

**Artificial intelligence (AI)** is [intelligence](#) demonstrated by [machines](#), as opposed to the **natural intelligence** displayed by [animals](#) including [humans](#). AI research has been defined as the field of study of [intelligent agents](#), which refers to any system that perceives its environment and takes actions that maximize its chance of achieving its goals.<sup>[a]</sup>

The term "artificial intelligence" had previously been used to describe machines that mimic and display "human" cognitive skills that are associated with the [human mind](#), such as "learning" and "problem-solving". This definition has since been rejected by major AI researchers who now describe AI in terms of [rationality](#) and acting rationally, which does not limit how intelligence can be articulated.<sup>[b]</sup>

AI applications include advanced [web search](#) engines (e.g., [Google](#)), [recommendation systems](#) (used by [YouTube](#), [Amazon](#) and [Netflix](#)), [understanding human speech](#) (such as [Siri](#) and [Alexa](#)), [self-driving cars](#) (e.g., [Tesla](#)), [automated decision-making](#) and competing at the highest level in [strategic game](#) systems (such as [chess](#) and [Go](#)).<sup>[2][citation needed]</sup> 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](#).<sup>[3]</sup> For instance, [optical character recognition](#) is frequently excluded from things considered to be AI,<sup>[4]</sup> having become a routine technology.<sup>[5]</sup>

Artificial intelligence was founded as an academic discipline in 1956, and in the years since has experienced several waves of optimism,<sup>[6][7]</sup> followed by disappointment and the loss of funding (known as an "[AI winter](#)"),<sup>[8][9]</sup> followed by new approaches, success and renewed funding.<sup>[7][10]</sup> AI research has tried and discarded many different approaches since its founding, including simulating the brain, [modeling human problem solving](#), [formal logic](#), [large databases of knowledge](#) and imitating animal behavior. In the first decades of the 21st century, highly mathematical-statistical [machine learning](#) has dominated the field, and this technique has proved highly successful, helping to solve many challenging problems throughout industry and academia.<sup>[11][10]</sup>

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](#), [knowledge representation](#), [planning](#), [learning](#), [natural language processing](#), [perception](#), and the ability to move and manipulate objects.<sup>[4]</sup> [General intelligence](#) (the ability to solve an arbitrary problem) is among the field's long-term goals.<sup>[12]</sup> 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](#), [probability](#) and [economics](#). AI also draws upon [computer science](#), [psychology](#), [linguistics](#), [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".<sup>[4]</sup> This raised philosophical arguments about the mind and the ethical consequences of creating artificial beings endowed with human-like intelligence; these issues have previously been explored by [myth](#), [fiction](#) and [philosophy](#) since antiquity.<sup>[14]</sup> [Science fiction](#) writers and [futurologists](#) have since suggested that AI may become an [existential risk](#) to humanity if its rational capacities are not overseen.<sup>[15][16]</sup>