**ARTIFICIAL INTELLIGENCE**

**Artificial intelligence** (**AI**) is [intelligence](https://en.wikipedia.org/wiki/Intelligence) demonstrated by [machines](https://en.wikipedia.org/wiki/Machine), as opposed to the **natural intelligence** displayed by [animals](https://en.wikipedia.org/wiki/Animal_cognition) including [humans](https://en.wikipedia.org/wiki/Human_intelligence). Leading AI textbooks define the field as the study of "[intelligent agents](https://en.wikipedia.org/wiki/Intelligent_agent)": any system that perceives its environment and takes actions that maximize its chance of achieving its goals.[[a]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-Definition_of_AI-1) Some popular accounts use the term "artificial intelligence" to describe machines that mimic "cognitive" functions that humans associate with the [human mind](https://en.wikipedia.org/wiki/Human_mind), such as "learning" and "problem solving", however this definition is rejected by major AI researchers.[[b]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-3)

AI applications include advanced [web search](https://en.wikipedia.org/wiki/Web_search) engines (i.e. [Google](https://en.wikipedia.org/wiki/Google)), [recommendation systems](https://en.wikipedia.org/wiki/Recommendation_systems) (used by [YouTube](https://en.wikipedia.org/wiki/YouTube), [Amazon](https://en.wikipedia.org/wiki/Amazon_(company)) and [Netflix](https://en.wikipedia.org/wiki/Netflix)), [understanding human speech](https://en.wikipedia.org/wiki/Natural-language_understanding) (such as [Siri](https://en.wikipedia.org/wiki/Siri" \o "Siri) or [Alexa](https://en.wikipedia.org/wiki/Amazon_Alexa" \o "Amazon Alexa)), [self-driving cars](https://en.wikipedia.org/wiki/Self-driving_car) (e.g. [Tesla](https://en.wikipedia.org/wiki/Tesla,_Inc.)), [automated decision-making](https://en.wikipedia.org/wiki/Automated_decision-making) and competing at the highest level in [strategic game](https://en.wikipedia.org/wiki/Strategic_game) systems (such as [chess](https://en.wikipedia.org/wiki/Chess) and [Go](https://en.wikipedia.org/wiki/Go_(game))).[[2]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-FOOTNOTEGoogle2016-4) As machines become increasingly capable, tasks considered to require "intelligence" are often removed from the definition of AI, a phenomenon known as the [AI effect](https://en.wikipedia.org/wiki/AI_effect).[[3]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-FOOTNOTEMcCorduck2004204-5) For instance, [optical character recognition](https://en.wikipedia.org/wiki/Optical_character_recognition) is frequently excluded from things considered to be AI,[[4]](https://en.wikipedia.org/wiki/Artificial_intelligence" \l "cite_note-FOOTNOTEAshok832019-6) having become a routine technology.[[5]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-FOOTNOTESchank199138-7)

Artificial intelligence was founded as an academic discipline in 1956, and in the years since has experienced several waves of optimism,[[6]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-FOOTNOTECrevier1993109-8)[[7]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-AI_in_the_80s-9) followed by disappointment and the loss of funding (known as an "[AI winter](https://en.wikipedia.org/wiki/AI_winter)"),[[8]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-First_AI_winter-10)[[9]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-Second_AI_winter-11) followed by new approaches, success and renewed funding.[[7]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-AI_in_the_80s-9)[[10]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-FOOTNOTEClark2015b-12) AI research has tried and discarded many different approaches since its founding, including simulating the brain, [modeling human problem solving](https://en.wikipedia.org/wiki/Symbolic_AI#Cognitive_simulation), [formal logic](https://en.wikipedia.org/wiki/Symbolic_AI#Logic-based), [large databases of knowledge](https://en.wikipedia.org/wiki/Symbolic_AI#Knowledge-based) and imitating animal behavior. In the first decades of the 21st century, highly mathematical [statistical machine learning](https://en.wikipedia.org/wiki/Artificial_intelligence#Statistical) has dominated the field, and this technique has proved highly successful, helping to solve many challenging problems throughout industry and academia.[[11]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-AI_widely_used_1990s-13)[[10]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-FOOTNOTEClark2015b-12)

The various sub-fields of AI research are centered around particular goals and the use of particular tools. The traditional goals of AI research include [reasoning](https://en.wikipedia.org/wiki/Automated_reasoning), [knowledge representation](https://en.wikipedia.org/wiki/Knowledge_representation), [planning](https://en.wikipedia.org/wiki/Automated_planning_and_scheduling), [learning](https://en.wikipedia.org/wiki/Machine_learning), [natural language processing](https://en.wikipedia.org/wiki/Natural_language_processing), [perception](https://en.wikipedia.org/wiki/Machine_perception) and the ability to move and manipulate objects.[[c]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-Problems_of_AI-14) [General intelligence](https://en.wikipedia.org/wiki/Artificial_general_intelligence) (the ability to solve an arbitrary problem) is among the field's long-term goals.[[12]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-Artificial_General_Intelligence-15) To solve these problems, AI researchers have adapted and integrated a wide range of problem-solving techniques -- including search and mathematical optimization, formal logic, artificial neural networks, and methods based on [statistics](https://en.wikipedia.org/wiki/Statistics), [probability](https://en.wikipedia.org/wiki/Probability) and [economics](https://en.wikipedia.org/wiki/Economics). AI also draws upon [computer science](https://en.wikipedia.org/wiki/Computer_science), [psychology](https://en.wikipedia.org/wiki/Psychology), [linguistics](https://en.wikipedia.org/wiki/Linguistics), [philosophy](https://en.wikipedia.org/wiki/Philosophy), and many other fields.

