RESEARCH ARTICLE

A REVIEW ON SEMANTICS APPLICATION OVER CLOUD

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ARTICLE INFO	ABSTRACT
	Most of the researchers used diverse procedures for finding pertinent information and find the keyword based search, which are not able to fetch the relevant search result because they do not know the real meaning of the term or expression and relationship between them in the web search. Data processors are stimulated to move their byzantine data from local repository to commercially available open cloud. We need to search and retrieve all the files which are semantically linked to user demanded query along with proper storage and secured access. We present a review on semantic search and security of data. We perform an exhaustive review to understand the problems and solving techniques of searching and why semantic search is more proficient. The algorithms and targeted challenges of cloud security producing improvised results and future work will use more advanced algorithms with change in day to day technology.

INTRODUCTION

Keywords which we define as a cord of one or more words, provides a brief illustration of a document's content. Keyword are extensively used to express queries within information recovery system as they are easy to define, update, remember and share. In comparison to mathematical signatures, keywords, are independent of any staple and can be applied multiple staples and IR. Semantic where aggregate things are used in order to perform a search rather than just keywords. To get output not only related to stagnant meaning of a word or phrase but also to understand the intent of a searcher query within a specific area. By learning from past results and creating links between varied objects , a search engine might then be able to analyze the answers of searchers query, rather than provide blue links that may not provide the correct answer. Semantic search depends on both the semantic extension of websites and the huge amount of semantic information it has to pull. The best factors of semantics are taken into consideration so as to achieve proper results as users needed.

Keyword Based Search: Searching using keyword, selection of desired keywords must done to get accurate results. Then it depend on technique which one is used as single-keyword, multi-keyword search etc, as keyword searches can retrieve a massive results.

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Numerous options are available to clarify search and results. Some filters are applied at different stages like Quick Limits can be used while doing a keyword search and Pre-set Limits can be selected before doing a keyword search. Through the various arenas of the file: authors, labels, series, topics, notes, subjects notes, and editors. Unlike the other exploration options, the Keyword Search can find words and expressions within a label, series, author, or subject. Keyword search is restricted one like if a person needs to search about beaches but due to incorrect spelling typed leaches, the retrieved result get totally changed. It is just simple check mechanism which does not work perfectly for all type of queries.

As just this simple spelling check algorithm could not configure well like if a user type boy instead toy totally the result get changed. Variety of ways to search using keyword were done: Ranked Keyword search: An information retrieval system allocation a relevance score to each and every document and most relevant data is sent according to that score. Only the threat lies if any ranking function may leak any keyword. Single Keyword search: Only usage of single keyword so no large and complex queries can be provided. Multi-Keyword searchable encryption: This is appropriate for large and complex queries. Fuzzy-Keyword searchable encryption: This provide fuzzy sets of relation as that depends on which lies to its nearby distance. Boolean Keyword search: Usage of AND, OR and NOT operator for keyword search query. It doesn't provide ranked result.

Semantic search provides

- Worry less about exact keywords as it focused on its content
- It make definite every part of content which user produce must got clear emphasis, search engines are intended to identify the sense of user query.
- Create a high quality content understands user content, not just accurate keyword that matches the query the meaning behind it.
- Use structured data makeup: data mark up will improve our search engine optimization
- Focus on long tail keyword: Even though actual keywords matter less, long tail keywords are still crucial.
- Semantic which means denotation or feature of something.

Applied to search then it relate to study of words and logic. Usage of notion matching, substitutes and natural language algorithms it provides cooperative results through altering structured and unstructured data. To extract answers delivery of more personalized results. Google's knowledge graph(14) provides semantic search. Semantic help to understand more deeply what actually one denote and want.

For example a exploration for Warren Buffet provide general end result that he is an American Business tycoon, stakeholder, orator and humanitarian who serves as a chairman and CEO of Berkshere Hathaway each and every image related to his links to Wizard, Oracle or Sage. Searches which have been used from ages that are the Navigational searches that matches syntactically query keywords(keyword-search) as they are not constant with the change in one word or even the synonym can totally change the results, as they do not require any contextual information do not denote any concept. Whereas, semantic search derived conceptual information from semantic entities into result set of traditional IR. There are diverse methods in semantic searching:

Ontology based: Provides concept hierarchy, individuals and interrelationship among them with some axioms and constraints. It can be exploited to get relationship among concepts denoted by search query keywords. RDF based: A semantic examine approach based on graph where query is created in the graphical format. Further, a user specified 'ent' into graph was used and located on a conceptually deep domain ontology for getting-subgraph to match the query graph. Semantic resemblance is calculated using query graph by relating distance.

NLP Techniques: (Natural Language Processing) This depends on context information out of natural language search, hence helpful in resolving conflict and assign correct sense to ambiguous word by analyzing rest of sentence.

