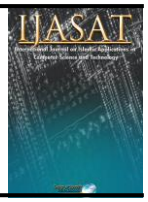

Ontology Based Knowledge Retrieval and Semantic Modelling of Qur'an with Contextual Information

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Abstract

Quran is the holy book of Muslims that was reviled on the last Prophet Muhammad (PBUH). It contains the complete code of life not only for Muslims but also for mankind. Quran is also a source of humongous information about science and technology as well. To gather the organized knowledge about Islam with all references and verses in one collective form, the basic understanding of Quran, its semantics and its lexicon is always the first step. For that purpose, ontology plays a pivotal role in gathering and presenting the Quran knowledge. Current ontology based semantic approaches show redundant and has numerous errors in delivering sincere concepts of Quran with multi-references and verses and not considering the contextual information. Furthermore, previous approaches only consider the Quranic information and its concept, without correlating the information about subject and its authenticity by giving the cross references of Quran with context. Learning about the Quranic information and its topics is extremely important and should deliver valid, sincere and authentic information. This paper is proposing a technique that helps in learning of Quran by utilizing the semantic based search approach with cross references about subject and context. For this purpose, an application is developed to form several datasets which link chapters, verses, words and concepts with their reference chapters, verses, words and concepts defined in Quran with the help of authentic books written by Islamic scholars and also by consulting different scholars. Then these datasets are transformed into ontology, which links up each subject with other related subjects and context so far, we had represented the following concepts: chapter, verse, word, pronoun reference, topic, location, living creation and event. Furthermore, an application is developed to run queries and perform different searches related to Quranic knowledge on this Ontology.

***Keywords*:** Quran Knowledge Retrieval, Semantic Web, Quran Ontology, Semantic Quran, Ontology and Search in Quran.

1. Introduction

Quran is not only a book of religious literature, but it is a huge source of information for everything like life code of conduct, science and technology and so on. For this reason, it demands learning and understanding. Quran has great information regarding science, therefore in the past few decades, Quran has been a hot topic of research among researchers.

The primary techniques used for the research and discussion of Quran are based on taxonomy, hierarchy or tree classification. These techniques are helpful in delivering the extracted information about discussed subject and topic or verse. But these old techniques do not link the interconnected topics or verses that are discussed in another place with its context, also the systems developed are not optimized and components are not well designed which results in lack of accurate answers for queries which leads to the research gaps (Utomo, Suryana, & Azmi, 2020). A systematic approach for understanding the Quran with conclusive references

and context to interrelate and present the ideas. Understanding the Quran requires appropriate learning and teachers, which is sooner or later difficult to be available continually. Nevertheless, by using data innovation, the understudies can learn and fathom the Quran effectively, especially through web and portable based applications. A technique used to learn about Quran is presented in a tree-based structure, which failed in delivering the complete meaning.

Moreover, it is confined to perceiving the real importance of the thought in the Quran (Utomo et al., 2020). Quran cannot be contrasted and regarded as a logical book in light of facts. Quran is considered as a wellspring of information on any topic concerning the world and the great beyond (Noordin, 2015). Currently, the searches and extraction of information from the Quran is either in inappropriate manner or not exact. The information extraction approach did not simply depend on information order. Thus, it failed leaving the real deficiencies in existing examination issues that identified from information extraction (SURYANA, UTOMO, & AZMI, 2018). Ontology utilizes classes, properties, and individual structure to speak to the semantics of Quran learning (Elsayed & Fathy, 2019). The semantic or idea is alluded to the progressive system relationship of division (ju'uz), section (surah), and verse (ayah) in the Quran. Ordinarily, the reference to the verses in Quran is characterized by division, section, and verse, which is the most essential advance in applying a philosophical approach to deal with semantic (Alqahtani, 2019). The semantic approach requires a well-characterization of Quran verses in data conception and innovation (Hakkoum & Raghay, 2015). An investigation showed that well-grouping of learning was characterized from the information foundation (Hakkoum & Raghay, 2016). In this manner, we are required to deliver a semantic searching methodology for Quran that depend on the Quran ontology in light of subjects. Then, is used to build the semantic seeking techniques likewise.

