Selected Methods and Applications of Rough Sets in Management and Engineering (Springer, 2012)

Georg Peters, Pawan Lingras,
Dominik Ślęzak, Yiyu Yao

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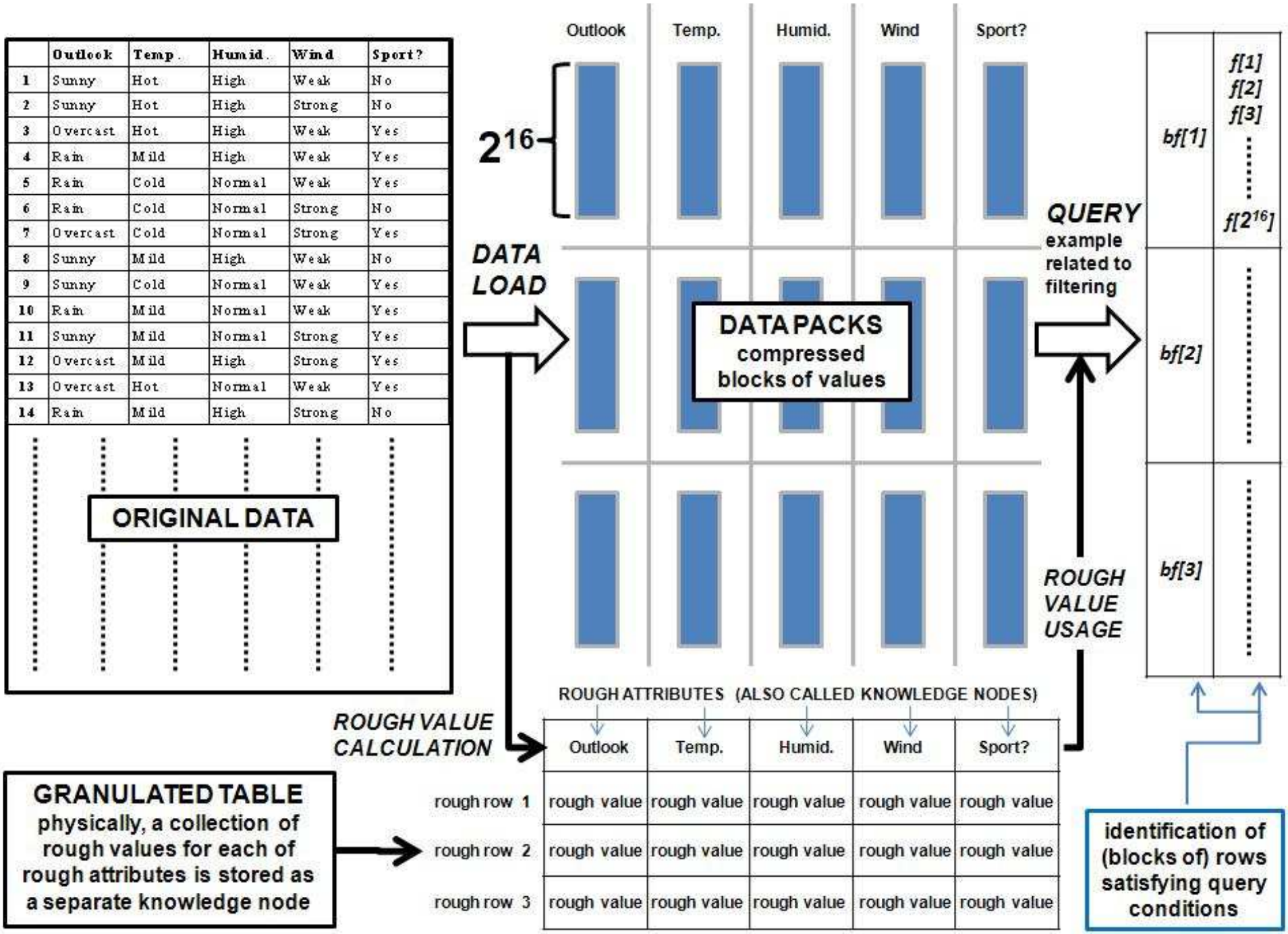

