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Relevance and computational theory languages in designing AI solutions

Theory languages are tools designers use in constructing AI applications. These languages have three important layers. The lowest level theory-language is formal, such as mathematics and logic. Their semantics is built on formal sets. Second level of AI languages are computational. In them semantics is built on elements and operations which are meaningful in real world. Finally, the highest level is natural language. In this system of three types of theory languages. The main difference between formal and computational theory languages is that in latter it makes sense to discuss relevance of information. One can ask whether a design solution makes sense thinking the task is intended to take care of. Capacity to create mental representations with relevant elements and information structures is one major characteristic of human thinking. People define what is relevant, but in designing AI systems. Relevance opens thus also an important criterion for goodness of challenge for designers. Machine intelligence opens an additional problem field for matascience of design. LLM:s for example are able to construct relevant information representations as they rely on datamasses constructed by people and for this reason they have sense making structure. Relevance makes it necessary to develop holistic design processes for intelligent technologies.

Keywords

Relevance, Computational languages, AI

Biography

Pertti Saariluoma is professor of cognitive science (Emeritus) and research director in Jyväskylä University, Finland. He has studied and worked in Oxford, Carnegie Mellon, Cambridge Universities, IIASA, Aberdeen, Granada and Eindhoven. His work has concerned cognitive psychology of thinking, expertise and memory, foundations of scientific research, HTI, and AI-design methodologies. He has supervised over fifty thesis on the presented topics.