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A Structured Dominion Ontology Semantic Search for Web User Queries

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Abstract— Web mining engages a broad series of applications that aims at discovering the effective result for the users query and removes the hidden information stored on the web. The advantage of web mining is to offer a mechanism to make the data access more professionally and adequately. Personalized Ontology Model (POM) related to the web studies and gather information based on the ontological user profiles which were obtained from the world knowledge base and user local repositories. POM simulates user's concepts in order to improve information gathering but does not match the user local instances with global knowledge base. Ontology-based Question Answering (OQA) system deals with multilingual capabilities, inter-domain portability and user information requirements. OQA system was not effective in controlling the queries and questions with calculus output. Also, OQA system does not contain user query formulation related to different types of sources. To exploit the different types of user web query a Structured Dominion Ontology Semantic Search (SDOSS) model is developed which first matches the semantic content with the user given query. Followed by this the SDOSS model, evaluate the user query syntactically and semantically. Next, with the aid of context analysis, the SDOSS model retrieves the web results more relevant to the user query. Finally, the relevance match of the user local instances with the global knowledge base is measured using the weight table to determine the weight and weight score calculation using the context analysis. SDOSS model demonstrates promising performance improvements over other semantic information retrieval with calculus output. SDOSS model is experimented on the factors such as average processing time, matching quality, utility rate, precision ratio, common description rate, and web semantic search efficiency.

Keywords— Structured Dominion Ontology Semantic Search, Users Web Query, Weight Score Calculation, User Local Instances, Global Knowledge Base

I. INTRODUCTION

The World Wide Web is one of the most used interfaces to access remote data for both the commercial and non-commercial services. Due to the mushroom growth of usage of WWW by the users, these transactions are growing very quickly. Many experts forecast that the subsequent huge growth is forwarded in web information technology by adding semantics to web data, and will almost certainly consist of the semantic web. Adaptive Web Access Pattern Tree (AWAPT) as illustrated in [5] explored a new recurrent sequence pattern for frequent sequential pattern mining. An AWAPT combines Suffix tree and Prefix tree for competent storage space of all the sequences that persist in an item. It removes recursive reconstruction of intermediate WAP tree all through the mining by assigning the binary codes to each node in the WAP Tree.

Accurate identification of aliases on person name with binary code is helpful in various web related tasks. Robust alias detection system as constructed in [4] extracted lexical pattern-based approach to professionally take out a large set of candidate aliases from snippets. The retrieved snippets from web search engine described the numerous ranking scores to charge candidate aliases. A clustering-based pre-fetching system as demonstrated in [8] contained the graph-based clustering algorithm with ranking score. The algorithm recognized clusters of correlated Web pages based on the users' access patterns. The scheme was incorporated easily into a web proxy server for improving its performance and the additional similarity metrics were not used for directed test generation.

Web People Search approach via connection analysis in [19] clusters web pages based on their connection to different people. Web People Search develops a diversity of semantic information extracted from web pages, such as name entities and hyperlinks, to disambiguate surrounded by namesakes referred to on the web pages. The information stored in the top-k web pages are not upon the maximum quality mark. Probabilistic spatiotemporal model for the target event as demonstrate din [20] find the center of the event location but still advanced algorithms is not developed for query expansion.

Ochiai algorithm as illustrated in [12] overcame all the faults but the additional similarity metrics were not directed for test generation, and evaluate the effectiveness. Test generation and fault-localization techniques for client side were not developed. The enrichment method as presented in [14] constructed a Knowledge Base (KB) for the automatic enhancement of the semantic relation network. A rule based method using WordNet's glossaries and an implication method used axioms for WordNet relations. The areas included semantic document indexing, document topic detection, query development, ontology extension, semantic information retrieval and knowledge integration.

Web semantic search is a key technology of the web database, since it is the major process through which the access content in the web data can be performed. Current web search technologies are fundamentally based on grouping of textual keyword search using ranking via the link structure of the web. Semantic Knowledge-Based as presented in [6] showed how to abstract away from the raw real-world information step by step by means of semantic technologies. The framework triggered a knowledge exchange between the status monitoring agents but failed to apply the approach to more complex scenarios involving other agents. Semantic Knowledge-Based framework did not deal with the acoustic communication limitations associated to the underwater environment.