	Outlook	Temp.	Humid.	Wind	Sport?
1	Sunny	Hot	High	Weak	No
2	Sunny	Hot	High	Strong	No
3	Overcast	Hot	High	Weak	Yes
4	Rain	Mild	High	Weak	Yes
5	Rain	Cold	Normal	Weak	Yes
6	Rain	Cold	Normal	Strong	No
7	Overcast	Cold	Normal	Strong	Yes
8	Sunny	Mild	High	Weak	No
9	Sunny	Cold	Normal	Weak	Yes
10	Rain	Mild	Normal	Weak	Yes
11	Sunny	Mild	Normal	Strong	Yes
12	Overcast	Mild	High	Strong	Yes
13	Overcast	Hot	Normal	Weak	Yes
14	Rain	Mild	High	Strong	No

Ensembles of Bireducts: Towards Robust Classification and Simple Representation*

Dominik Ślęzak[1,2], Andrzej Janusz[1]

[1] Institute of Mathematics, University of Warsaw
ul. Banacha 2, 02-097 Warsaw, Poland
[2] Infobright Inc.
ul. Krzywickiego 34 lok. 219, 02-078 Warsaw, Poland
slezak@infobright.com,andrzejanusz@gmail.com

Abstract. We introduce the notion of a bireduct, which is an extension of the notion of a reduct developed within the theory of rough sets. For a decision system $\mathbb{A} = (U, A \cup \{d\})$, a bireduct is a pair (B, X), where $B \subseteq A$ is a subset of attributes that discerns all pairs of objects in $X \subseteq U$ with different values of the decision attribute d, and where B and X cannot be, respectively, reduced and extended without losing this property. We investigate the ability of ensembles of bireducts (B, X) characterized by significant diversity with respect to both B and X to represent knowledge hidden in data and to serve as the means for learning robust classification systems. We show fundamental properties of bireducts and provide algorithms aimed at searching for ensembles of bireducts in data. We also report results obtained for some benchmark data sets.

Keywords: Attribute Subset Selection, Inexact Dependencies, Classifier Ensembles, Discernibility, Decision Rules, Randomized Search.

	Outlook	**Temp.**	**Humid.**	**Wind**	**Sport?**
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12	Overcast	Mild	High	Strong	Yes
13	Overcast	Hot	Normal	Weak	Yes
14	Rain	Mild	High	Strong	No

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({O},{1-5,7-8,10,12-13})

({H,W},{1-2,5-6,8-10,13-14})