The field was founded on the assumption that human intelligence "can be so precisely described that a machine can be made to simulate it".[[d]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-17) This raises philosophical arguments about the mind and the ethics of creating artificial beings endowed with human-like intelligence. These issues have been explored by [myth](https://en.wikipedia.org/wiki/History_of_AI#AI_in_myth,_fiction_and_speculation), [fiction](https://en.wikipedia.org/wiki/Artificial_intelligence_in_fiction) and [philosophy](https://en.wikipedia.org/wiki/Philosophy_of_AI) since [antiquity](https://en.wikipedia.org/wiki/Ancient_history).[[14]](https://en.wikipedia.org/wiki/Artificial_intelligence#cite_note-FOOTNOTENewquist199445%E2%80%9353-18) [Science fiction](https://en.wikipedia.org/wiki/Science_fiction) and [futurology](https://en.wikipedia.org/wiki/Futurology) have also suggested that, with its enormous potential and power, AI may become an [existential risk](https://en.wikipedia.org/wiki/Existential_risk) to humanity.

**Advantages And Disadvantages of AI:-**

**Advantages**

* Good at detail-oriented jobs;
* Reduced time for data-heavy tasks;
* Delivers consistent results; and
* AI-powered virtual agents are always available.

**Disadvantages**

* Expensive;
* Requires deep technical expertise;
* Limited supply of qualified workers to build AI tools;
* Only knows what it's been shown; and
* Lack of ability to generalize from one task

**REFERENCES**

* *Werbos, P. J. (1988),*[*"Generalization of backpropagation with application to a recurrent gas market model"*](https://zenodo.org/record/1258627)*, Neural Networks,****1****(4): 339–356,*[*doi*](https://en.wikipedia.org/wiki/Doi_(identifier))*:*[*10.1016/0893-6080(88)90007-X*](https://doi.org/10.1016%2F0893-6080%2888%2990007-X)
* *Gers, Felix A.; Schraudolph, Nicol N.; Schraudolph, Jürgen (2002).*[*"Learning Precise Timing with LSTM Recurrent Networks"*](http://www.jmlr.org/papers/volume3/gers02a/gers02a.pdf)*(PDF). Journal of Machine Learning Research.****3****: 115–143. Retrieved 13 June 2017.*
* *Deng, L.; Yu, D. (2014).*[*"Deep Learning: Methods and Applications"*](http://research.microsoft.com/pubs/209355/DeepLearning-NowPublishing-Vol7-SIG-039.pdf)*(PDF). Foundations and Trends in Signal Processing.****7****(3–4): 1–199.*[*doi*](https://en.wikipedia.org/wiki/Doi_(identifier))*:*[*10.1561/2000000039*](https://doi.org/10.1561%2F2000000039)*.*[*Archived*](https://web.archive.org/web/20160314152112/http:/research.microsoft.com/pubs/209355/DeepLearning-NowPublishing-Vol7-SIG-039.pdf)*(PDF) from the original on 14 March 2016. Retrieved 18 October 2014.*
* *Schulz, Hannes; Behnke, Sven (1 November 2012).*[*"Deep Learning"*](https://www.semanticscholar.org/paper/51a80649d16a38d41dbd20472deb3bc9b61b59a0)*. KI - Künstliche Intelligenz.****26****(4): 357–363.*[*doi*](https://en.wikipedia.org/wiki/Doi_(identifier))*:*[*10.1007/s13218-012-0198-z*](https://doi.org/10.1007%2Fs13218-012-0198-z)*.*[*ISSN*](https://en.wikipedia.org/wiki/ISSN_(identifier))[*1610-1987*](https://www.worldcat.org/issn/1610-1987)*.*[*S2CID*](https://en.wikipedia.org/wiki/S2CID_(identifier))[*220523562*](https://api.semanticscholar.org/CorpusID:220523562)*.*
* *Fukushima, K. (2007).*[*"Neocognitron"*](https://doi.org/10.4249%2Fscholarpedia.1717)*. Scholarpedia.****2****(1): 1717.*[*Bibcode*](https://en.wikipedia.org/wiki/Bibcode_(identifier))*:[2007SchpJ...2.1717F](https://ui.adsabs.harvard.edu/abs/2007SchpJ...2.1717F).*[*doi*](https://en.wikipedia.org/wiki/Doi_(identifier))*:*[*10.4249/scholarpedia.1717*](https://doi.org/10.4249%2Fscholarpedia.1717)*.*</ref> was introduced by [Kunihiko Fukushima](https://en.wikipedia.org/wiki/Kunihiko_Fukushima" \o "Kunihiko Fukushima) in 1980.
* *Habibi, Aghdam, Hamed (30 May 2017). Guide to convolutional neural networks : a practical application to traffic-sign detection and classification. Heravi, Elnaz Jahani. Cham, Switzerland.*[*ISBN*](https://en.wikipedia.org/wiki/ISBN_(identifier))[*9783319575490*](https://en.wikipedia.org/wiki/Special:BookSources/9783319575490)*.*[*OCLC*](https://en.wikipedia.org/wiki/OCLC_(identifier))[*987790957*](https://www.worldcat.org/oclc/987790957)