Man and Machine in Harmony

Know-how Enthusiasm for Artificial Intelligence is steadily growing. What implications this will have for the future of the human workforce and what and where exactly is the starting point for AI - these are issues, which have yet to be clarified.

By Dalith Steiger

The C Level Manager Community has conducted a survey on Artificial Intelligence (AI) among their members. 70 percent of those surveyed stated that they were able to define and explain AI. However, this is a very sporting and self-reliant assessment – the field is wide and complicated.

If you restrict AI to UI (User Interface: the interface, on which the man-machine interaction takes place) and UX (User Experience: how the user deals with and reacts to platforms) respectively to their optimisation, you do not do justice to AI. And to state that "fuzzy" algorithms, or algorithms with a certain lack of clarity, are somewhat "smarter" than "linear" algorithms, this does not get to the heart of the matter either.

Fuzzy logic is much more than having the courage to be inaccurate.

AI – attempting to narrow it down

It is very difficult to find a generally valid definition of artificial intelligence. Therefore we have to understand AI in its widest possible sense as something, which helps humans to achieve their full potential. This help can present itself in the form of computer systems, algorithms, robots or other technologies. What is common to all of them is that people can be helped to perform certain tasks only while they are able to grasp and solve other problems more quickly and more accurately. There is a range of definitions and distinctions for artificial intelligence, which in some cases differ widely from one another. Therefore, for instance, research and industry differentiate between different forms of AI. The current state of research differentiates between weak and strong AI.

Weak AI denotes all computer systems or physical objects (robots), which are programmed to perform a specific action in specifically delimited areas (e.g. facial recognition, Internet searches or playing chess). Strong AI on the other hand denotes systems, which possess general human cognitive abilities and thus are no longer able to perform unknown tasks. At the present time it is still not totally clear whether it is at all possible to programme strong AI respectively. In principle it enables Artificial Intelligence constantly to improve its ability to "feel", "understand", "learn" and "act on" the systems controlled by it. These refinements and optimisations ultimately open whole new possibilities to the entire economy - and change the entire business environment.

AI – Global

The leading regions in matters of AI are Asia, which is very strong in robotics, and the USA. In the USA the AI scene is concentrated on two centres, on one hand the Massachusetts Institute of Technology (MIT) on the east coast and on the other Silicon Valley in California. In this process the Americans focus more on AI software (e.g. neural networks) and they are unbeatable when it comes to transferring research to business, or put more crudely: making profit from research. The Europeans urgently need to catch up on researching into AI and transferring the knowledge gained into commercial enterprises.

AI – Switzerland

In Switzerland the trains run punctually to the second and Mr. Nötzli is very strict about numbers.

Accuracy and precision work are not exactly the cornerstones of fuzzy logic - although accuracy can to all intents and purposes be achieved with it. Notwithstanding, AI has found its path in Switzerland and is slowly conquering its territory. In fact, there is a strong scene in research and numerous attempts are being made to anchor AI more securely on the one hand in the business world, but also in the awareness of the Swiss themselves. A brief overview:

Start-ups

The AI start-up scene is rather small when compared to the international situation. The universities, the Swiss Federal Institutes of Technology in Zurich and Lausanne do generate scores of spin-offs, which find world-wide recognition. For the first time you can find all the potentially successful start-ups on the AI Start-up Map recently published by Swisscom.

The number of Swiss start-ups, which use artificial intelligence for evaluating data and signals, has significantly increased in the last few years. The Swiss start-ups have developed innovative solutions in quite different areas: robotics, adtech, sales and CRM, business intelligence, speech recognition, financial and insurance technologies, Legal Tech and RegTech, agriculture, public health care and life science, machine intelligence, image recognition, e-commerce, mobility, security, virtual assistants and chatbots. With this range of AI solutions Switzerland is extremely well situated and delivers innovative technology at a world-class level.

Universities and Institutes

Both Swiss Federal Institutes of Technology (ETH Zurich and EPF Lausanne) are working on AI and also the related area of robotics. The universities of Berne, Basel, Geneva and Freiburg have separate institutes working on AI. At the Università della Svizzera Italiana USI there is a huge AI lab, which works closely with the Federal Institutes of Technology.

The most well-known AI researcher in Switzerland is without doubt Rolf Pfeifer. He is also well-known outside Europe and in particular in Asia. He has an impressive track record behind him and is connected with all the prestigious AI laboratories, for example, with the MIT, Brussels, CMU, Tokyo and others. Other luminaries with comparable standing are Jürg Kohlas (Freiburg University) and Horst Bunke (Bern University). Jürgen Schmidhuber, who last year won an award for deep learning methods, works at the USI. The young researcher Malte Helmer at Basel University, Davide Scaramuzza at Zurich University and Edy Portmann at Freiburg University all work on AI from different perspectives.

Large international corporations

The international corporations in Switzerland tackle the issue of AI in a concentrated and systematic manner. Clear sector-specific differences can be noted. Whereas in practically all customer-oriented industrial segments there is very strong investment in RPA (Robotic Process Automation), there are more far-reaching concepts to be found as a rule at the proof-of-concept stage. RPA uses major elements of artificial intelligence and is principally devoted to increasing efficiency and reducing costs.