Conversely, present web semantic search does not permit semantic processing of web search queries, which analyzed based on both web search queries and web pages. The web pages with respect to 'keyword' return precisely the semantically appropriate pages for a query. For the same reason, current standard web search does not allow complex web search queries that engage reasoning over the web. Fast Nearest Neighbor Search with Keywords as illustrated in [17] developed a new access method called the spatial inverted index that extended the conventional inverted index to cope up with multidimensional data.

Web usage mining is one of the frequent usage areas of web mining. The awareness of Web mining lies in analyzing user's behaviour on the web after exploring access logs and its popularity is increasing at a faster face especially in E-services areas. The applications in these web semantic search areas added its approval and made it as an inevitable part in computer and information sciences. Details like user log files demand for resources and maintain web servers, which is the core mining area of web usage. The semantic analysis gives the user browsing patterns utilized for target advertisement, development of web design, fulfilment of users and making market analysis. Most of the web service providers realized the fact behind it to retain their users.

The Web enabled people with varied goals and characteristics access an ever-growing amount of information. The web designer and web administrator pick up the formality of a website as demonstrated in [10] by determining link connections on the website. Consequently, web log files were pre-processed and then path investigation technique were used to inspect the URL information concerning admission to electronic sources. Quality of Web Service Composition (QoS-WSC) as explained in [3] balanced the new dimension of semantic quality using the ranking and optimization criteria. Utility of Genetic Algorithms in QoS-WSC allowed optimization within the context of large number services but the result of tasks and the candidate services did not match in a semantically precise fashion.

Taxonomy-aware Catalog Integration (TACI) processing as described in [18] regulated the outcome of a text-based classifier to make sure products that are close together in the provider taxonomy remain close in the master taxonomy. TACI failed to identify candidate products for labeling. The three important individual factors that have been examined in presented empirical studies [7], including gender differences, prior knowledge, and cognitive styles. These applications were worn by a varied population of users with heterogeneous backgrounds, in terms of their information, skills, and requirements but reliability and validity of such questionnaires were not examined.

Based on the aforementioned techniques, a Structured Dominion Ontology Semantic Search (SDOSS) model is designed and implemented that retrieves the search results by analyzing the syntactic and semantics of the user query. The semantic search retrieves the most relevant results for the user queries using the context analysis (i.e.,) domain form. The search is made possible by construction of strong dominion ontology with the weight table. The weight table is used to compute the weight score and provide the relevance information from the web database where the web database matches the user local instances with the global knowledge base. SDOSS technique extracts the information from the web documents in convinced domain and all along the link are found in domain specific pages for effective user query result on web pages.

The structure of paper is outlined as follows. In Section 1, describe the basic information and limitations related to web semantic search. In Section 2, demonstrates the Structured Dominion Ontology Semantic Search (SDOSS) model to match the user local instances with global knowledge base. Section 3 explains about the Billion Triples Challenge dataset and experiment evaluation on JAVA with parametric factors. Section 4 performs result analyze through graph. Section 5 illustrates the related work limitations. Section 6 finally concluded the work.

II. STRUCTURED DOMINION ONTOLOGY SEMANTIC SEARCH (SDOSS) MODEL

Dominion Ontology is an independent system with precise specification on the web search to handle different types of query sources to provide a common understanding of a query term and also its relationship with other terms in the query. The user query is refined to provide a better search result by means of SDOSS component. In SDOSS component the query given by the user is evaluated syntactically and semantically. Then the context related to it is analyzed on the user query using the level of phrases, clauses, sentences and paragraphs.

The context analyses that are semantically related to the query are extracted from the dominion ontology built. The concluding step results in the construction of weight table which is used to determine the weight. The weight score calculation in SDOSS model verifies the relevance of semantically related words. These user queries with context analysis have more semantic relevance where the global knowledge from the web database matches with the local instances. Architecture Diagram of SDOSS Model is described in Fig 1.

The SDOSS Model enters the user query related to the natural language. The expected output of user query is semantically suitable to web global knowledge based information. SDOSS Model involves the evaluation of both syntactically and semantically based constructs. Context analysis is performed once the originally specified query passes through the evaluation stage. The context analysis identifies the level of phrase, clauses, sentence and paragraph in user query. These words are then matched with the concepts contained in the dominion ontology to get a set of more related semantic search. At the end of SDOSS Model processing, a collection of words which are semantically related and domain specific contexts are obtained.

