Preface

The 3rd International Workshop on Spatio-Temporal Reasoning and Learning (STRL 2024) was organised as part of the 33nd International Joint Conference on Artificial Intelligence (IJCAI 2024), the premier AI Research conference bringing together the international AI community to communicate the advances and achievements of AI research. IJCAI 2024 was held at Jeju island, South Korea, and the STRL 2024 workshop was held there as a full-day event.

Context

Opposing the false dilemma of logical reasoning vs machine learning, we argue for a synergy between these two paradigms in order to obtain hybrid AI systems that will be robust, generalizable, and transferable. Indeed, it is well-known that machine learning only includes statistical information and, therefore, is not *inherently* able to capture perturbations (interventions or changes in the environment), or perform reasoning and planning. Ideally, (the training of) machine learning models should be tied to assumptions that align with physics and human cognition to allow for these models to be re-used and re-purposed in novel scenarios. On the other hand, it is also the case that logic in itself can be brittle too, and logic further assumes that the symbols with which it can reason are already given. It is becoming ever more evident in the literature that modular AI architectures should be prioritized, where the involved knowledge about the world and the reality that we are operating in is decomposed into independent and recomposable pieces, as such an approach should only increase the chances that these systems behave in a causally sound manner.

The aim of this workshop is to formalize such a synergy between logical reasoning and machine learning that will be grounded on spatial and temporal knowledge. We argue that the calculi associated with the spatial and temporal reasoning community, be it qualitative or quantitative, naturally build upon physics and human cognition, and could therefore form a module that would be beneficial towards causal representation learning. A (symbolic) spatio-temporal knowledge base could provide a dependable causal seed upon which machine learning models could generalize, and exploring this direction from various perspectives is the main theme here.

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