

# A Method of Rapid Prototyping of Evolving Ontologies \*

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**Abstract.** A text corpus analysis method is proposed for analyzing a branch of knowledge evolving in time. We apply this method to the case of parallel computing, which has shown a great progress during the last 15 years. For this, we construct a rapid prototype of ontology (RPO) of this domain, based on a large collection of different types of documents. We demonstrate the possibility of embodying the RPO idea and its usefulness for revealing prospects for research in different areas of parallel computing.

## 1 Introduction and Problem Formulation

The principal goal of our study is to create a method for analyzing the development of a given branch of knowledge [1]. We take as an example parallel computing.

We propose a rapid prototyping of its ontology. By ontology we understand a hierarchical scheme of concepts and words [2]. The bottom levels of the “pyramid” are more detailed concepts of a given branch of scientific knowledge, and every next upper level contains more abstract concepts. Creation of an ontology usually implies manual work involving experts in a given domain and knowledge engineers.

## 2 Method and Results of the Study

For rapid prototyping of an ontology (RPO) we use a corpus of documents belonging to the selected branch of knowledge, with different level of abstractedness. In this study we used texts of four levels of abstractedness:

- Titles of conferences, monographs, and manuals; it is possible to include titles of journals or Proceedings;
- Tables of contents of monographs and manuals; it is possible to include the headings of conference sections;
- Titles of papers (but not their sections);
- Bodies of the abstracts and papers.

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