Now coming towards the question, why do we need to develop a link or connection among the division (ju'uz), section (surah), and verse (ayah) in Quran? There are various important reasons. Firstly, the information about a particular topic is not completely present in one chapter. The information is spread in different chapters. There are many verses in Quran that can be interpreted in many different ways (Utomo et al., 2020). There are verses which have different subjects at the same time. Moreover, Quran uses different words to specify one subject or scenario depending upon the context. For example, the word heaven is used as paradise and garden. A single term may have two different and sometimes contradictory meanings. The old techniques discussed above cannot even extract the information properly, so they cannot be used to build a connection among the Quranic data (Alqahtani, 2019) (Hakkoum & Raghay, 2016).

To overcome this issue, semantic based knowledge approach is utilized for information extraction from the Holy Quran. This approach consists of two steps. First, development of Quran ontology based on the classification of Quran by themes or subjects discussed in Quran. It is implemented in Web Ontology Language (OWL) (Afzal & Mukhtar, 2019). OWL is a set of languages that help to process the content of information. Secondly, use of Microsoft .Net framework for the final application development. The search approach was evaluated by recall and precision, which is an accurate way for the information retrieval (Elsayed & Fathy, 2019).

2. Research Background

In recent years, ontology has been developed to extract data from different domains and build a link between them. Ontology has become common worldwide web standard. The ontologies on web ranging from categorizing the data present on different websites to combining the

features of any product for sale. It requires a language for encoding the data so that it is understandable by the system. Ontologies have been developed in different domains to standardize their data. Ontology refers to as machine-readable definition of basic concept related to a specific domain and build a relation between them (Al-Sanasleh & Hammo, 2017).

Research in artificial intelligence (AI) proved that knowledge is critical for intelligent systems. Having a good refined data about a specific domain helps to solve tasks much more easily and algorithms works much efficiently. Intelligent systems require data (knowledge) that is processed, reused and communicated. All of these tasks are supported by the ontology.

2.1 Information Security

Ontology is based on thematic classifications. The subject is classified into different classes depending on the theme. Ontology building requires many steps.
1) Defining the classes in ontology.
2) The classes are arranged in the form of taxonomic hierarchy or metadata.
3) Object properties and data properties are defined.
4) Assign the values to the Object properties and data properties.

It is also useful to write down a list of words we would like to make statements about, or which help to explain the domain to the user (Allemang & Hendler, 2011).

3. Human Intentions Based on the Sharia

Ontologies good ability of concept hierarchy provide logical interference and expresses the relationship among different concepts. For the retrieval of information, the system must contain some knowledge to express the concepts and their interrelation. A reliable vocabulary is required by the system to describe the object, classes and also to link the corresponding metadata elements of them. It also requires an algorithm for the formation of metadata elements and their assignment to the corresponding concept. Some syntax is also required to mark metadata elements and their relation. Most importantly the search reasoning mechanism in the hierarchy. After fulfilling these conditions, the data is converted into machine readable form, which is the goal of semantic web (Ali & Ahmad, 2013) (Noy & McGuinness, 2001). Queries are executed as following (Qin & Paling, 2001):

- User select query related to Ontology.
- Take input from user, if user entered keyword from the concept of domain ontology, the keyword for the text differentiates into three kinds of query expansion.
- At this time statistic of frequency expands each query.
- The queries are sorted according to the use of frequency to facilitate the user selection and then search the query based on user selected search.
- If the user enters a keyword that is not present in the concept of domain ontology, then the query will not be expanded.

The query engine works like a brain, it gets queries from the user and then passes on the queries to its subsystem, where the queries are processed. It gets a query from the user application and passes it to "POS TAGGER." POS TAGGER is used to define parts of speech tagging. It mentions each word present in the sentence as verb, noun, adverb and adjective. It is also used to retrieve ontological knowledge from ontology extractor, to entertain the user's query. After the authentication of the concepts from concept validator, it is sent to ontology extractor for refinement of the knowledge (Deepak & Priyadarshini, 2018) (Chauhan, Goudar, Sharma, & Chauhan, 2013).

