Generative AI: why should I care?

Luís Cruz-Filipe

Artificial Intelligence (AI) has suddenly become a part of our everyday life with the widespread of chatbots, of which ChatGPT is probably the most well-known. Within a few months, these tools have already changed the way we perform a lot of tasks. But what about teaching?

The purpose of AI is to build machines that behave in a way that humans perceive as "intelligent". AI is not exactly a new thing: research on the field started in the 1950s, small prototype programs (including a chatbot!) appeared already in the 1960s, and successful commercial applications have been around since the 1980s. However, until quite recently most apps based on AI tended to focus on one specific application (recognizing faces, identifying plants, recommending Netflix series), and were not seen as especially "intelligent".

The situation changed drastically over the last few years, when chat programs suddenly matured and became able to maintain conversations on roughly every topic. From a technical perspective, these programs are not very different from other specialized apps. They can only do one thing (chat), and they are not even especially intelligent -- indeed, they are at the level of a parrot, as they do not understand the sentences they produce. But because they interact in a very human way (and have access to a lot of data), they feel much more intelligent to the average person -- and since they can chat about roughly anything, their appeal is much higher.

The area of AI that deals with generating content - be it texts, images, music, ... - is called generative AI. In broad terms, generative AI works by building a representation of the domain in which it should work (like a language) based on a sophisticated analysis of a large number of examples. In the case of ChatGPT, the examples include all the data available on the internet at the end of 2021. Content is then generated by using the statistical information to combine different elements (words, in the case of text, or shapes, in the case of music) in ways that make sense according to the model.

Unfortunately, humans are wired to interpret behavior based on human patterns. This means that we perceive an app that produces well-structured, meaningful text as extremely intelligent and knowledgeable - because a human who could produce such texts would have these characteristics. As a result, many have started trusting chatbots way more than it is reasonable or safe. This is a visible challenge in teaching, where we hear daily reports of students who hand in assignments written by ChatGPT, or type down the questions the teacher asks in class on their mobile phone and read the answer out loud as if it were their own.

To deal with this reality, it is important that all of us in academia spend some time understanding how generative AI works, what it can do and what it can not do -- and that we also spend some time transmitting that knowledge to our students. We need to rethink some areas of our teaching and examination, both to benefit from the availability of these tools and to prevent them from being used improperly. Most importantly, we need to communicate to our students that, while these tools can make our life significantly easier, we still need to be in charge - and we can only do that if we understand what they are supposed to be doing.

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Luís Cruz-Filipe is Associate Professor at IMADA, and head of education for Computer Science and Artificial Intelligence. In recent years, his research has focused on Symbolic AI, specifically in the problem of how to represent knowledge in a computer, and how to teach a computer to think within various domains.