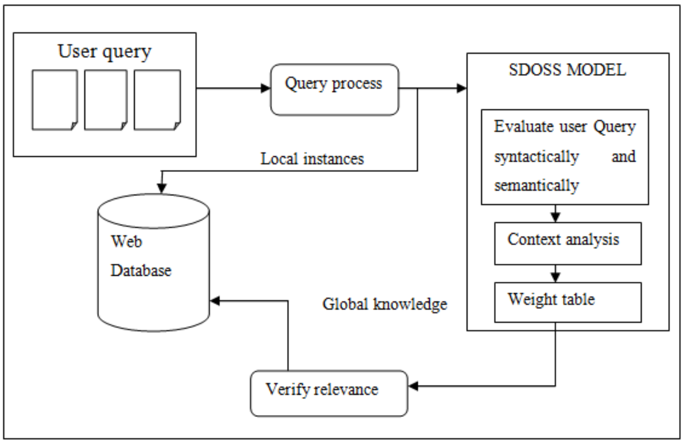

Fig. 1 Architecture Diagram of SDOSS Model

A. Structured Dominion Ontology Process

The initial work starts with the process involved in the design of structured dominion ontology construct. Structured Dominion Ontology play an important role in providing a dominion (i.e.,) controlled vocabulary of concepts. The web search vocabulary contains the concepts and relationships used to explain and signify an area of concern. Each user query in SDOSS Model is explicitly defined and converted into machine understandable semantics. Due to the tremendous information on the web database, it is gradually more complicated to search more useful information on certain domain. To overcome the difficulty related to it, an evaluation of syntactical and semantic evaluation for user query is highly essential which is discussed in detailed in the forthcoming section.

1) *Syntactic and Semantic Evaluation of User Query*: The semantic evaluation of user query for SDOSS model employs similarity measures Point-wise Joint Normalization (PJN) between the queries. The Point-wise Joint Normalization in SDOSS model is used for semantic similarity identification for discovering synonyms on web query. Let 'i' and 'j' be the two strings in the user query to measure the amount of association between p (i) and p (j) in SDOSS Model with p (i, j) as the joint probability of 'i' and 'j' and the PJN between queries is defined as,

$$PJN(i,j) = \log\frac{p(i,j)}{p(i)p(j)} \quad \text{......(1)}$$

From (1) yield negative values, if p (i,j) < p(i)p(j). To deal with the negative log probability Point-wise Joint Normalization (PJN) is defined which is given as below,

$$PJN(\mathrm{SDOSS})(\mathrm{i,j}) = \frac{PJN\,(\mathrm{i,j})}{-\log(p(i,j))} \quad \text{......(2)}$$

From (2), the PJN with SDOSS model limits with positive values with the normalization bounds range between 0 and 1. The jointly normalized $PJN(\mathrm{SDOSS})$ is a symmetric measure between 'i' and 'j' in the sense that the local instances matches with the global knowledge in semantic evaluation (i.e.,) $PJN(\mathrm{SDOSS})(\mathrm{i,j}) = PJN(\mathrm{SDOSS})(\mathrm{j,i})$.

The syntactic evaluation of user query in SDOSS Model uses the hierarchical clustering with cosine similarity metric to perform the insertion and substitution operation. An example for hierarchical clustering in SDOSS Model is shown in Fig 2.

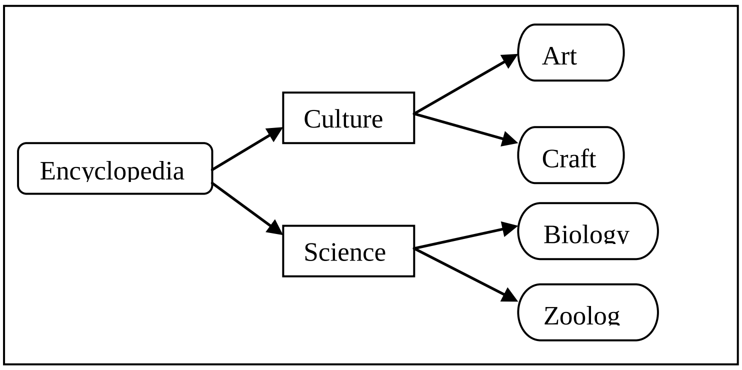

Fig. 2 Example for hierarchical clustering in SDOSS Model

SDOSS Model clusters the words according to their syntactic similarity and uses the cosine distance formula between vector representations of words. A position between two sequences 'i' and 'j' is used for syntactic evaluation of cosine distance. For two vectors of attributes, X and Y, in Dominion Ontology model, the cosine similarity, cos (θ), is represented using a dot product and magnitude as given below

$$SS = Cos(\theta) = \frac{X.Y}{|X||Y|} \quad \ldots\ldots(3)$$

$$\frac{X.Y}{|X||Y|} = \frac{\sum_{i=1}^{n} X_i * Y_i}{\sqrt{\sum_{i=1}^{n}(X_i)^2 * \sum_{i=1}^{n}(Y_i)^2}} \quad \ldots\ldots(4)$$

Syntactic Similarity (SS) is computed with hierarchical clustering with cosine similarity metric in SDOSS Model to improve the evaluation rate. $\sum_{i=1}^{n} X_i * Y_i$ is used to compute the syntactic for two different attributes in user query form.

