Ontology learning: grand tour and challenges.

Summary: Ontologies are at the core of the semantic web. As knowledge bases, they are very useful resources for many artificial intelligence applications. Ontology learning, as a research area, proposes techniques to automate several tasks of the ontology construction process to simplify the tedious work of manually building ontologies. In this paper we present the state of the art of this field. Different classes of approaches are covered (linguistic, statistical, and machine learning), including some recent ones (deep-learning-based approaches). In addition, some relevant solutions (frameworks), which offer strategies and built-in methods for ontology learning, are presented. A descriptive summary is made to point out the capabilities of the different contributions based on criteria that have to do with the produced ontology components and the degree of automation. We also highlight the challenge of evaluating ontologies to make them reliable, since it is not a trivial task in this field; it actually represents a research area on its own. Finally, we identify some unresolved issues and open questions.

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68T30 Knowledge representation
68T05 Learning and adaptive systems in artificial intelligence
68T07 Artificial neural networks and deep learning

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ontologies; ontology learning; linguistic and statistical approaches; machine learning; deep learning

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