designed to understand their environment, set goals and act to achieve those objectives without direct human intervention.

- '2023 was the year of being able to '**chat with an AI'** from Peter Norvig, a fellow at Stanford's Human-Centered AI Institute.

- In 2023, **generative AI projects** entered the top 10 most popular projects across the code hosting platform for the first time, with projects such as Stable Diffusion and AutoGPT pulling in thousands of first-time contributors. Open-source AI is publicly available, typically for free, enabling organisations and researchers to contribute to and build on existing code.

- **Retrieval-augmented generation (RAG)** has emerged as a technique for reducing hallucinations (plausible-sounding but incorrect responses to users' queries), with potentially profound implications for enterprise AI adoption.

- **Customised generative AI models** for niche business requirements - Building a customised model rather than using an off-the-shelf public tool often also improves privacy and security, as it gives organisations greater control over their data. Currently very expensive to develop yet stricter AI regulation in the coming years could push organisations to focus their energies on such models.

- **Shadow AI** As employees across job functions become interested in generative AI, organisations are facing the issue of shadow AI: use of AI within an organisation without explicit approval or oversight from the IT department. This trend is becoming increasingly prevalent as AI becomes more accessible, enabling even nontechnical workers to use it independently. There is a fear factor and risk angle that's appropriate for most enterprises, regardless of sector, to think through because once the info is put into the public models they cannot be removed.

- **2024 A generative AI reality check**
- As organisations progress from the initial excitement surrounding generative AI to actual adoption and integration, they're likely to face a reality check in 2024 in confronting generative AI's limitations, such as output quality, security and ethics concerns, and integration difficulties with existing systems and workflows.

- Increased attention to AI ethics and security risks - what are the controls that you're going to need?

- Evolving AI regulation.

AI is accelerating in use, and yet basic questions have not found satisfactory answers.
Like the advance of train travel in the 19thC, road and air travel in 20th C, did we ask why we needed them, or how the different scales of society would be impacted, such as fundamental change in work patterns, and the breakup up of communities resulting from increasing travel.
The basic benefits were the opportunity to explore, further and further afield and ever more quickly, and to enable an increase in distribution and quantity of raw materials and goods.

The digital age quickened the pace of life, destabilised traditional societies, created artificial societies through increased electronic connexity, delivered easier access to trade and public services, accelerated access to knowledge, but when people talk of a global community that is an illusion. Yes, there is global business and exploitation, and global education, but these are not communities in the traditional sense.

There are many questions and it seems that the speed of change is such that we do not have the time to find good and better answers before further challenges arise.
Poverty, education and health can always be improved by technological advances, but security, privacy and inequalities are threatened.

What will AI do?

Will it bring a jobless future, or a more able yet much reduced workforce?

What psychological and social damage will follow from so many more people being jobless?

It will revolutionise much research and applications in medicine, but will individual data become available for exploitation and privacy lost?

Will super, exa-and bio-computing deliver good or an avalanche of threats and fear?

Will AI as a creative tool be a servant or a boss? Will it gain conceptual ideas and be a threat to human expression?

Will AI ever be programmed for a common understanding of morality?

Can AI be regulated by anyone, government, or global institution?

Will AI take away our understanding of freedom?

Is AI a misnomer

The challenge for us is not only to differentiate what AI's usefulness is to us, but if it is an illusion because of its name. We should define AI which is only one form of many intelligences that we each possess. Has it been assumed artificial intelligence is intelligence itself? Perhaps it's not. Perhaps it's simply a processing of learned patterns in data to predict the next outcomes in much the same way that most IQ tests are set, which are of course very limited in their capacity to appreciate the full breath of human intelligence. It focuses on logic, not the senses, emotion or ability to side-step convention.
Human intelligence embraces emotion, wisdom and judgement which are accumulated through experience lived. Add to this creative insight which has little to do with patterns or pattern recognition but the ability to intuitively sense and see new ways of interpreting the world and constructing new ideas and formulating concepts. Then we have a muscular input from our physical being which again has implications in terms of behavioural intelligence. Putting these non-logical attributes together along with reasoning we have a sentient self, a fully cognitive being.
Artificial Pattern Recognition and Prediction (APRAP) would be a better term, but unfortunately not as sexy as AI !
The other part of AI is recovering historical data, fed to it through the internet. Hopefully, most is correct and thus a genuine source of our collective cultural information.

IR notes assembled from various sources including *https://www.tableau.com/data-insights/ai/history*; *https://www.techtarget.com/searchenterpriseai/tip/9-top-AI-and-machine-learning-trends*.

End