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Research in Graubünden

How do we teach AI to think?

So far, it still lacks a connection to the real world



AI-generated image of Midjourney with the prompt "Human-Level AI in Switzerland". Image provided.

Artificial intelligence (AI) can be found almost everywhere these days. For example, we have AI to thank for our reliable power supply. AI regulates the power grid and ensures that the electricity gets to where it is needed. AI also plays a role in the flexible ski ticket prices in Switzerland. It adjusts the prices depending on the weather forecast, day of the week and expected number of visitors.

In November 2022, OpenAI opened up free access to the chatbot ChatGPT. In a flash, ChatGPT can compose poems about your beloved pet, suggest ten different banana bread recipes, formulate birthday wishes for Uncle Theodore or even improve this text. These - at first glance - impressive skills have aroused a great deal of media interest and many of us have already tried out the tool. Educational institutions in particular are now faced with the challenge of developing guidelines on how such language models can be used sensibly by teachers and students.

There are also some amusing examples that show where AI has its limits: ChatGPT, for example, unwaveringly claims that part of the Matterhorn is located in the mountains of Graubünden (as of February 7, 2024). We are therefore still a long way from developing artificial intelligence that reaches or even surpasses human intelligence (known as human-level AI or general artificial intelligence). One research facility dedicated to this difficult task is Lab42 in Davos. Research Director Rolf Pfister names some essential steps on the way to achieving human-level AI: "Generative AI has so far lacked a connection to the real world. We need to give AI a physical presence. The vision is to develop a curious robot that, like a small child, is able to recognize and learn connections on its own in a constantly

changing world. Humans are able to draw meaningful conclusions from a small amount of data and observations. AI has hardly been able to do this so far.”

Based on the Abstraction and Reasoning Corpus (ARC) by François Chollet, an “IQ test” for algorithms, Lab42 has launched the ARCathon. This is a competition in which talented people try to teach AI systems to solve ARC. ARC consists of 1000 tasks, each of which must be solved separately. Only a few examples are presented per task in order to find the solution. While humans can master an average of 80 percent of these tasks, AI programs have great difficulty with them. They often need thousands of examples to understand a problem.

Pfister is convinced: “If we succeed, we will have taken another step towards human-level AI. To test later whether AI has achieved human-like intelligence, we could give it everyday tasks such as brewing coffee. When exactly human-level AI will be achieved is difficult to predict, but I think it could be possible in the next ten to twenty years.”

Rolf Pfister and Daniela Heinen

About Lab42

Lab42 was founded as the Institute for Artificial Intelligence in Davos on July 1, 2022. The aim of Lab42 is to develop the next generation of AI: A human-level AI that understands its environment and can competently support people in their everyday lives. Lab42 is operated by the Mindfire Foundation.

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Rolf Pfister.

Image: Mindfire Foundation

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