

Preface

First Workshop on Deep Learning for Knowledge Graphs and Semantic Technologies (DL4KGS 2018)

Semantic Web technologies and deep learning share the goal of creating intelligent artifacts that emulate human capacities such as reasoning, validating, and predicting. There are notable examples of contributions leveraging either deep neural architectures or distributed representations learned via deep neural networks in the broad area of Semantic Web technologies. Knowledge Graphs (KG) are one of the most well-known outcomes from the Semantic Web community, with wide use in web search, text classification, entity linking etc. KGs are large networks of real-world entities described in terms of their semantic types and their relationships to each other.

A challenging but paramount task for problems ranging from entity classification to entity recommendation or entity linking is that of learning features representing entities in the knowledge graph (building knowledge graph embeddings) that can be fed into machine learning algorithms. The feature learning process ought to be able to effectively capture the relational structure of the graph (i.e. connectivity patterns) as well as the semantics of its properties and classes, either in an unsupervised way and/or in a supervised way to optimize a downstream prediction task. In the past years, Deep Learning (DL) algorithms have been used to learn features from knowledge graphs, resulting in enhancements of the state-of-the-art in entity relatedness measures, entity recommendation systems and entity classification. DL algorithms have equally been applied to classic problems in semantic applications, such as (semi-automated) ontology learning, ontology alignment, duplicate recognition, ontology prediction, relation extraction, and semantically grounded inference.

These proceedings present the nine accepted papers of the first DL4KGS workshop held in conjunction with the Extended Semantic Web Conference (ESWC 2018) in Heraklion, Greece. These papers have been selected from a total of twelve submissions. Each submission was peer-reviewed by at least two experts regarding its relevance for the workshop, scientific quality, originality, and technical adequacy. Topics range from knowledge graph embeddings for recommender systems, biomedical knowledge, and scientific text extraction, entity relatedness detection, embedding-based classification of ontology alignment changes to type prediction and representation, domain categorization and visual semantic similarity inferences. The program of the workshop also includes an invited talk by Pascal Hitzler on “Neural-Symbolic Integration and Its Relevance to Deep Learning and the Semantic Web”.

We would like to thank all the authors for their submissions and careful preparation of the camera-ready versions, taking all provided comments into consideration. We would also like to thank our Program Committee for providing detailed and knowledgeable reviews for all submissions. A list organizing

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committee members and PC members has been included in the proceedings and can also be found on our website at <http://usc-isi-i2.github.io/DL4KGS/>.

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