4. Unintentional Behavior under Islamic Perspective

The semantic web architecture (Wu, Ilyas, & Weddell, 2011) is shown in Figure 1:

4.1 URI (Uniform Resource Identifier) and UNICODE

The first layer is Uniform Resource Identifier (URI) and UNICODE. Unicode is an international standard for encoding, in which the letters, digits or symbols are assigned a specific numerical value. It can be used on the web using one standardized form. URI is a chain of characters that distinguish distinctive resorts or archives. It helps in the cooperation of data that are available over the web. Uniform Resource Locator (URL) is a subset of URI; it is a reference for the specific web asset or address. It happens fundamentally as Hypertext Transfer Protocol (HTTP) (Al-Sanasleh & Hammo, 2017). Another subset of URI is Uniform Resource Name (URN). It allows identifying an information resource without specifying locations. There is an international variant for URI that is IRI (International Resource Identifier). It allows the mapping of Unicode characters, which is defined by URI.

4.2 XML (Extensible Markup Language)

The second layer incorporates Extensible Markup Language (XML). It makes sure that there exists a common syntax for the semantic web. It allows a user to define their own language from a set of languages to view the documents on the web.

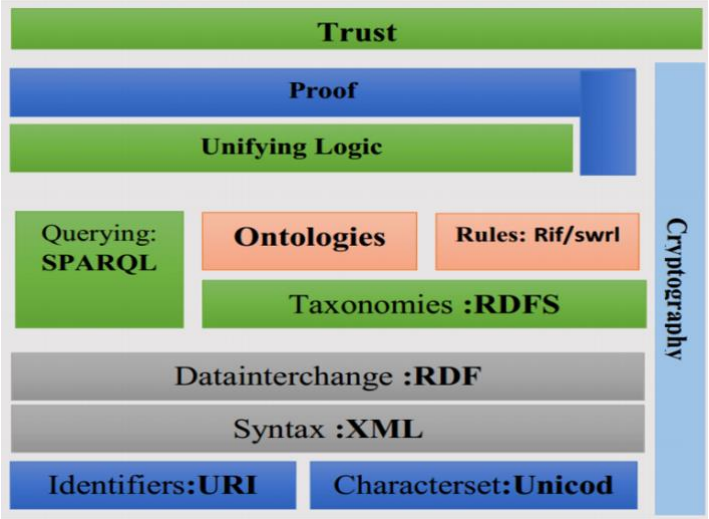

Figure 1. Semantic Web Architecture Diagram

4.3 RDF (Resource Description Framework)

An important data representation format for semantic web is RDF (Resource Description Framework). It represents data in the form of a graph (Al-Sanasleh & Hammo, 2017). It is primarily used for the representation of metadata resources like name, author or modification date, but it can be used to represent other data resources as well. It serves as a description of the graph in the form of triplets. It is used to describe a taxonomy of classes and properties that can also be used to create the ontologies.

4.4 OWL (Web Ontology Language)

Both RDF and OWL have their own ways to define the semantics. These semantics are used for conceptual reasoning and inference from the knowledge bases and ontologies that are described using these languages. To overcome the constraint of these languages, other

standardized languages rules languages are being used. RIF and SWRL [1] are these two standards.

4.5 SPARQL

For querying the data stored in RDF format in knowledge bases, SPARQL (SPARQL Protocol and RDF Query Language) language is used. It is a semantic query language. It allows extracting information from the databases. It also enables the manipulation and reuse of the data obtained from these databases.

5. How to Overcome Unintentional Security Behavior

The information is retrieved in two steps.

5.1 Knowledge Retrieval

Knowledge Retrieval Keyword based search algorithm gives bulk of irrelevant data, when queried. Therefore, it is an inefficient way of retrieving information from knowledge base. This limitation is taken out by introducing the semantic web ontology. The user query can even reflect differ interconnected domain. This can also be retrieved using semantic web techniques. Our basic interest is processing the bulk of information with in no time, analyzing the data and retrieving it on the basis of domain (Al-Sanasleh & Hammo, 2017). Words in a document are divided into three types:

1) Special characters like semicolon, coma, and other punctuation marks
2) The word that does not possess any meaning itself, for example, the, of etc.
3) Keyword used to rank a document. Information retrieval systems processes the data on the basis of spread of these types of words in the document.

