Artificial intelligence (AI) is intelligence demonstrated by machines, unlike the natural intelligence displayed by humans and animals, which involves consciousness and emotionality. The distinction between the former and the latter categories is often revealed by the acronym chosen. 'Strong' AI is usually labelled as AGI (Artificial General Intelligence) while attempts to emulate 'natural' intelligence have been called ABI (Artificial Biological Intelligence). Leading AI textbooks define the field as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals.[1] Colloquially, the term "artificial intelligence" is often used to describe machines (or computers) that mimic "cognitive" functions that humans associate with the human mind, such as "learning" and "problem solving".

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.[2] For instance, optical character recognition is frequently excluded from things considered to be AI,[3] having become a routine technology.[4]

Modern machine capabilities generally classified as AI include successfully understanding human speech,[5] competing at the highest level in strategic game systems (such as chess and Go),[6] autonomously operating cars, and intelligent routing in content delivery networks and military simulations.[7]

Artificial intelligence was founded as an academic discipline in 1956, and in the years since has experienced several waves of optimism,[8][9] followed by disappointment and the loss of funding (known as an "AI winter"),[10][11] followed by new approaches, success and renewed funding.[9][12] AI research has tried to emulate human abilities. Researchers have created systems which are able to pick up emotional cues and to respond to them. The history of AI shows that initially, the field was concerned with developing algorithms that could imitate human intelligence. This led to a lot of early successes in areas like computer vision, speech recognition, and natural language processing. However, as researchers encountered more complex problems, they discovered that many of the techniques they had developed were insufficient. This led to the rise of machine learning techniques like neural networks, which are loosely modeled after the structure of the human brain.

When AI researchers realized that machine learning could dramatically improve the speed and efficiency of training deep neural networks, the field was revolutionized. Today, machine learning algorithms are at the heart of many modern AI systems. They are used to recognize faces, translate languages, identify objects in images, and much more.

There is no consensus on how to define the field of artificial intelligence, but many researchers agree on some core principles. AI systems should be able to learn from experience and adjust to new input, they should be able to reason and make decisions based on data, and they should be able to communicate with humans. AI systems should also be designed with transparency and accountability in mind. As AI becomes more advanced and more integrated into society, these principles will become even more important.

There are also many challenges facing the field of artificial intelligence. One major challenge is the "AI alignment problem," which concerns how to ensure that AI systems behave ethically and in accordance with human values. Another challenge is the potential for AI to exacerbate existing inequalities and biases in society, particularly if the data used to train AI systems reflects these biases. Finally, there are concerns about the potential for AI to replace human workers in many industries, leading to job losses and economic