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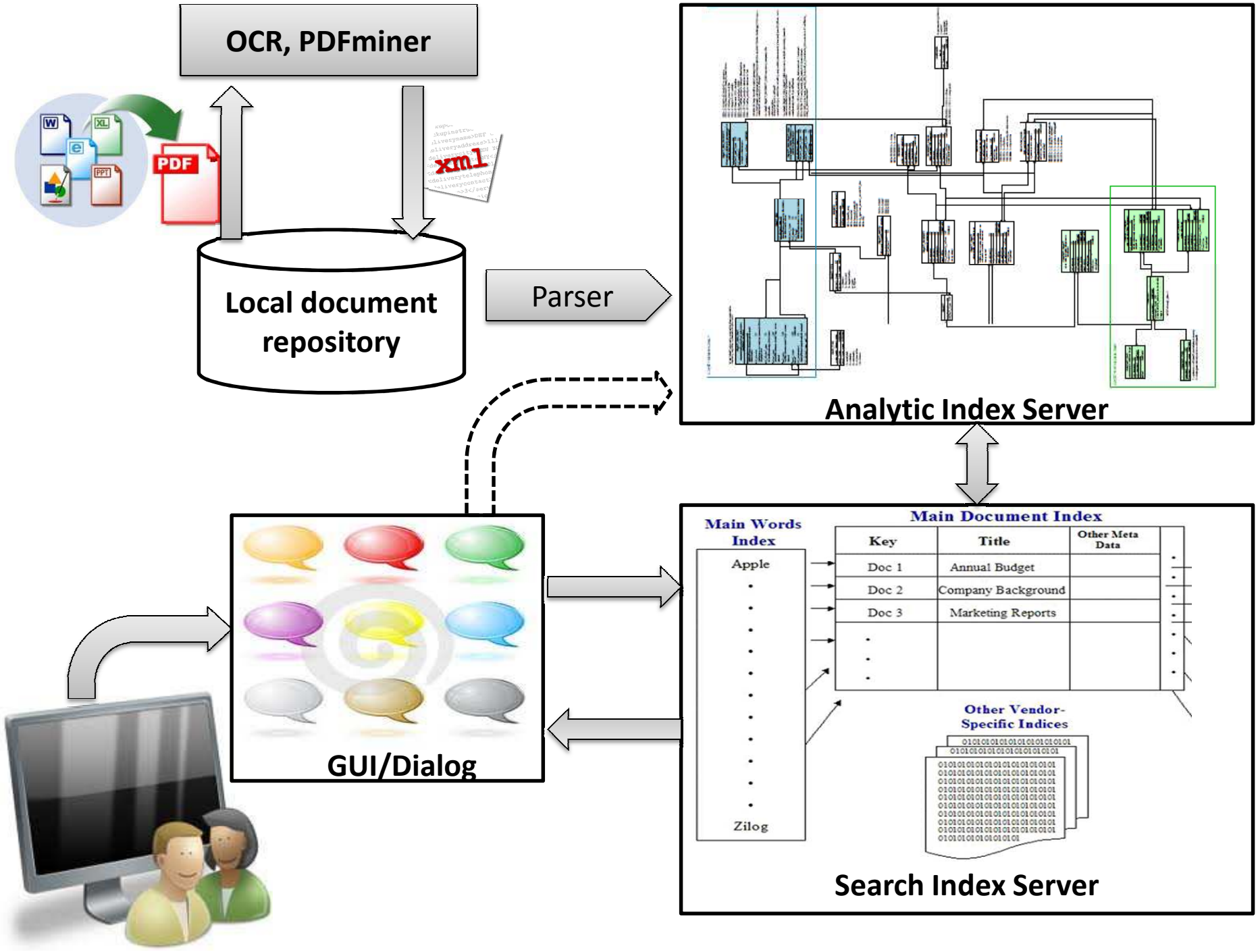
Semantic Analytics of PubMed Content*

Dominik Ślęzak[1,2], Andrzej Janusz[1], Wojciech Świeboda[1],
Hung Son Nguyen[1], Jan G. Bazan[3,1], and Andrzej Skowron[1]

[1] Institute of Mathematics, University of Warsaw
ul. Banacha 2, 02-097 Warsaw, Poland
[2] Infobright Inc.
ul. Krzywickiego 34 lok. 219, 02-078 Warsaw, Poland
[3] Chair of Computer Science, University of Rzeszów
ul. Rejtana 16A, 35-310 Rzeszów, Poland

Abstract. We present an architecture aimed at semantic search and synthesis of information acquired from the document repositories. The proposed framework is expected to provide domain knowledge interfaces enabling the internally implemented algorithms to identify relationships between documents, researchers, institutions, as well as concepts extracted from various types of knowledge bases. The framework should be scalable with respect to data volumes, diversity of analytic processes, and the speed of search. In this paper, we investigate these requirements for the case of medical publications gathered in PubMed.

Keywords: Semantic Search and Analytics, PubMed, MeSH, RDBMS, Document Repositories, Decision Support Systems, Behavioral Patterns.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Thank you!!!!