2) *Context analysis:* Once the syntactic and semantic evaluation of user query is performed, the context analysis is performed to eliminate the irrelevancy in from the user query. The context analysis in SDOSS Model eliminates the irrelevant domain from the evaluated syntactic and semantic user query. The most ordinary form of SDOSS context analysis consists of a knowledge query mechanism with data cube in order to perform OLAP (Online analytical processing) operations. Context analysis filters out all unimportant domain from the set found in the user query. These content and structure information filters out specific domain pages of certain procedure and web pages that match a certain hyperlink structure.

Context analysis identifies and quantifies the semantic relationship between a given hierarchical clustering nodes. The hierarchical cluster in SDOSS model goes on with the similar domain rather than the irrelevant link structure. Thus, discovering the degree of semantic association among two adjacent clusters in a structure involves identifying the specialization, generality direction and degrees of similarity. In semantically evaluated structures, the structured dominion ontology is implied with the direction of joint normalization on the parent-child relationships system. The parent child relationship in SDOSS hierarchical clustering still improves the web based semantic search.

3) *Dominion Ontology Weight Score Computation:* Finally, with the irrelevancy domain eliminated using the context analysis, dominion ontology weight score computation is performed. The weight table determines weights to each user query using the context analysis in structured dominion ontology. The strategy of assigning weight depends on the specific and non-specific term. The specific term related to user query terms and it is assigned with more weight. The non-specific term is the terms other than the user query term and it is assigned with lesser weight. The user query term which are common to all the domain (i.e.,) in context analysis is assigned with an average weight. The weight assigning for SDOSS model is built with the assistance of the knowledge experts.

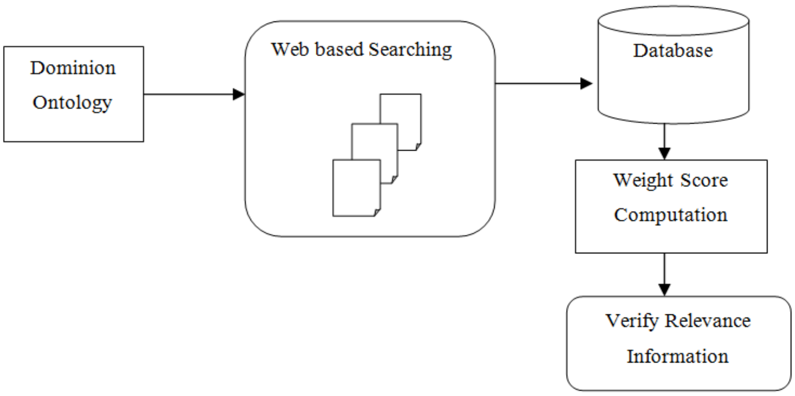

Fig. 3 Structured Dominion Ontology Weight Score Computation

Structured Dominion Ontology is retrieved selectively through the weight score computation and it is described in Fig 3. To remove unexpected documents, the non-specific group is initially removed from the weight table. Then, weight score computation is used to extract the relevant information from the web. During the weight score calculation, the relevancy of a web page depends on the context analysis. The calculation of the terms weight W_k of each Specific Term ST_k is performed as given below

$$w_k = ST_k * f \quad \ldots\ldots(5)$$

The information frequency 'f' in the SDOSS model denotes the total number of documents in the web database that contains the Specific Term (ST). The information frequency is as given below

$$f = log_2 n - log_2 f + 1 \quad \ldots\ldots(6)$$

Where n is the total number of documents in the web database. $ST_k * f$ is used to efficiently find contexts that best represents the semantics result to the users. For context analysis with a high appearance frequency on semantic web, the value is high resulting with effective matching of global knowledge with the local instances on different sources. Then, the information selection maximizes w(k), which is expressed as a cosine vector representation for semantic and syntactic evaluation.

