

Combining learning and reasoning: new challenges for knowledge graphs

Frank van Harmelen*

*Dpt of Computer Science, Vrije Universiteit Amsterdam, The Netherlands
Frank.van.Harmelen@vu.nl,
<https://www.cs.vu.nl/frank.van.harmelen/>

Summary

The question on how to combine learning with reasoning is widely seen as one of the major challenges for AI. Knowledge Graphs are now well established as a formalism for knowledge representation and reasoning, with large scale adoptions in industry (Google search, Apple's Siri, Amazon, Uber, Airbnb, BBC, Reuters, and many others). Besides their use for reasoning tasks, knowledge graphs have also shown promise as a formalism to combine reasoning with learning. They have been used as a source of labels for semi-supervised learning, machine learning has been used to generate knowledge graphs, using knowledge graphs can be used to construct post-hoc explanations for machine learning, to name just a few. Central questions in this talk will be : what is the progress that has been made on combining knowledge graphs with machine learning to date, and what are the promises and challenges in both the near and the long term ?