5.2 Semantic Term Based Data Retrieval

There are three steps involved in retrieving the data solely based on the semantic term.

5.2.1 User Query Processing

Primary step of information retrieval is to understand and identify the user's query. It reflects the user's domain of interest. The user query may reflect multiple domains. After the removal of the unnecessary words from the query, the remaining are the conceptual keywords for the system. Semantic web techniques help to process the queries with more than one domain of interest on the basis of concept mapping. The keyword is compared with the other ontologic keywords that are converted into a text document, found in local repository. If the keywords are not found in the local repository, they are expanded using WORDNET ontology [2] (Kannengiesser & Müller, 2018).

5.2.2 Domain Ontology in Local Repository

The ontologies that describe real world problems are called domain ontologies. These ontologies can be created in protégé[3]. The most difficult task is the processing of domain ontology, when queried. It is executed in different steps. The first step is to linking the query term with the local repository classes (Kannengiesser & Müller, 2018) (Mannan & Sundarambal). In the second step, queried term is compared with all the classes using WordNet.

[1] https://www.w3.org/Submission/SWRL/
[2] https://wordnet.princeton.edu/
[3] http://protege.stanford.edu/

In the third step, if the relationship between queried term and the classes found, and is >= 0.8, then query term is selected. The process is described by the Figure 2.

5.2.3 Ontology Text Processing

Once the domain ontology has been selected, it is derived as a word document to treat it as semantic keywords. The semantic keywords along with user keywords are considered as a rank for the document. Large number of classes results in misleading the rank of document (Sadi et al., 2016).