B. Algorithm of SDOSS Model

The algorithmic step of Structured Dominion Ontology model is effective in semantic knowledge which acquires semantic similarity of the known query result with the maximal web semantic similarity.

Begin
Step 1: Set of user Query 'Q' for web semantic search
Step 2: Acquire Web pages for semantic search
Step 3: Read Structured Dominion Ontology process
// Query Semantic and Syntactic Evaluation
Step 4: Employ Point-wise Joint Normalization (PJN) for semantic evaluation
Step 5: Matching performed with the local instances and the global knowledge or semantic evaluation (i.e.,) $PJN(\text{SDOSS})(\text{i,j}) = PJN(\text{SDOSS})(\text{j, i})$
Step 6: Employ hierarchical clustering with cosine similarity metric for syntactic evaluation
//Context Analysis
Step 7: Filters out all unimportant domain from the user query
Step 8: Identifying the specialization on the specific domain
Step 9: Generality direction to analyze the context on user query
Step 10: Degrees of similarity between local instances and global knowledge are identified
//Weight Table
Step 11: Assign more weight for specific term related to user query
Step 12: Assign average weight for user query term which are common to the entire domain
Step 13: $W_k$of each Specific Term ST_k is computed
Step 14: Information frequency 'f' in the SDOSS model verify the relevance
End

SDOSS model extracting relevant information based on the semantic web. SDOSS exploits the benefits of the semantic web to regain the relevant user information with frequency 'f' on web database. SDOSS model with query semantic and syntactic evaluation, context analysis and weight table produce effective precision ratio. The web semantic search exhibit promising performance improvements with Structured Dominion Ontology for semantic search over other methods in semantic search.

III. EXPERIMENTAL EVALUATION SDOSS MODEL

Performance experiments are conducted with various conditions using JAVA Weka tool platform for web semantic search retrieval. The core design on the SDOSS model is to extend the current web search result by encoding the context analysis for the effective semantic search results on the web. SDOSS model able to improve the search process using Billion Triples Challenge dataset for evaluation. Billion Triples Challenge dataset consists of over a billion triples collected from a variety of web sources. The specific goal of the Billion Triples Track is to demonstrate the scalability of SDOSS model on various web based search applications as well as the capability to deal with the data specifics that has been crawled from the public web.

The core technological building block of SDOSS model is to flexibly perform user query process with storage database information. The overall objective is to apply Dominion Ontology web semantic search for the potential applicability on broad range. Billion Triples Challenge dataset contains the DBpedia, Freebase, US census, and numerous web crawls for processing. Billion Triples Challenge dataset effectively used to experiment on SDOSS model, Personalized Ontology Model (POM) and Ontology-based Question Answering (OQA) system. The experiment is performed on the factors such as average processing time, matching quality, utility rate, precision ratio, common description rate, and web semantic search efficiency.

The time it takes to complete a procedure requested by the users on semantic web search. The processing time is measured in terms of seconds (sec). Web Semantic search quality is maintained by using the structured dominion ontology model. The system effectively matches the global instances with the local instances for effective quality maintenance, measured in terms of accuracy percentage (accuracy %). The utility rate defines the resources utilized effectively for user search result fetching of information.

The precision ratio is the fraction of retrieved user query instances that are relevant to local instances, and recall is the fraction of relevant instances that are retrieved by the user. The precision and recall is evaluated using the fractional points. Common description rate examines the hierarchical clustering with cosine similarity metric in order to improve syntactic evaluation. The syntactic evaluation rate (i.e.,) description rate is measured in terms of percentage (%). The web semantic search retrievals efficiency is measured on SDOSS model, POM and OQA system. The result describes the efficiency rate of the system.

IV. Table And Graph Based Result Analysis

Structured Dominion Ontology Semantic Search (SDOSS) model is compared against the Personalized Ontology Model (POM) and Ontology-based Question Answering (OQA) system. The table (1) given below table shows the experimental values and graph illustrates the pictorial form of SDOSS model with existing POM and OQA system on various statistical parameter. The experiment on semantic search produces an effective outcome on user query evaluation.

