

Artificial intelligence – Definition: What is AI?

AI is understood as a technology that enables machines or computer systems to solve complex tasks on their own. Other (more established) technologies frequently accomplish this as well. However, AI can do more: It mimics human intelligence and human problem-solving behavior while working automatically, that is, independently without human intervention. It requires extensive data (called “big data”) for this purpose. By analyzing this data, it learns and independently optimizes the developed solutions to be able to reach a result. However, AI always follows specifications defined by people at the outset to solve a problem or to achieve a result. AI is based on specific software and often uses or controls specific hardware. The research area within information technology that deals with this technology and the associated processes is also called AI.

The characteristics of AI are:

- AI mimics human intelligence and problem-solving.
- AI automatically solves complex tasks.
- People define objectives for AI.
- AI learns using big data.
- AI independently optimizes solutions.

Distinction between weak and strong AI

The field of AI can be divided into strong and weak AI.

Weak AI: Weak AI is geared to very specific application fields: it cannot transfer problem-solving strategies it develops to other application areas. Weak AI is focused on only one clearly defined task. This is one reason why artificial intelligence thus far remains vastly inferior to human intelligence. At this time, solely weak AI applications exist.

Strong AI: In contrast, strong AI is understood as intelligence that previously was limited to people. This would now also include systems that surpass human intelligence and evolve on their own. This moment is referred to as technological singularity. Robots with such AI software could perhaps then solve all everyday tasks better than people and continuously improve themselves. So far, strong AI exists only in people’s imagination and in scientific theory. Many experts doubt the possibility that such AI could ever exist.

Difficulty of the term

Artificial intelligence is a designation that sparks interest because it is exciting, but it also conveys something that does not reflect reality. Indeed, intelligence is a trait that is deeply associated with being human. People possess consciousness, which enables them to weigh ideas and reflect. However, machines cannot develop consciousness. At the same time, the term intelligence is vague and difficult to describe. Thus, intelligence remains deeply human and the designation AI is, strictly speaking, misleading.

Materials on the topic of big data are available on the Siemens Stiftung Media Portal:

<https://mediaportal.siemens-stiftung.org>.