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Universal Metaphysics

by

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Abstract:

The development of natural science especially physics allows us to understand to a large extent the material world. However, the world also contains a large amount of concepts that are non-material and abstract, which are often poorly described by our language, let alone being well understood. In order to provide a comprehensive and coherent account of the structure of the world, we argue that it is important to create an explicit system and language to describe the composition and working of the world, especially the non-material components. This is reminiscent of the goal of the millennia-old subject metaphysics. Yet instead of focusing on isolated topics like most existing metaphysical studies, we argue it is beneficial to develop a roadmap for metaphysics (or mind) — a unified and coherent theory of what exist in the world, how to describe them, how they interact and how they are organized. Such development might lead to new insight into research in the science and engineering of intelligence and perhaps also how we view the world.



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Metaphysics is the branch of philosophy that examines the fundamental nature of reality, including the relationship between mind and matter, between substance and attribute, and between potentiality and actuality. Metaphysics studies questions related to what it is for something to exist and what types of existence there are. Metaphysics seeks to answer, in an abstract and fully general manner, the questions: **What is there? What is it like?** Topics of metaphysical investigation include existence, objects and their properties, space and time, cause and effect, and possibility.

Wikipedia

During our past few years' contemplation of Artificial General Intelligence (AGI)¹, we observe that the literature contains a plethora of models that each achieves good performances on a few tasks or a class of tasks. However, it is unclear how to position those tasks into a big picture — the universe of all tasks.

Same things apply to all the concepts we understand. The more I think about it, the more I feel it is a shame that how little I understand about the hierarchy of my conceptual understanding.

We humans are excellent at using concepts, yet only have some vague intuition about how to describe them, and has no explicit awareness of the organization of them whatsoever. We do not even know what concepts are fundamental and what concepts are secondary and composed. The brain hides unnecessary details (according to its own standard) from us to make us efficient ².

In other words, we do not have a roadmap of our mental world — we are so lost like a child in the castle of our mind. This is what I believe should be changed — we should develop our awareness of the organization of the thoughts and concepts in our brain. We should be keen to what exists in our metaphysical world.

This leads to the research program that we propose: Universal Metaphysics (UM). It is like developing a unified roadmap for metaphysics (or mind) such that every concept human understands has a well identified position in it, together with a good characterization.

Significance

- UM is a pursuit of a white-box understanding of our intelligence and language. If successful, it would help us create more interpretable and safer AI agents.
- We believe that UM, as a roadmap of the mind, if developed, will also serve well as the roadmap towards AGI.
- We hypothesize that there are limits on what is understandable and describable by our mind and language. As a roadmap for the mind, UM aims at probing such limits. This is contrary to the traditional optimistic view that AI systems should be good at solving potentially all problems possible. One interesting task would be to identify what is solvable and what is not.

¹This report follows our 2017 position paper trilogy, as an ongoing effort to tackle the main problems towards AGI. See <https://github.com/qianli/papers>.

²Thanks, Mr. Brain!