Abstract

of attestation master's degree work

on subject:

" Operations over ontologies of semantic search engines."

by

Moravetska Viktoriia Vitaliivna

Actuality of the work

Due to the permanent growth of data in text form, as well as the problem of distribution of these data to various resources on the Internet and other online networks, the problem of automated intelligent processing of these data becomes more important. Thus, there appears the notion of Semantic Web, which main idea consists in the publication of the data not only in machine-readable, but also in the mashinno-clear form that will allow computers to process the data which they exchange, more "intellectual" method. To address this goal is proposed to use ontologies, which are regarded as technology that allows the formalization of the semantics of information and its unambiguous interpretation. Therefore the study of operations on ontologies, semantic search engines is an urgent problem of our time.

The purpose of the work

The purpose of the work is to research of ontologies of semantic search engines, software and technologies for working with ontologies, and analysis operations on the ontologies used in semantic search engines.

Tasks solved in work

1. Research of ontology languages, description formalisms and structural components of ontologies.
2. Research of existing semantic search engines, mechanisms of their work.

3. Research ways of storing ontologies, revealing of advantages and disadvantages of each method, and to develop recommendations regarding the use of existing storage facilities and querying ontologies.

4. Analysis of the basic operations on ontologies and selection among them those which are most often used in the Semantic Web.

5. The development of the canonical process of mapping operations and computation on its basis a time complexity of existing mapping algorithms.

The achieved results

Solving the tasks put in-process, an author defends:

- results of research of ontology languages, формализмов descriptions and structural a component of ontologies;
- results of research of existing semantic search engines;
- results of research ways of storing ontologies;
- results of the analysis of the basic operations on ontologies;
- canonical process of mapping operation and the calculating of time complexities of mapping algorithms.

Scientific novelty

The scientific novelty of the work consists of the following:

- were conducted the research of ways of storing ontologies in databases, revealed their basic problems, as a result of the analysis were found advantages and disadvantages of using each type of databases;
- were made the comparative analysis of storing and querying ontologies;
- were developed canonical process of mapping operation on which basis it is possible to calculate time complexities of mapping algorithms.

Practical value

Practical value of work consists of the following:

- the analysis of existing ontology storage and querying tools, which resulted in the summary table comparing the characteristics of these instruments;
- were made comparison of time complexity of existing mapping algorithms on which basis were formulated recommendations concerning a choice of concrete mapping algorithm.

Conclusions

1. Languages of representation of ontologies, formalisms and structural components of ontologies are investigated.
2. Existing semantic search engines, mechanisms of their work are investigated.
3. Ways storing ontologies in databases are investigated (relational, objective, objective-relational), were given a detailed characteristic of existing ontology storage and querying tools.
4. Operations on ontologies are analysed. It has been shown that mapping operation of ontologies are most often used by semantic search.
5. Developed the canonical process of mapping operations, which helped to calculate the time complexity of existing mapping algorithms. Based on the calculated results were made conclusions about the effectiveness of these algorithms.

The work contains 112 p., 15 images, 47 sources.

Keywords: SEMANTIC SEARCH ENGINES, ONTOLOGY OPERATIONS, OWL, RDF.