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Proceedings of the 5th Workshop on Semantic Deep Learning (SemDeep-5)

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209 N. Eighth Street
Stroudsburg, PA 18360
USA
Tel: +1-570-476-8006
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acl@aclweb.org

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Preface

Welcome to the 5th Workshop on **Semantic Deep Learning (SemDeep-5)**, held in conjunction with IJCAI 2019 (Macau, China). As a series of workshops and a special issue, SemDeep has been aiming to bring together Semantic Web and Deep Learning research as well as industrial communities. It seeks to offer a platform for joining computational linguistics and formal approaches to represent information and knowledge, and thereby opens the discussion for new and innovative application scenarios for neural and symbolic approaches to NLP, such as neural-symbolic reasoning.

SemDeep-5 features a shared task on evaluating meaning representations, the Word in Context (WiC) challenge. It represents a joint task of semantic structure in the organization of senses and their representation. In addition to providing a reliable benchmark for studying an important linguistic phenomenon, WiC is directly related to applications such as word sense disambiguation, entity linking, and semantic search. In brief, the task consists in determining whether a given word is used in the same or different senses given two different contexts. For the WiC challenge there were seven participant systems and three papers could be accepted. Ansell et al. present an ELMo-inspired approach to tackle this challenge that introduces a new similarity measure for an adapted version of contextualized representations. Loureiro and Jorge combine word sense disambiguation with contextual embeddings and sense embeddings. Finally, Soler et al. utilize word and sentence embeddings paired with in-context substitute annotations.

In total, six research papers could be accepted for the workshop, four of which are long papers and two are short, covering a wide variety of topics from neural question answering to knowledge representation and sequential tagging. Hommel et al. evaluate the impact of integrating linguistic features, such as Part-of-Speech (PoS) and syntactic dependency relations, in a state-of-the-art question-answering architecture and find a highly positive effect of this integration. Also along the lines of PoS, Wang et al. analyze cross-linguistic aspects of tagging social media texts and propose a language-agnostic model that utilizes a tagging scheme specific to this text genre, tested in Chinese. Concatenating rich features from a gazetteer with input embeddings also proved as a successful integration strategy in Magnolini et al., who analyze English and Italian data. More towards knowledge representation, Agibetov et al. focus on link prediction utilizing hyperbolic embeddings specifically in the biological domain and Zhou et al. learn household task knowledge from WikiHow descriptions. Finally, Deshmukh et al. extract structured data from unstructured text by treating the problem as a sequence tagging task.

We would like to thank the Program Committee members for their support of this event in form of reviewing and feedback, without whom we would not be able to ensure the overall quality of the workshop.

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