

Rough Sets and Formal Concept Analysis: Foundations and the Case Studies of Feature Subset Selection and Knowledge Structure Formation

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Abstract. The theories of Rough Sets (RS) and Formal Concept Analysis (FCA) are well-established from the point of view of both mathematical foundations and real-life applications. The interest in searching for similarities and dissimilarities between RS and FCA has been constantly growing, both with respect to pure theory, as well as with an objective of developing hybrid techniques, better adjusted to practical problems. In this talk, we outline introductory notions of RS and we draw basic lines of its comparison with FCA. As the first case study, we consider the KDD-related problem of feature subset selection and show how to model some new approaches to approximate selection (a more flexible and more practically applicable extension of the classical RS-based feature subset selection principles) in the FCA terminology. As the second case study, we consider the latest Infobright's open source data warehouse platform (www.infobright.org) and we discuss possibilities of improving its performance by using new RS-FCA-based knowledge structures automatically calculated from data.