Workshop Notes

Seventh International Workshop

"What can FCA do for Artificial Intelligence?"

FCA4AI 2019

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http://fca4ai.hse.ru/2019/

Preface

The six preceding editions of the FCA4AI Workshop showed that many researchers working in Artificial Intelligence are deeply interested by a well-founded method for classification and mining such as Formal Concept Analysis (see `http://www.fca4ai.hse.ru/`). FCA4AI was co-located with ECAI 2012 (Montpellier), IJCAI 2013 (Beijing), ECAI 2014 (Prague), IJCAI 2015 (Buenos Aires), ECAI 2016 (The Hague), and finally with IJCAI/ECAI 2018 (Stockholm). All the proceedings of the preceding editions are published as CEUR Proceedings (`http://ceur-ws.org/Vol-939/`, `http://ceur-ws.org/Vol-1058/`, `http://ceur-ws.org/Vol-1257/`, and `http://ceur-ws.org/Vol-1430/`, `http://ceur-ws.org/Vol-1703/`, and `http://ceur-ws.org/Vol-2149/`). This year, the workshop has again attracted researchers working on actual and important topics related to FCA, showing the diversity and the richness of the relations between FCA and AI.

Formal Concept Analysis (FCA) is a mathematically well-founded theory aimed at data analysis and classification. FCA allows one to build a concept lattice and a system of dependencies (implications) which can be used for many Artificial Intelligence needs, e.g. knowledge discovery, learning, knowledge representation, reasoning, ontology engineering, as well as information retrieval and text processing. Recent years have been witnessing increased scientific activity around FCA, in particular a strand of work emerged that is aimed at extending the possibilities of FCA w.r.t. knowledge processing, such as work on pattern structures and relational context analysis. These extensions are aimed at allowing FCA to deal with more complex data, both from the data analysis and knowledge discovery points of view. Then these investigations provide new possibilities for AI practitioners in the framework of FCA. Accordingly, we are interested and discuss the following issues at FCA4AI:

- How can FCA support AI activities such as knowledge processing (knowledge discovery, knowledge representation and reasoning), learning (clustering, pattern and data mining), natural language processing, and information retrieval.

- How can FCA be extended in order to help Artificial Intelligence researchers to solve new and complex problems in their domains.

In addition, the 3rd workshop on "Formal Concept Analysis for Knowledge Discovery" (FCA4KD 2019) was held at the Faculty of Computer Science of National Research University Higher School of Economics (NRU HSE, Moscow, Russia) on June 7, 2019. FCA4KD is an event which is close to FCA4AI, as the goal of the FCA4KD is to attract researchers applying FCA-based methods of knowledge discovery in various subject domains. There was an invited talk by Andrey Rodin on the problem of justification of knowledge discovery. In addition, there were 6 regular contributions, three of which were selected for the current volume. Sergei O. Kuznetsov would like to acknowledge the support of the NRU HSE University Basic Research Program funded by the Russian Academic Excellence Project 5-100.

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