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Machine Learning is Not Intelligence

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What's Missing? And How We Might Create a Science of Intelligence
No other community has laid a stronger claim to the term Artificial Intelligence than the machine learning community. But truth be told, we don't really know the mechanisms underlying natural intelligence—and therefore we cannot really know what underlies artificial analogue is either. What do we know then about intelligence? We know how to measure intelligence in humans, we know that intelligence is predictive of many real-world capabilities, we can list properties we attribute to intelligent behavior, but we remain without a clear constructive understanding of the computational underpinnings of intelligence. Probably everybody agrees that what happens in a human body and brain is fundamentally different from any artificial system we have created thus far—and that the resulting behavior is also fundamentally different.
In this talk, I will present the Cluster of Excellence "Science of Intelligence" which seeks to find constructive explanations of intelligence. It brings together researchers from the study of artificial intelligence (robotics, computer vision, machine learning, AI, control) and natural intelligence (psychology, behavioral biology, neuroscience, philosophy, educational science). It is based on the assumption that only by merging the perspectives of relevant disciplines we can obtain a complete and valid understanding of intelligence. Some of the ongoing research of "Science of Intelligence" provides evidence for why a recipe for "true" artificial intelligence will include more than one ingredient. I will talk about what some of these ingredients might be and present research in support of their relevance to intelligent behavior.
Spoiler alert! These ingredients will include things other than machine learning (but, of course, machine learning is probably one of the ingredients).

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