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POTENTIAL AND LIMITATION OF CURRENT AI

On 14 June 2023, a general AI regulation was adopted by the European Parliament on the proposal of the EU Commission. For the first time, rules on product safety and the protection of human rights were combined. The background for this legislative initiative is the fear of increasing unpredictability, opacity and lack of explainability of current machine learning, which is largely based on pattern recognition in large statistical data masses generated by modern computer capacities and data storage. However, we already know from elementary statistics that statistical correlations cannot provide causal explanations. Is AI becoming an inscrutable "black box"?

Thus, even the amazing simulation of natural language dialogues and art products such as poems, novels and music by chatbots like ChatGPT is ultimately due to the statistical guessing of expectation probabilities of data patterns stored in masses of documents. However, every child solves problems not on the basis of masses of stored documents, but with relatively little prior knowledge and through logical thinking. With Heidegger, one could say pointedly: AI (in the sense of machine learning) "does not think" (at least not like humans), but is extremely successful in a limited different way. Anyone who understands this, especially the mathematics behind it (which, by the way, is not very demanding), is no longer afraid of this AI.

The problem lies in how we humans deal with this technology. Here, the EU legislator must ensure, on the one hand, that our social and legal system can deal with this technology in an adequate, balanced and practical way, and, on the other hand, not overdo it by overregulating.

References:

- K. Mainzer, Artificial Intelligence. When do Machines take over? Springer 2nd edition 2019 (Chinese: Tsinghua University Press 2022)
- K. Mainzer, R. Kahle, Limits of Artificial Intelligence theoretical, practical, ethical, Springer 2023 (German: Springer 2022)