TABLE I
TABULATION OF AVERAGE PROCESSING TIME

Query Count	Average Processing Time (sec)		
	POM	OQA system	SDOSS model
5	104	97	91
10	201	192	171
15	315	292	257
20	436	385	346
25	537	408	447
30	665	624	590
35	841	883	934

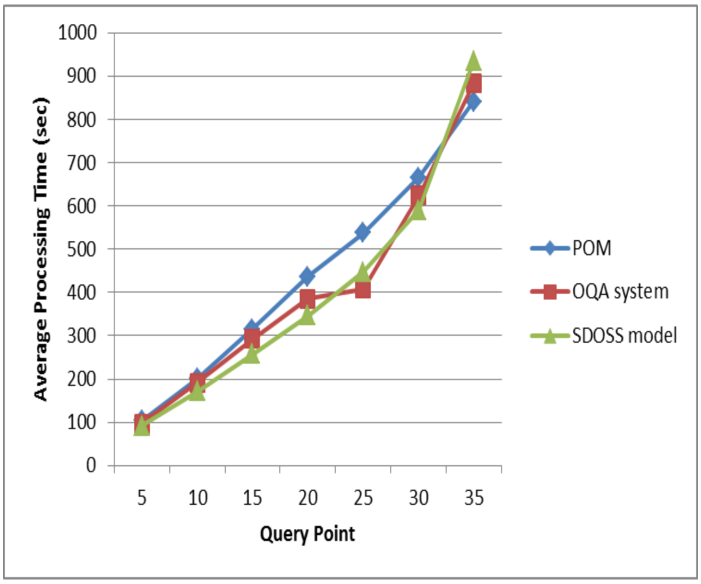

Fig 4 Performance of Average Processing Time

Fig 4 describes the average processing based on the query point. The processing time in SDOSS model is less when compared with the POM and OQA system because of the application of Point-wise Joint Normalization (PJN) between the queries. The PJN reduces the processing time by 11- 20 % when compared with the POM [1]. PJN development in SDOSS model is used for discovering synonyms on web query with 5 – 11 % lesser time consumption for processing when compared with the OQA system [2].

TABLE III
TABULATION OF MATCHING QUALITY

User Query Size (KB)	Matching Quality (Accuracy %)		
	POM	OQA system	SDOSS model
2	78	83	88
5	79	85	88
8	82	88	93
11	84	89	94
25	84	90	95
40	86	93	96
55	87	94	97

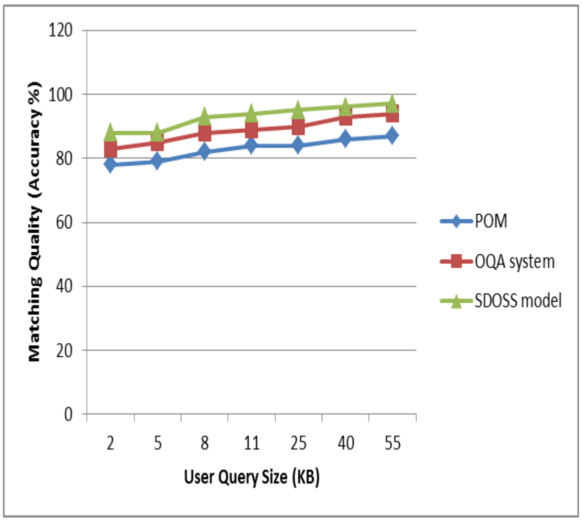

Fig 5 Measure of Matching Quality

Fig 5 and table 2 illustrates the matching quality based on the user query size. The user query size varies in the range of 2 to 55 Kilo Bytes (KB). The varying Kilo Bytes change the matching quality accordingly. The information frequency 'f' in the SDOSS model denotes the total number of documents in the web database with Specific Term (ST). With the aid of (6) the matching quality is improved by 11- 13 % when compared with the POM [1] and 3 – 6 % improved when compare with the OQA system [2].

TABLE IIIII
TABULATION FOR UTILITY RATE

Iterations	**Utility Rate (%)**		
	POM	**OQA system**	**SDOSS model**
1	65	71	75
2	66	72	78
3	68	73	81
4	70	76	82
5	76	81	87
6	78	83	89
7	79	88	93

