1) Project title, author name, email , affiliation

The development ontology for recommendation system for City Travel Routes Information Portal

Tokareva Margarita

[Rit1336@yandex.ru](mailto:Rit1336@yandex.ru)

HSE

2) Introduction

It is generally agreed that today our modern world is occupied by increasing amount of invisible nets which put together different information systems. This links are enlarging and our world becomes more complicated from day to day. In this case different kinds of questions such as time economy during searching, getting and posting information are stated.

The creation of new algorithms for example rapid reaching point B from point A or organizing a information system is currently an active area of research for developers.

Our present life unthinkable without unification and normalization of big data. Ontology is one of the solutions to the problem. It defines a vocabulary for users who need to search information in a domain. It also facilitates the understanding of the information structure for software agents and people.

One of the most popular web search queries among Internet users is a query connected with tourism and travel organization. Travel services need to process a great amount of information. Moreover, it is important to distinguish data which is appropriate to users. This fact underlines the urgency of my research.

3) Aim and objectives of the project

Subject area of my research is a search engine of tourism services that can be developed through the use of semantics based on ontology. Ontology is a background of knowledge basement which we study. As a consequence it allows us to compile, save and create our own information system.

I analyzed the sphere of touristic services. The key points of my research are highlighted. Afterwards the stages of development are marked:

1. Analysis of existing technical solutions in the subject area: analysis of the analogies of travel sites dedicated to City Travel Routes, analysis of methods of building recommendation systems, analysis of methods for constructing ontologies.   
2. Preparation of technical specification for the development of an information system.  
3. Justification of the choice of methods and development of own methods for building information systems, developing a method of data analysis to build a recommendation system, justification for the development ontology.   
4. Justification of the choice of programming languages.  
5. Justification of the choice of instrument and software  
for creating the site and for the development of ontologies.  
6. Research and development of structural schemes for ontology.

The seminal aim of my project is to create ontology for recommendation system for City Travel Routes Information Portal. This system will be divided in two categories which help to identify user's preferences based on specified criteria. On the basis of this query will be allocated to the key concepts and relationships that will help to create the basis for ontology. Concepts of the ontology are close to objects and relations on nouns that describe the act as objects, verbs linking them form a relationship. Therefore, defined objects and relationships in my domain I designed the ontology.

The object of my research is to issue recommendations at the request of the user. Users attempt to organize and plan your vacation and pointing main preferences and interests.

4) Methodology and data

The owl is known as the main instrument for creating ontologies. The Web Ontology Language (OWL) is a family of [knowledge representation](https://en.wikipedia.org/wiki/Knowledge_representation) languages for authoring [ontologies](https://en.wikipedia.org/wiki/Ontology_%28computer_science%29" \t "_blank).

During my research I examined articles written by the following authors: Antoniou G., Van Harmelen F., Gruber T. R. , Horrocks I., Patel-Schneider P. F. , Lu C., Stankovic M., Laublet P.

The approach of article [1] is effective from the perspective of development of using the ontologies in touristic sphere.

The value of the article [5] for my project is the information about ontology which can be used as a knowledge basement for development of the advisory system.

Summarizing and analyzing the authors argue of article [4] leads that all web-semantic service research is a prerequisite to the creation of a mathematical model that will describe the data in different formats. It is proved that classes with properties are used for building this model. The ranking data is also mentioned as the instrument for creation the automatic sampling of the preferred information.

5) Expected Results

The expected outcome of my research is the analysis and development of the structural scheme for the current ontology, as well as requests to the designed system written in OWL. Requests of the users represent a basis for the recommendation system. The results will be revealed options for recreation and proposed information about the preferences, which we are able to retrieve.

6) References

1. Ananthapadmanaban K. R., Srimathi H., Srivatsa S. K. Tourism information system-integration and information retrieval of tourism information systems using semantic web services //International Journal of Computer Applications. – 2012. – Т. 52. – №. 14. – С. 13-20.
2. Gruber T. R. A translation approach to portable ontology specifications //Knowledge acquisition. – 1993. – Т. 5. – №. 2. – С. 199-220.
3. Horrocks I., Patel-Schneider P. F. Reducing OWL entailment to description logic satisfiability //The Semantic Web-ISWC 2003. – Springer Berlin Heidelberg, 2003. – С. 17-29.
4. Antoniou G., Van Harmelen F. Web ontology language: Owl //Handbook on ontologies. – Springer Berlin Heidelberg, 2004. – С. 67-92.
5. Lu C., Stankovic M., Laublet P. Leveraging Semantic Web technologies for more relevant E-tourism Behavioral Retargeting //Proceedings of the 24th International Conference on World Wide Web Companion. – International World Wide Web Conferences Steering Committee, 2015. – С. 1287-1292.