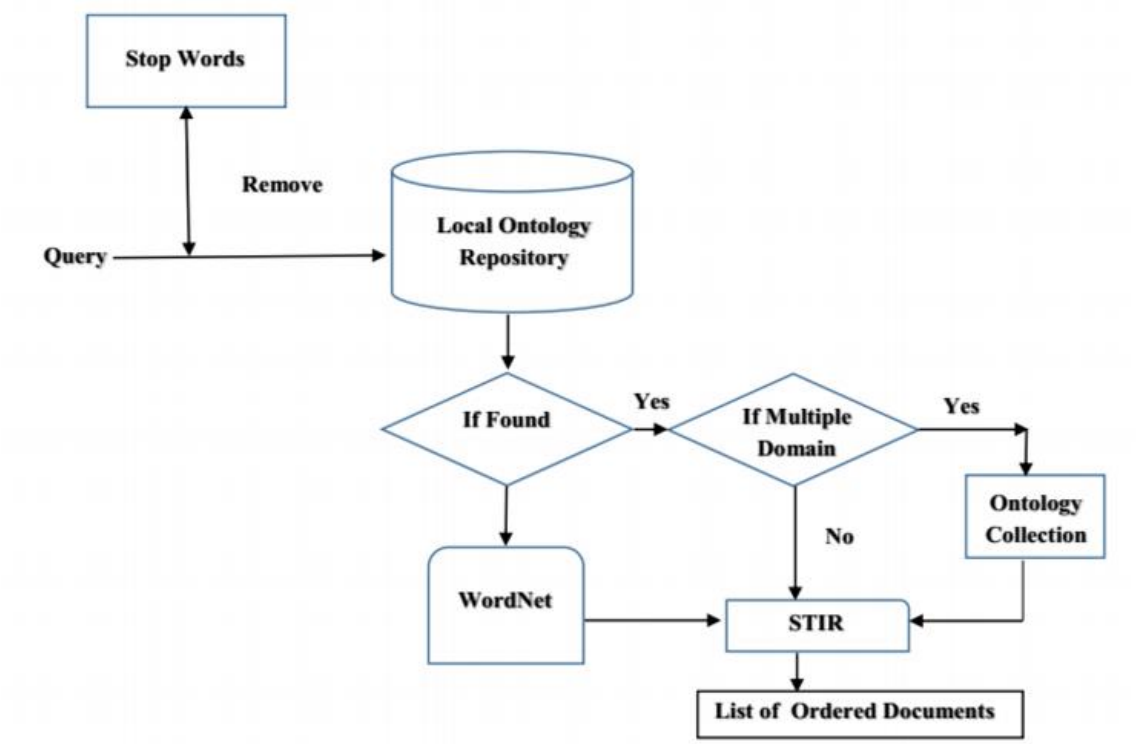

Figure 2. Triple Representation of verse

6. Knowledge Representation

Knowledge representation refers to the dynamic formalization of the knowledge and its processing. Ontologies is an emerging technique have enabled the machine to process and analyze data in conceptual way (Allawi & Iltayif, 2020). The system takes decisions on the basis of domain knowledge. Knowledge representation in artificial intelligence (AI) is an emerging area, systems apply reasoning and inferencing (just like humans) among data and then provide the machine-readable representation of the data. The system maintains and known as knowledge bases.

This learning base stores the images of the computational model as proclamations. The systems are relevant to the particular domain or area; then the reasoning is performed based on these symbols. Processing is done on the questions that are relevant to the domain (Ouda, 2015).

6.1 Ontology Based Information Systems (OBIS)

OWL, RDF, SPARQL are the web semantic standards that provide the whole infrastructure for querying a system (Abbas et al., 2013). The semantic methodologies offer a higher-level view than the previous relational databases due to their flexible SQL query language. It enhances data processing, exploration and reuse. There are two standards, W3C and R2RML, which are used to map the relational databases to the semantic technological landscape. An appropriate

tool creation is required for the implementation of semantic information landscape. The tool can access and extract the concise, authentic and meaningful analyzed information from the data.

There are two basic cases for Ontology Based Information System (OBIS) Framework. The first one is to go through and analyzed data in the virtual or real RDF databases. These databases include RDF databases that are the conceptual representation of the traditional relational databases. These databases also support the SPARQL endpoints that are used for the description of the data that is available. The second one is to manage the information system to directly store the data in RDF or graph databases and also creates a SPARQL enabled conceptual data store.

6.2 The Basic Working Scheme

OBIS starts with data ontology designing that reflects the structure of data present in the system. On web, OBIS framework creates a new application in the application manager. The user then fills the application with ontology namespace and data namespace (Sherif & Ngonga Ngomo, 2015). The user also chooses repository type and the available connection parameters. Once the basic application is stored in the application manager and data ontology is loaded, the data ontology is fully ready for execution. For the further exploration of data ontology, sorting and filtering are done through MS Excel. It provides an allowance to the user to select one or many links defined for the classes and a list of instances as well. Then a list of items that are connected to the instances is obtained through the specified links (Hakkoum & Raghay, 2015).

6.3 Searching in Quran Ontology

The knowledge representation in Quran is based on the classification of its content, its subject and domain theme. This classification should be understood by a human as well as by the system to maintain accurate semantics of Quran knowledge. The hierarchy and tree structure approaches give various definitions and elaborations of concepts but not provide any mechanism for the cross or inter-linkage of the data. Ontology structure represent the relationship of different subjects of the Quran (Allawi & Iltayif, 2020). The thematic approach is a more efficient way of learning. It allows the knowledge to be continuous and natural instead of fragmented.

Chapters and verses and the chapters that share the same subject are classified under the same domain. The ontology of Quran refers to the mapping of themes on the basis of keywords with the correct verses.

7. Islamic Ontology Based Development

The documents on Islamic knowledge on the web such as translations of the Quran, hadith, and so on are available as a normal text document. The problem with the data is that it is presented in bulk and it is not in machine readable form (Allawi & Iltayif, 2020). This is the reason a new approach is required to convert the data from human understandable to machine readable understandable format. This is achieved through ontologies.

7.1 Limitation

Quran, Muslims' Holy book is revealed in Arabic. Arabic has a vast vocabulary. Approximately 200 million people can understand and speak Arabic, yet there is a very less research on Arabic computational resources. Quran is a book that is read around the globe, but still, there is very less focus on Quranic search. Currently, there are few studies being held on applying the database linguistic techniques to understand the Arabic and in-turn improves

better concepts of Quran. There is no doubt on the fact that this book not only contains religious literature, but it contains information about all aspects of life.