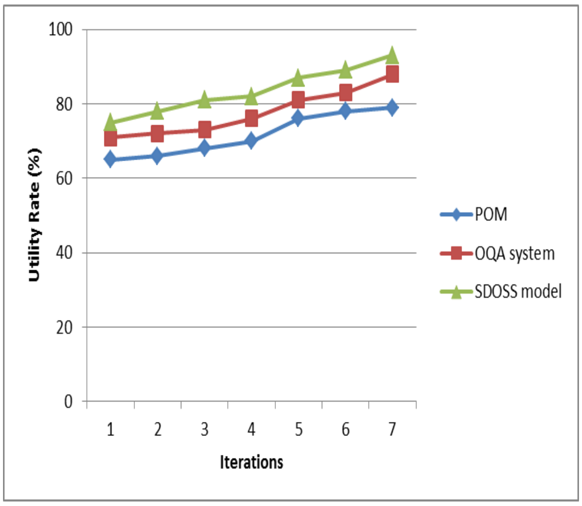

Fig 6 Utility Rate Measure

Fig 6 and table 3 illustrates the utility rate with respect to the iteration count. The iteration count from 1 to 7 iterations, shows the different utility rate percentage. The Context analysis filters out all unimportant domains from the set found in the user query. The context analysis usage in SDOSS model improves the utility rate percentage. The use of content and structure information for filtering out the specific domain pages increases utility rate by 14 – 19 % when compared with the POM [1]. SDOSS model utility rate is increased by 5 – 10 % when compared with the OQA system [2].

TABLE IV
TABULATION FOR PRECISION RATIO

Recall	Precision Ratio (Fractional Points)		
	POM	**OQA system**	**SDOSS model**
0.1	0.53	0.7	0.82
0.2	0.55	0.72	0.85
0.3	0.59	0.73	0.89
0.4	0.61	0.74	0.92
0.5	0.62	0.75	0.93
0.6	0.63	0.78	0.95
0.7	0.65	0.79	0.96

The precision ratio is computed based on the recall fraction points. Recall denotes the user relevant information retrieved from the web database.

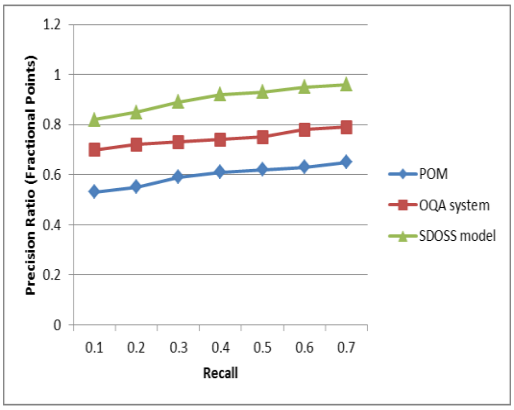

Fig 7 Precision Ratio Measure

Fig 7 explains precision ratio measure based on the recall point. The vector attributes X and Y, in Dominion Ontology model improves the precision ratio by 47 – 55 % when compared with the POM [1]. The SDOSS model involves identifying the specialization, generality direction and degrees of similarity. The cosine similarity, cos (θ), used to improve the precision ratio by 17 – 25 % when compared with OQA system [2], so that precision discover the degree of semantic association among two adjacent clusters.

TABLE V
TABULATION OF COMMON DESCRIPTION RATE

Log Files	Common Description Rate (%)		
	POM	**OQA system**	**SDOSS model**
10	49	51	55
20	56	59	61
30	65	69	73
40	67	72	78
50	71	81	85
60	72	76	81
70	76	82	88

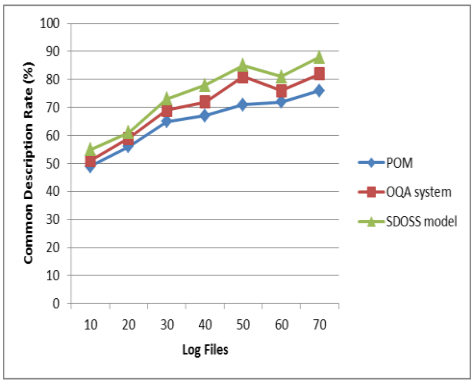

Fig 8 Measure of Common Description Rate

Table 5 and Fig 8 illustrate the common description rate based on the log files. The log file ranges from 10, 20 up to 70. The SDOSS model uses the hierarchical clustering with cosine similarity metric to improve the common description rate. The description rate improves the evaluation using $\sum_{i=1}^{n} X_i * Y_i$ which compute the syntactic on two different attributes in user query form. The common description rate is 8 – 19 % improved in SDOSS model when compared with the POM [1] and 3 – 8 % improved when compared with the OQA system [2].

