

Workshop Notes



9th International Workshop

“What can FCA do for Artificial Intelligence?”

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<http://fca4ai.hse.ru/2021/>



Preface

The eight editions of the FCA4AI Workshop showed that many researchers working in Artificial Intelligence are deeply interested by a well-founded method for classification and data mining such as Formal Concept Analysis (see <https://conceptanalysis.wordpress.com/fca/>).

FCA4AI started with ECAI 2012 (Montpellier) and the last edition was co-located with ECAI 2020 (Santiago de Compostela, virtual conference). The FCA4AI workshop has now a quite long history and all the proceedings are available as CEUR proceedings (see <http://ceur-ws.org/>, volumes 939, 1058, 1257, 1430, 1703, 2149, 2529, and 2729). This year, the workshop has again attracted researchers from many different countries 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 and association rules) which can be used for many AI needs, e.g. knowledge discovery, machine 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. These extensions are aimed at allowing FCA to deal with more complex data, both from the data analysis and knowledge discovery points of view. Actually these investigations provide new possibilities for AI practitioners within the framework of FCA. Accordingly, we are interested in the following issues:

- How can FCA support AI activities such as knowledge processing, i.e. knowledge discovery, knowledge representation and reasoning, machine learning (clustering, pattern and data mining), natural language processing, information retrieval. . .
- How can FCA be extended in order to help AI researchers to solve new and complex problems in their domains, in particular how to combine FCA with neural classifiers for improving interpretability of the output and producing valuable explanations. . .

The workshop is dedicated to discussion of such issues. First of all we would like to thank all the authors for their contributions and all the PC members for their reviews and precious collaboration. This year, 24 papers were submitted and 14 were accepted for presentation at the workshop, out of which 6 short papers. The papers submitted to the workshop were carefully peer-reviewed by three members of the program committee. Finally, the order of the papers in the proceedings (see page 5) follows the program order (see <http://fca4ai.hse.ru/2021/>).

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