

What is AI?

AI simulates neural networks with computers. It uses the same architecture as the human brain.

The brain has nerve cells, each of which has over 10,000 contact points (synapses) with other nerve cells from which they can receive electrical impulses (input).

The nerve cells weight and integrate (sum up) these impulses in the synapses, and if the excitation is strong enough, it sends an impulse (output) via a fiber, the axon, which can reach many other cells via branches. (Output pulse yes or no, depending on threshold).

The weighting can be negative (lowering the impulse), 0 (ignoring the impulse), or positive (reinforcing the impulse).

The branching architecture can have many layers. This allows generalizations.

Generalization means combining a large number of properties into one object.

A nerve cell then represents, for example, the grandmother and simulates the characteristics of the grandmother. "Grandmother" receives impulses, filters them in its synapses and then reacts (sends impulse or not) as is typical for Grandma (the parameter values of Grandma's synapses filter).

The intelligence of a neural network lies in the layering of the connection between nerve cells and in the fine tuning of the synapse's weights across the neural network.

In the brain there is no spatial separation between processing and storing information.

In the brain, the map for experiences is expanded or remodeled. The brain rebuilds its HW based on new information so that the SW (signals) can run better. In the long term, new connections can be established between nerve cells. Otherwise, synapse parameters will be adjusted. These are learning processes (the training of neural networks).

During mental processes (perceiving, thinking, feeling, planning, deciding, acting) the brain itself materially changes its hardware (synapse strengths / new connections / network configuration) (neuroplasticity).

The brain (according to today's understanding) consists of a few 100 modules with different tasks:

- recognizing colors, movements and faces
- recognizing sounds, syllables and words
- planning and implementing movements, activating muscles,
- Modules for intellectual activities. They pass information to each other.

AI Transparency

You can read and understand program lines.

The effect of synapse strengths does not lead to any insight of functional understanding.

You can't tell from the strength of a synapse what contribution it makes to what result or decision.

Chat GPT has 175 billion= 10^9 synapses (synapse value between -1 to +1)
(human brain has 10^{15} synapses)

Questions to Artificial Intelligence

The strength (parameter value) of each synapse is the result of our life experience or the training experience of e.g. ChatGPT.

Nobody can understand how these $175 * 10^9$ parameters transform input signals. But the network generates ideas and answers.

Dealing with AI results

It is not important to find out how humans or AI came up with an idea, but whether the idea is correct, whether you can find a fact-based justification for the idea.

Do you have the time to find this justification? If not, do you trust AI or human intuition?

What if an AI's intuition always wins and we don't understand why. (GO game)

AI learns faster and can be trained more intensively than a child at school. For Children the training material (school books) is the subject of discussion and renewal.

Who selects and controls the training material for an AI?

If AI uses the same architecture as humans, why shouldn't AI be able to do the same things as a human expert?

Where does AI need human input (instructions) that AI cannot generate itself?

What is intuition?

Intuition is the ability to gain insights into facts, perspectives, laws or the subjective consistency of decisions without discursive use of the mind, i.e. **without conscious conclusions**. Intuition is a part of creative developments.

What is intelligence?

Intelligence is the ability to give correct and appropriate answers to questions.

It is smarter to be able to give these answers more quickly.

Intelligence also includes being able to ask the "right" questions.

Who asks the questions to AI? Does the AI itself do this?

What is a question? Can AI ask questions?

Questions are conceptual (linguistic) responses to challenges that people face.

Questions not only express ignorance, but they also draw our attention primarily to partial steps that are supposed to lead to a solution of a problem. If they do, they were the "right" questions.

What matters is the better intuition about the nature of a problem and the possible solutions.

Can AI recognize challenges and formulate initial questions?

Can AI recognize challenges earlier than humans?

Can AI develop a question-chain for an initial question?

Can AI suggest solutions?

What criteria are used to select solutions? What is considered and what is not?

Optimization criteria or technical risks are conceivable for technical questions.

For economic and political issues, it is a harm-benefit analysis.

Questions to Artificial Intelligence

Ethical and political considerations often apply for harm-benefit balances.

Can AI learn to make ethical considerations? Can AI then also provide the reason for the outcome?

Training material is from the past. Can AI be UpToDate? Can AI ask questions for human future?

Responsibility and Accountability

Who takes responsibility for AI implementations?

AI tools cannot take responsibility or be accountable.

AI tools don't understand what they're doing.

And people fundamentally cannot understand how a result comes about.

AI is not transparent.

Humans must review a proposed course of action, take responsibility for it, and feel accountable for it, independently of AI.

People make harm-benefit experiences, not AI machines.

AI tools are therefore not automatically capable of learning (experience) harm and benefit.

What happens when AI automatically controls civilian and military machines?

People remain responsible and accountable for the use of AI-controlled machines.

The military faces a dilemma:

If humans want to remain in control, they are too slow and lose to AI-driven attacks without intermediary human control.

Soldiers must therefore hand over responsibility for success to AI, and rely on their AI.