

How artificial intelligence works from a company and human perspective

Artificial Intelligence (AI) is now all around us, affecting many aspects of our lives, so our knowledge of AI is not only important and crucial for projects, including manufacturing companies, but also in our everyday lives. With this in mind, we asked Zoltán Beke, head of Hungary-based Mortoff IT Consultant Ltd., what is worth knowing and what to look out for when it comes to AI-driven technologies, their development and their spread.



1. How should humans relate to AI-enabled machines?

Zoltán Beke (ZB), CEO of Mortoff Ltd: I think that **some people are afraid of artificial intelligence, which may be because they have little information**. A lot of people are afraid that AI will take away their work, but what I see now is that AI will help us do our work. Basically, AI can play a role in two types of work: the work that people are already doing and the work that they have not been able to do because of the abundance or nature of the data. What we see is that in the tasks that people are currently doing, **AI will typically support them rather than replace them**. In professional circles, the term "**augmented intelligence**" (instead of "artificial intelligence") has been coined to refer to the use of AI to support human decision-making. For example, a change in resonance level filtered out by AI may indicate that the eight bearing in the equipment has failed. Or, for example, in the medical field, it can formulate a series of questions based on the data collected, or it can help in making a diagnosis. In a wide range of professional fields, one is not always up to date or able to fully understand a situation.

2. Which areas of business use AI the most?

Before answering the question, it is necessary to clarify what is preventing companies from using AI. The main reason for this barrier is that **in many areas AI is still an immature technology**. In many cases, it is almost necessary to carry out basic research in a particular area before AI can be applied. In other cases, the AI is already working on a machine, but the operator is not aware of it (e.g. self-diagnostics that can detect certain situations or quality control using black-boxes installed on the production line). If a mass-producible solution has not yet been developed, the cost of this is very high - something that an SME cannot afford. At the same time, the market is changing very rapidly: for example, what was an R&D category 2-3 years ago is now available "off the shelf".

Turning to the question, the simple answer is: use it where it "hurts". What do we mean by that? For companies, one of the sensitive points is the **quality of the product** and its continuous control, and the goal of producing as few rejects as possible from the product manufactured. The other key area is **ensuring machine availability**, i.e. recognising in time when a machine needs maintenance or is about to break down. Furthermore, occupational **health and safety** has also recently emerged as an area of use in industrial companies (e.g. cameras to check that all employees are wearing protective equipment or that people are not walking on the designated routes of automatic forklift trucks).

3. What do you think are the most striking benefits of AI?

One of the biggest advantages is that **the AI does not tire**, so the quality of performance at the 10th or 12th hour is the same as at the first. Furthermore, **AI can do tasks that humans cannot** (as discussed earlier, e.g. quality control in 0.5 seconds, which humans cannot do).

4. Can SMEs afford to buy new AI systems or is it only for large companies?

As time goes by, more and more solutions will be available on the market, also for SMEs. The cost will be determined by whether the solution is based on a ready-made model (trained or built by others) or whether it is a start from scratch.

Accessible solutions for SMEs **always use existing models**. There are more and more existing models on the market and more and more professionals who can apply them, so the cost of entry is significantly reduced.

5. What are the current barriers to the uptake of AI, and what can we do now to prepare for the use of AI?

A counter-example can be used to illustrate the complexity of this issue: about 10 years ago, a development was to have been made to support radiologists in US medical institutions, so that the system would have provided a preliminary opinion, e.g. the location of a tumour, based on the patient's medical records and CT, MR, X-ray images. This development was not possible because even within a single hospital, data is not shared between departments (for insurance and other reasons) and tens of thousands of patients would have been needed to build the system. So, in fact, there is a rather sharp divide between where AI **should be used** and where **it can be used**.

The key to the solution may be **to strive for high-quality data** within the enterprise now, even if these AI solutions are not yet available to us. For example, data generated during production should be collected in real time, at the moment the data is generated, and not aggregated in an excel spreadsheet afterwards, when it may not be accurately and correctly recorded. In this way, good quality information ensures good and efficient decision making. However, for the decision maker, data may not only be relevant for production, but also for orders, payments, other areas of the operation.

6. How and over what timeframe do you think an investment in AI can pay off for a company?

The size of the company and the volume of production are relevant for the success. In the case of a large company, such an investment can pay off much more quickly; unfortunately, in the case of SMEs, it is still questionable in many areas whether it will pay off at all. But as I said, this is changing year by year, more and more of these solutions will be available to them.

Expectations of return on investment are also strongly influenced by the industry in which the company operates. For example, automotive companies plan for a maximum of 1 year, so the payback period is tailored to this. However, in the agri-food industry, it is common to plan costs over several years, and food safety or health and safety is also beyond a return-on-investment issue. Off-

the-shelf solutions are generally cheaper, but it is also necessary to assess whether the model can produce or create value.

7. Does artificial intelligence manipulate humans, and if so, how? Can it be protected against? If so, how?

The AI that we can describe based on our current knowledge cannot influence or manipulate humans. However, **what one does with the information revealed by AI, what one uses it for**, is a relevant question. Marketing has long been a decision-influencing discipline, and marketing professionals can use it to get to know us more deeply, to offer us more personalised offers.

To shed a little more light on how AI works, AI systems are based on some kind of models or algorithms that can learn, refine their operation, or adapt to a changing environment. These mathematical models can recognise certain events or actions as patterns, say an emergency or, in the case of a webshop, as members of a specific target group. The event/action is detected by the AI, on which it provides an estimate, say with a probability between 0 and 1: which can be used to decide whether, for example, the person detected by the camera is wearing protective equipment or not, whether the equipment is faulty or not, whether the product is defective or not. In summary, AI can determine the probability of a data set for a given question. Certain data sets are clustered, or otherwise clustered, and the extent to which the event experienced differs from this model is determined. So, there is no manipulation, but it is possible to build complex systems of models that try to influence people for some purpose, but this is beyond AI in the classical sense.