

## Unified Knowledge Representation for Science

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The vast amount of knowledge accumulated in various science disciplines has been traditionally maintained in a way that is difficult for AI systems to use, due to differences in formats, standards, and types. This makes it challenging to integrate and share knowledge across different domains and to use it to build intelligent systems. To address these challenges, there is a pressing need to develop AI/ML models that can automatically train foundational models for knowledge representation. These models should be able to extract and integrate knowledge from multiple sources, in different formats and types, and be able to update themselves incrementally as new knowledge becomes available. This will require developing advanced algorithms that can handle uncertainty, ambiguity, and variability, and that can learn to generalize from specific examples to more abstract concepts and categories.

In addition, research is needed on how to utilize these pre-trained knowledge models in building AI systems for science adventure. This requires developing new methods for reasoning, inference, and decision-making that can leverage the knowledge in the models to solve complex problems and make informed decisions. It also requires developing user interfaces and visualization tools that can enable scientists and engineers to interact with the knowledge models in a natural and intuitive way, and to explore and analyze the knowledge in different ways.

In summary, developing AI/ML models for knowledge representation and utilizing them in building intelligent systems for science adventure is a challenging but important research direction that has the potential to transform the way we discover, understand, and apply knowledge across different domains.

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