Combined Approach: Above all 3 processes are used in one, so as to make it more effective. In this framework six different steps are performed where the data is collected semantically structured (existing RDF sets), unstructured (eg. Webpages) and semi- structured (eg. data in XML and database). Collected structured and unstructured data transformed to structured data using definite processing techniques which is done in Knowledge attainment. Research in ontology provides favorable results for generating structured data ontologies from unstructured one.
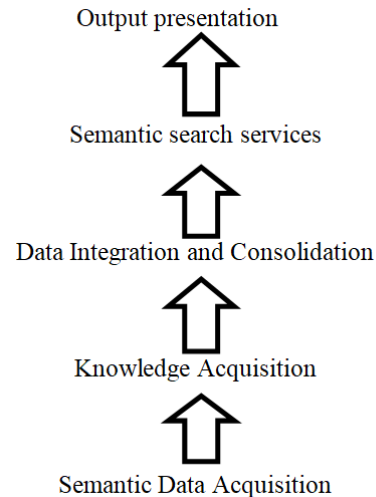
Semantic Framework

Fig 1.1. Framework of Semantic search

Data integration and consolidation component outlines for problem arisen from the knowledge acquisition process, as different sources publish different information. Search amenities provide abstract prototype of the functionality a semantic search engine suggests that are conventional IR techniques such as object and acquaintances. Finally result is presented in desired way as graphical or pictorial view. We are creating a cloud data repository where owners will upload there files and users will download securely by getting proper authentication. Users query will generate a trapdoor which provide access mechanism then the results are searched semantically over cloud and ranked output are sent, on top the expected file is there. Reference provide proofs that semantic based search engine is more efficient than cloud based search engine by using TREC style average precision measure.

Literature review: With the development of searchable encryption, many existing schemes provide more abundant retrieval function based on text search. Traditionally, keyword-based search techniques were in use, now more smartly the work is done and hence semantic searching is being done which provides the in depth and precise knowledge of searching. References which provide details regarding single keyword search, then come the era of multiple keyword search in encrypted form .Ning Cao, Cong Wang follows about multi-keyword ranked search over encrypted data in cloud computing against 2 threat model which is called MRSE. This supports vector space model (VSM) and secure inner product to release the high efficiency of search .Zang Fu (Sun *et al*.,2011) generates search index with term frequency and vector space model and chooses cosine similarity to compare the source and the query which can help achieve more accurate search result . Then come how to return the ranked result through the frequency of keyword access.

Searching issues: Ning Cao, Cong Wang ,Kui Sun find to solve the problem of multi-keyword ranked search over encrypted cloud data (MRSE). In MRSE, where a document D each considered vector P ,each bit represent P(i) index and again splits into 2 invertible matrices in the same way query vector Q is split into two. As the trapdoor is received secure inner product between index and query is done and result are

returned. It's inefficient in semantic search and vectors too consumes much space. Wei Zang (Xiao *et al*., 2015) presents the multi-keyword secure ranked search with multiple owners due to which more data items are concatenated and encrypted result get in more time consumption. Fu in 2015 first time add a concept of synonym based queries, which provide accurate result than which occur during Fuzzy and Boolean keyword search. Still it provides only synonym based search, future work has shown good results of semantic search.

Mayan too proposed searching based on synonym queries. Matching data vector and query vector products is done based on that conclusion are made , but whose relevancy can't be said. Zhangjie Fu, Fengxiao Huang, Xingming Sun then finally introduced semantic search techniques on conceptual graphs over encrypted outsourced data in cloud (SSCG) same encrypted document and query indexes are created. Conceptual graphs are constructed based on each document its three index vectors are designed which are encrypted and sent over the cloud. Provide more accurate results than earlier search mechanism but time consuming too. Zang Fu (Cong *et al*.,2016) proposed semantic search where extended concept hierarchy stored semantic relations, between concepts and search terms. Here secure search scheme based on asymmetric scalar product preserving encryption scheme (ASPE) is used where secure nearest neighbor result is retrieved. Space needed here was less than earlier. Zang Fu (Wang *et al*.,2017) proposed similar algorithm like MRSE and introduce Conceptual Graphs as a knowledge representation tool. Earlier three indexes were used, here only two one for concept and other for its value.

Privacy issues: Deepali Rane proposed where keyword privacy of queries as well as data fetched should be unknown to server. Documents are encrypted using symmetric key cryptographic algorithm are sent over the cloud and queries too are encrypted while sending and retrieving .While Mayan encrypt using asymmetric encryption algorithm and for searching securely use knn. Various algorithm are proposed to ensure security of users data, so that people can trust to upload data.Chen (Mu *et al*., 2016)introduce the concept of dual server public key encryption with keyword search for secure cloud storage and protection of data and again it was used while semantic searching .

PROPOSED METHODOLOGY

The proposed system provide efficient and secure search semantically, in which dual server system with encrypted documents and query sent over the cloud. We focus on its efficiency, accuracy as well as secrecy. So advanced algorithm are use to make it more efficient.

Conclusion

Semantic search system which provides intent of user's search query its contextual meaning. This come from various communities of information retrieval semantic web, machine learning, natural language processing and so on. Extension of scope and improve quality of search. Here usage of semantics instead of keyword based searches has proven quite effective till now. But here we not only increase its accessibility but also security while retrieving results from cloud.

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