TABLE VI
TABULATION FOR WEB SEMANTIC SEARCH EFFICIENCY

Weight count	**Web Semantic Search Efficiency (%)**		
	POM	**OQA system**	**SDOSS model**
8	71	69	76
16	75	70	79
24	76	74	80
32	79	75	83
40	81	75	85
48	87	81	92
56	91	87	95

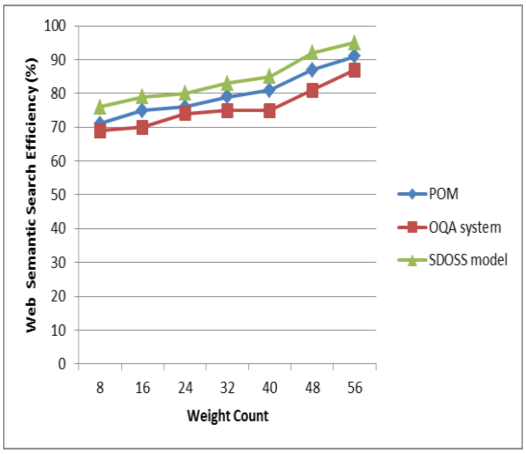

Fig 9 Web Semantic Search Efficiency Measure

The web semantic search efficiency is evaluated based on the weight count. The weight score calculation in SDOSS model with frequency 'f' verifies the relevance of semantically related words. Weight score computation is used to extract the relevant information on the web in which 4 – 7 % improved search efficiency when compared with the POM [1]. The specific term is evaluated using (5) with the web database information and improves the efficiency measure by 8 – 13 % when compared with the OQA system [2].

Finally, Structured Dominion Ontology Semantic Search objective is attained with effective retrieval of the search results and analyze the syntactic and semantics of the user query. The semantic and syntactic evaluation leads to a context analyzation. After the context analysis, final part reaches the weight computation and relevance matching. The relevance matching matches the local instances with global knowledge system.

V. RELATED WORK

An automatic annotation approach as described in [12] first aligned the data units on a result page into diverse groups such that the data in the same group had the identical semantic. Decorative tag detection was not perfect in automatic annotation approach, which results in some tags to be falsely detected as decorative tags, leading to mistaken merging of the values of different attributes. ML-based methodology as shown in [13] builds an application that was capable of recognizing and broadcasting the semantic relations but added source of information which were not integrated. Identifying and classifying medical-related information on the web is not effective in providing the valuable information to the research community and also to the end user.

Navigation-Pattern-based Relevance Feedback (NPRF) as illustrated in [15] attained the high effectiveness of content-based image retrieval (CBIR) in coping with the large-scale image data. The iterations of feedback were condensed considerably by using the navigation patterns discovered from the user query log. In terms of effectiveness, the discovered navigation patterns of query refinement strategies such as Query Point Movement, Query Reweighting, and Query Expansion converged the search space toward the user's intention but not effective utilizing parallel and distributed computing techniques.

Personalized Ontology Model (POM) as illustrated in [1] learns ontological customer profiles from a world knowledge base and customer local occurrence repositories. Ontology model simulates users' concept which attempted to recover web information gathering. The performance by using ontological user profiles did not match the customer local instances with global knowledge base. On the other hand, huge volume of documents existing on the web may not have such content-based descriptors. Ontology based fuzzy video semantic content model as expressed in [16] used spatial and temporal relations in occasion and concept definitions. The meta-ontology definition provided a wide-domain applicable rule construction standard that permitted the user to construct ontology for a given domain but the extraction capabilities were not attained up to the level.

Ontology-based Question Answering (OQA) system as described in [2] dealt with multilingual capabilities, inter-domain portability and user information requirements. OQA system is not effective in controlling the queries and questions with some calculus as output. Also, OQA system did not contain user query formulation to exploit different kinds of sources. The conceptual prediction model as illustrated in [9] automatically generated a semantic network of the semantic web usage knowledge. Web usage knowledge is the integration of domain knowledge and web usage knowledge but the extreme comparisons on semantic query web-page recommendation systems were not performed.

VI. CONCLUSIONS

Structured Dominion Ontology Semantic Search (SDOSS) model matches the semantic content with the user given query. SDOSS model initially evaluates the syntactic and semantic on user query. The web search results more suitable to the user query are extracted after the syntactic and semantic evaluation during context analysis in structured dominion ontology. The search is made effective by construction of strong dominion ontology with the weight table. The weight table is used to compute the weight score and provide the relevance information from the web database. SDOSS model attains the performance improvements over other semantic information retrieval with the experiments conducted with various conditions using JAVA platform attain the average processing time, maximal matching quality, utility rate and precision ratio. The web semantic search efficiency is improved approximately by 5.397 % in SDOSS model with maximum description rate.

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