

Thoughts on the Construction Technology of Knowledge Graphing

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Keywords: Knowledge Graph; Information Retrieval; Application; Outlook

Abstract: From the current development trend, Knowledge Graphing technology is more suitable for deep question answering system, intelligent semantic search, etc., and the core technology supporting these applications is Knowledge Graphing technology. In view of this, this paper takes Google as an example, first expounds the application of Knowledge Graphing technology, and then discusses the problems and challenges faced by Knowledge Graphing technology for reference.

1. Introduction

In recent years, Google Knowledge Graph related products have sprung up, and this technology has also been highly valued by people from all walks of life. Whether it appears to be hype or as a cornerstone of search engines as Google has said, has become a topic of deep concern for current personnel. In view of this, this paper stands in the position of Knowledge Graph construction, and deeply analyzes the application and challenges of Knowledge Graph technology to help relevant people to know the technology and then make judgments objectively.

2. Application of Knowledge Graph Technology

The flexible use of Knowledge Graphs can express the information of the Internet into a form closer to the world of human cognition, and it also provides a better way to organize, manage and apply massive amounts of information.

From the perspective of intelligent semantic search application, when the user initiates the query, the search engine will rely on the function of the Knowledge Graph to research and analyze the keywords of the relevant user query, and transform it into the Knowledge Graph. A concept is also a set of concepts above. The concept hierarchy contained in the map returns the graphical knowledge structure to the user in the shortest time. Obviously, the whole link is the knowledge card we saw on Google search results and Baidu search results.

As far as the problem is applied, the system will analyze the grammatical and semantic problems of the natural language used by the relevant users by means of the function of the Knowledge Graph, so that it can be turned into the corresponding query statement, and then in the Knowledge Graph. Get the answer. Generally speaking, for the query link of the Knowledge Graph, the query statement of the graph is often used, and in the actual query, the query language equivalent transformation often occurs. For example, if the user asks: "How to judge whether it is infected with AIDS?" Then the results of this inquiry can be easily replaced with: "What are the symptoms of AIDS?", followed by the corresponding reasoning conversion Then get a triad query, such as (AIDS, symptoms, ?), (AIDS, signs, ?), etc., and then get the final answer. Obviously, this kind of application is easy to encounter the phenomenon that there is no answer in the knowledge base. If the knowledge base is not perfect and the user's question cannot be reasoned smoothly, then the deep question and answer system can also feedback the corresponding feedback to the user by means of the search engine. As a result, at the same time, the contents of the knowledge base are updated in real time in combination with the retrieved results, and then the preparation for the follow-up problems is fully prepared.

Usually, the question-and-answer system based on Knowledge Graph is mainly divided into the following two types: one is the question and answer system of information retrieval; the other is the question and answer system of semantic analysis. For the problem retrieval system of information

retrieval, it represents the Jacana-Freebase system; for the question and answer system of semantic analysis, it represents the SEMPRES system.

In terms of the idea of the question-and-answer system, it is essentially to turn the problem into a corresponding structured query, and then extract a number of answers from the knowledge base that are similar to the problem, and then from these answers. The final answer is detected. Yao and other related researchers from the perspective of the Freebase knowledge base, the first thing to do for a given problem is to accurately judge the question words, problem keywords, etc.; to analyze the words that represent the relationship in the problem, while also To transform it into a relational predicate in Freebase; based on the deep analysis of the problem subject, explore the matching node from the Freebase knowledge base, and then treat the relevant node as an alternative answer, including the attributes of all nodes. And the kind of relationship; from the standpoint of the node, explore the nodes that match the relationship words and use them as answers. Berant and other related personnel stand on the standpoint of the Freebase knowledge base, turning the given problem into several logical forms; combining the extracted logical forms with reference to a certain pattern to form a problem that matches it; Enter similarities between the questions for detailed calculations.

In terms of the problem system, the essence is to use semantic analysis to grasp the true meaning of the problem and turn the problem into a query mode until the final answer is found. From the perspective of Freebase and the Probase knowledge base, researchers such as Fader have divided the given questions into several questions, then answered them one by one, and finally merged the answers. In addition, Berant and other related researchers stand on the standpoint of the Freebase knowledge base, and actively use the method of regular rules for a given problem to transform the entities and question words contained in the problem into entities and relationships in the knowledge base. The predicate, then the two words are bridged, so that new predicates can be obtained. Finally, the predicate from the problem is transformed into the corresponding query, and then the statement is used to get the final answer.

3. Problems and Challenges Faced by Knowledge Graphing Technology

Whether it is for Google's KnowlodgeVault, or for Microsoft's SatorI and other projects, it reveals the development space of the technology in a certain sense. However, in the process of development, the technology still faces many problems and challenges. Next, we will discuss the problems and challenges of the technology from the following three aspects for reference.

For the information extraction link, the current research on extraction methods is still in the development stage. Some research results have achieved corresponding achievements even in specific data sets, but there are still algorithms with low accuracy and poor scalability. There are many problems such as constraints. Therefore, if you want to truly construct a Knowledge Graph for the whole world, then the primary challenge is to derive from open domain information extraction. The research questions mainly include the following: first, entity extraction; second, relationship extraction; Third, attribute extraction. Especially the multi-language text information extraction problem and the open field text information extraction problem are the main challenges at this stage.

As we all know, knowledge processing belongs to the most characteristic Knowledge Graph technology, and it is also the biggest challenge in the field in the future. Usually, the main research questions include the following: first, the automatic construction of ontology; second, knowledge reasoning technology; third, knowledge quality assessment method; fourth, the application of reasoning technology. From the current development trend, the ontology construction problem mainly studies the clustering problem. The key to the research of knowledge quality assessment is to construct practical quality assessment technical standards and related indicator systems. For the means and application of knowledge reasoning, it is a common concern of relevant personnel at this stage. It should break the constraints of the existing technology. Obviously, the innovation of knowledge reasoning technology will have a profound impact on the use of this technology.

The most research-important challenges are mainly reflected in how to properly handle the

problem of expression of knowledge, query questions, etc., and these problems always run through all aspects of the technology, and the efficiency of the problem will be raised earlier. Challenges and problems have a direct impact. From the current development trend, Knowledge Graphs are usually stored using graph data, but on the basis of the convenience of graph data, the advantages of relational databases, such as collection query efficiency, are gradually lost. For the query aspect, how to properly handle the natural language query, in-depth reasoning, and the form of query expression that can be understood by the Knowledge Graph is also a problem that the relevant scholars are waiting to solve in the future.

4. Conclusion

All in all, the importance of the Knowledge Graph is not only because it is the basis for supporting related intelligent applications such as deep question answering systems and mobile personal assistants, but also because it is a key to open the door for people to open up new knowledge for related fields. From an objective point of view, the Knowledge Graph is not just a technology, but also a strategic asset. The author's intention in writing this article is to illustrate the technology and to attract more people to participate in the research of this work.

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