

Machine Learning and Knowledge Graphs: possible issues to be taken into account

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Abstract. Knowledge Graphs (KGs) are becoming important for several research fields, despite their inherent incompleteness and noise. A significant research effort has been devoted to knowledge graph refinement, aiming at correcting these issues with KGs. Particularly, link/type prediction and triple classification tasks have gained major attention. They have been targeted mostly by adopting numeric based Machine Learning (ML) methods since they resulted to be able to scale on very large KGs. Nevertheless, KGs may also rely on schema level information, by the use of ontologies, adopting on expressive representation languages, such as RDFS and OWL, that are also endowed with deductive reasoning capabilities. Nevertheless, both expressiveness and reasoning are most of the time disregarded by the majority of the numeric methods that have been developed, thus somehow losing knowledge that is already available. Actually, over the years ML methods have been exploited for targeting also problems such as ontology enrichment and completion (both at terminological and assertional level) as well as concept leaning, particularly by adopting symbol-based ML solutions. The talk will survey the most representative symbol-based and numeric-based solutions and related targeted problems, with a special focus on the main issues that need to be considered and solved when ML solutions are adopted.