There are also international firms working from Switzerland on ML/AI. Thus, Zurich is not only Google's largest research and development site outside the USA, but since 2016 has been the home of Google Research Europe - a team, which among other things drives research in the area of machine learning with the emphasis on recognising and understanding natural speech and machine perception. What's more, IBM Rüschlikon can also look back on a long research tradition and new players are arriving, such as IBM Watson.

Sectors

The concentrated use of AI in insurance groups in the detection of fraud makes it possible to identify potential cases of insurance fraud by means of automated segmenting of customers and the analysis of other patterns of behaviour; repetitive tasks such as changes of address, Standard Compliance enquiries, rectification of standard IT problems can be user-specifically performed by AI. AI is used in the analysis of documents, in order to take over the analysis and summarising of documents such as investor reports. The members of staff can then decide on the next action to take from the results. Banks use AI principally in marketing to improve their marketing mix, in order to optimise the return on investment from the various marketing measures and AI is used in complaints management to analyse customer complaints in e-mails and complaints forms.

GLOBAL AI-HUB

With the initiative of SwissCognitive in 2016 Switzerland has an AI hub, which serves as a platform for the exchange, discussion and networking of all those interested in AI as well as a point of contact and funding agency. The hub offers an open, neutral environment and brings technologists, consultants, IT users, enterprises, organisers, politicians, governments and all sectors and branches of industry together.
SwissCognitive has been set up to establish cognitive intelligence in companies with the object of making the company more independent and more competitive. Swiss firms are set to become pioneers in the field of cognitive technologies. Thanks to this initiative Switzerland has a coordinated network in AI matters and has thus taken a large step on the way towards becoming part of the wider AI world.
Recently SwissCognitive has been distinguished by the audience prize at the Swiss ICT Awards 2017. Furthermore it has been heralded by the Collegium Helveticum and Digital Society Initiative (DSI) of the University of Zurich as one of the 27 most significant initiatives in Switzerland in the field of digitalisation. It is evident that we are ready to climb aboard the train heading for the rest of the world and the associated efforts will be rewarded. With "Why Wait?" "Act Now and Share for Success!" SwissCognitive motivates and promotes the community to come together to strengthen Switzerland as an area of business activity.

The next actions are classified and allocated. The pharmaceuticals industry uses AI primarily to speed up clinical trials and for assessing the readiness for testing of new molecules with the object of reducing the costs of introducing new molecules onto the market. Alongside this there is a multitude of more minor uses, such as optimising expense management, in which patterns can be detected and regulation can be more rapid.

AI coordination and promotion

The Collegium Helveticum with its team - Thomas Hengartner, Christian Ritter, Abraham Bernstein, Mike Martin, Sarah Lechmann and Mathis Brauchbar - has been working on the numerous initiatives, which are connected with digitalisation in Switzerland and its effects on society.

In this area the field of the (institutional) actors extends from the sciences through economics, politics and administration to the arts and the cultural sector. Accordingly the cross-sectional issue of digital societies is dealt with from a variety of perspectives and to satisfy diverse objectives. The project conducted jointly by the Collegium Helveticum and the Digital Society Initiative (DSI) of Zurich University is developing for the first time a systematic overview of stakeholders active in Switzerland, who are actively working with issues of digital societies. The principles for this have been collated in cooperation with the Evaluescience consultancy firm. The aim of the project is an interactive, public application, which provides information on initiatives and institutions working on the issue of digital societies, their fields of activity, emphases and networks. In this way the project is firmly directed at stakeholders, who are currently engaged and will be engaged in the future on issues of digitalisation.

Artificial Intelligence and ethics

Of course, new technologies hide risks, as well as offering opportunities. This also goes for artificial intelligence. In view of its capacity for autonomy AI poses quite special questions, which must be answered with care. The technological development, which designs and drives AI, leads inexorably to a change in paradigm, since human beings would no longer represent the only intelligent system with operational capacities on Earth.

Therefore, it is essential to discuss the possible consequences. Such a discussion can and must deal with ethical issues and provide answers to these issues that are as conclusive and sensible as possible.

If in the future human beings use or interact with systems, which possess extensive cognitive capabilities or can even operate autonomously without human impact or supervision, it is essential to discuss whether and how the actions of intelligent computer systems and the interaction of man and machine are to be managed by means of moral principles.

Developing systems with AI may carry risk in two respects: AI can be programmed in such a way that a system can take over destructive functions, for example autonomous weapons systems. However, intelligent systems, which have been programmed for the use and welfare of humanity, also conceal the risk that they may develop destructive methods to achieve their objective. For these reasons it is imperative that we also assess the programming of AI by human beings from an ethical perspective. In the case of fuzzy logic ethics should not and must not be lacking in clarity. If these issues can be conclusively resolved, new markets and exciting possibilities, which may ultimately benefit the entire international community, are opened up to the economy.

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