

Artificial intelligence (AI) refers to the capability of [computational systems](#) to perform tasks typically associated with [human intelligence](#), such as learning, reasoning, problem-solving, perception, and decision-making. It is a [field of research](#) in [computer science](#) that develops and studies methods and [software](#) that enable machines to [perceive their environment](#) and use [learning](#) and [intelligence](#) to take actions that maximize their chances of achieving defined goals.^[1] Such machines may be called AIs.

High-profile [applications of AI](#) include advanced [web search engines](#) (e.g., [Google Search](#)); [recommendation systems](#) (used by [YouTube](#), [Amazon](#), and [Netflix](#)); [virtual assistants](#) (e.g., [Google Assistant](#), [Siri](#), and [Alexa](#)); [autonomous vehicles](#) (e.g., [Waymo](#)); [generative](#) and [creative](#) tools (e.g., [ChatGPT](#) and [AI art](#)); and [superhuman](#) play and analysis in [strategy games](#) (e.g., [chess](#) and [Go](#)). However, many AI applications are not perceived as AI: "A lot of cutting edge AI has filtered into general applications, often without being called AI because once something becomes useful enough and common enough it's [not labeled AI anymore](#)."^{[2][3]}

Various subfields of AI research are centered around particular goals and the use of particular tools. The traditional goals of AI research include learning, [reasoning](#), [knowledge representation](#), [planning](#), [natural language processing](#), [perception](#), and support for [robotics](#).^[a] To reach these goals, AI researchers have adapted and integrated a wide range of techniques, including [search](#) and [mathematical optimization](#), [formal logic](#), [artificial neural networks](#), and methods based on [statistics](#), [operations research](#), and [economics](#).^[b] AI also draws upon [psychology](#), [linguistics](#), [philosophy](#), [neuroscience](#), and other fields.^[4] Some companies, such as [OpenAI](#), [Google DeepMind](#) and [Meta](#), aim to create [artificial general intelligence](#) (AGI)—AI that can complete virtually any cognitive task at least as well as humans.^[5]

Artificial intelligence was founded as an academic discipline in 1956,^[6] and the field went through multiple cycles of optimism throughout [its history](#),^{[7][8]} followed by periods of disappointment and loss of funding, known as [AI winters](#).^{[9][10]} Funding and interest vastly increased after 2012 when [graphics processing units](#) started being used to accelerate neural networks, and [deep learning](#) outperformed previous AI techniques.^[11] This growth accelerated further after 2017 with the [transformer architecture](#).^[12] In the 2020s, the period of rapid [progress](#) marked by advanced generative AI became known as the [AI boom](#). Generative AI and its ability to create and modify content exposed several unintended consequences and harms in the present and raised [ethical concerns](#) about [AI's long-term effects](#) and potential [existential risks](#), prompting discussions about [regulatory policies](#) to ensure the [safety](#) and benefits of the technology.