Joint Proceedings of

PROFILES 2019
The 6th International Workshop on Dataset Profiling and Search

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&

SEMEX 2019
The 1st Workshop on Semantic Explainability

Philipp Cimiano, Basil Ell, Agnieszka Lawrynowicz,
Laura Moss and Axel-Cyrille Ngonga Ngomo

co-located with
The 18th International Semantic Web Conference
(ISWC 2019)

Volume Editors

PROFILES 2019

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Preface

This joint volume of proceedings gathers papers from the 6th International Workshop on Dataset Profiling and Search (PROFILES 2019) and the 1st Workshop on Semantic Explainability (SEMEX 2019), both held on October 27, 2019 during the 18th International Semantic Web Conference (ISWC 2019) in Auckland, New Zealand. While the PROFILES 2019 workshop focused on dataset profiling and search, the SEMEX 2019 workshop targeted semantic explainability.

PROFILES 2019. The Web of Data has seen tremendous growth recently. New forms of structured data have emerged in the form of knowledge graphs, Web markup, such as schema.org, as well as entity-centric data in Web tables. Considering these rich, heterogeneous and evolving data sources which cover a wide variety of domains, exploitation of Web Data becomes increasingly important in the context of various applications, including dataset search, question answering and fact verification. These applications require reliable information on dataset characteristics, including general metadata, quality features, statistical information, dynamics, licensing, and provenance. Lack of a thorough understanding of the nature, scope and characteristics of data from particular sources limits their take-up and reuse, such that applications are often limited and focused on well-known reference datasets. The PROFILES workshop series started in 2014 and has since then offered a highly interactive forum for researchers and practitioners, bringing together experts in the fields of the Web, Semantic Web, Web Data, Semantic Search, Databases, NLP, IR, and application domains, to discuss such challenges and identify synergies for joint initiatives.

The contributions of the papers accepted at PROFILES 2019 include new technologies for dataset profiling, specifically for the generation of descriptive datasets snippets, the provision of data with license annotations, and the automatic classification of Linked Open Data vocabularies. Such dataset profiles do not only enable fine-grained dataset search, but are also valuable resources for the configuration of data analytics workflows and knowledge mining, illustrated by the two invited talks.

SEMEX 2019. In recent years, the explainability of complex systems such as decision support systems, automatic decision systems, machine learning-based/trained systems, and artificial intelligence in general has been expressed not only as a desired property, but also as a property that is required by law. For example, the General Data Protection Regulation's (GDPR) „right to explanation" demands that the results of ML/AI-based decisions are explained. The explainability of complex systems, especially of ML-based and AI-based systems, becomes increasingly relevant as more and more aspects of our lives are influenced by these systems' actions and decisions.

Several workshops address the problem of explainable AI. However, none of these workshops has a focus on semantic technologies such as ontologies and reasoning. We believe that semantic technologies and explainability coalesce in two ways. First, systems that are based on semantic technologies must be explainable like all other AI systems. In addition, semantic technology seems predestined to support in rendering explainable those systems that are not themselves based on semantic technologies.

This workshop aims to bring together international experts interested in the application of semantic technologies for explainability of artificial intelligence/machine learning to stimulate research, engineering and evaluation – towards making machine decisions transparent, re-traceable, comprehensible, interpretable, explainable, and reproducible. Semantic technologies have the potential to play an important role in the field of explainability since they lend themselves very well to the task, as they enable to model users' conceptualizations of the problem domain. However, this field has so far only been only rarely explored.

The papers accepted to SEMEX 2019 include a systematic literature review that presents current approaches of combining Machine Learning with Semantic Web Technologies in the context of model explainability; an approach that makes the structure of a natural language argument and the background knowledge the argument is built on explicit; an interactive method to build a probabilistic relational model from any given domain represented by a knowledge graph; and an approach that verbalizes the inconsistencies identified by a reasoner so that users can be persuaded to change unhealthy behaviour if they do not follow dietary rules to manage their diseases. Furthermore, Freddy Lecue will give an invited talk about the role of knowledge graphs in explainable AI;

We would like to take this opportunity to sincerely thank the authors for their invaluable and inspiring contributions to the workshops. Our sincere thanks are given to the program committee members for reviewing the submissions and thereby assuring the high quality of the workshop program. We are also very grateful to the organisers of the ISWC 2019 conference and in particular to the Workshops & Tutorials Chairs Sofia Pinto and Hideaki Takeda for their support in the workshop organisation.

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