Foreword

Artificial intelligence (AI) has, with its subdomains deep learning and natural language processing (NLP), progressed in leaps and bounds in recent years. This is particularly so as computing power has received massive boosts thanks to more powerful graphics processes (GPUs) and cloud solutions, cheaper data processing and the generation of untold amounts of usable data.

AI is now used in virtually every area of life and the economy. It is even leveraged, in part at least, by our smartphones (speech recognition), laptops (spam filters) and cars (assistance systems). AI is also increasingly used for bespoke recommendations (Netflix, Amazon, etc.), recognising cancer cells, automated document processing (insurers' claim receipts, customs declarations, etc.), recognising creditworthiness and credit defaults, identifying fraud, and forecasts of all kinds.

The next step will involve developing artificial intelligence capable of carrying out multiple tasks simultaneously. Initial moves in this direction are already underway. An example of this is Zero-Shot translation, which facilitates translation between different languages. It has been programmed to translate both ways between English and Japanese and English and Korean, among others. This then makes it able to perform fairly reasonable translations between Korean and Japanese – without the system having explicitly learned this pairing. The example shows that so-called transfer learning enables the use of general translation know-how. That said, transfer learning is currently restricted to relatively similar scenarios: we are still some way away from real AI.

Notwithstanding the above, developments in the areas of deep learning and NLP are proceeding apace. Not yet a decade old, the methodology underpinning deep learning has already spawned far-reaching innovation – the possibilities and applications have mushroomed.

No one knows what course these developments will follow going forward. Will we still be working for a living in 2040 – or increasingly pursuing our personal interests? One thing is for sure: as AI, with its technical, social and psychological issues, develops, the universities of the TriRhenaTech Alliance will be making interdisciplinary and correspondingly solution-oriented contributions.

Prof. Dr. Crispino Bergamaschi,
Chair of the TriRhenaTech Alliance,
President of FHNW University of Applied
Sciences and Arts Northwestern Switzerland