7.2 Source of information

Focus on three things when designing an ontology-based application for the information extraction from the Quran. The verses revealed, the topic about which it revealed, and words that refers the interconnection of different concepts. To deal with all three thins, an ontology should be developed with the following prerequisites.

1) The verses should be explained using different other verses from Quran with context. The reason is that a subject in Quran is discussed in different chapter. It is quite possible that a subject is introduced in a specific verse but explained in any different chapter. If it is not so, then we can move on to hadiths to elaborate the subject.
2) If there are no hadith found, then explanation can be referred to the acts to beloved or companions of Prophet Muhammad (PBUH), as they were able to understand clearly those religious practices since they have witnessed the life of Prophet Muhammad (PBUH) closely.
3) If the explanation is still not found, the life of *tabi'in* (companions of companions) and *taba tabi'in* (companions of tabi'in) is considered.

7.3 Islamic ontology development

In the development of Islamic ontology, two basic components should be considered. The first and the most critical segment is the metadata segment, which is made from the scientific categorization of ideas. The second one is the attestation segment. It contains a specific representation of these concepts.

7.4 Document Pre-Processing

The meaningful interpretation of Quranic verses is generated on one layer of the semantic web architecture. It does not specify the hidden meaning of the verse. In Quran, a verse may divide into some phrases, separated with the help of commas. Some verses are interconnected. The same subject is discussed in many verses.

7.5 Domain concepts

To consider the concept domain, their traits and the relation among the other concepts are required. Extraction of the key terms, extraction of synonyms of that term, extraction of concepts, extraction of relations that may be taxonomic or non-taxonomic.

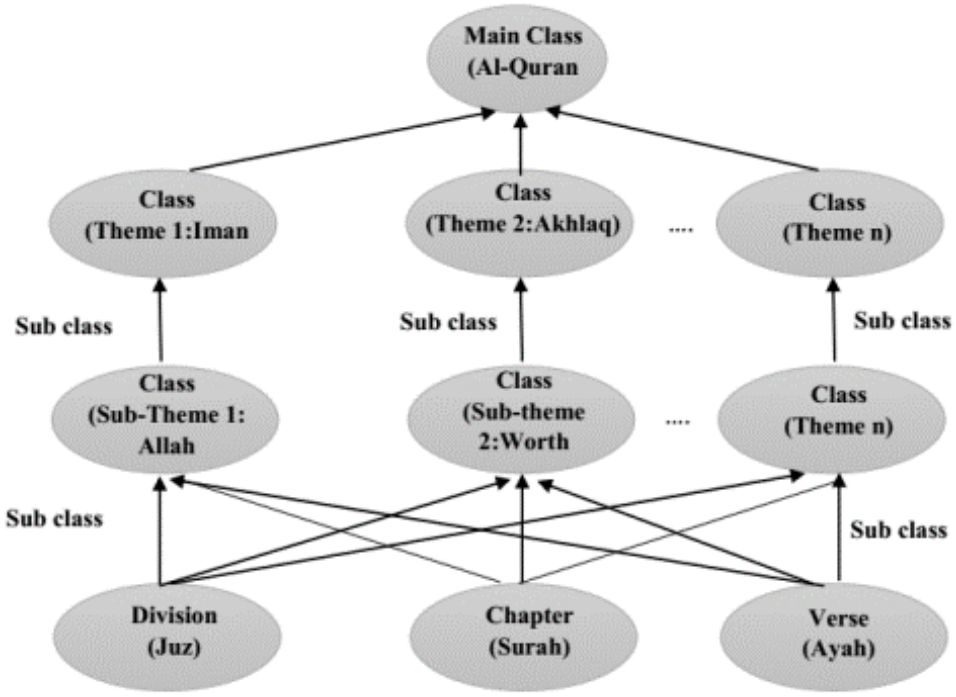

Figure 3: Quran Ontology Mode

7.6 Ontology Development

In order to develop the ontology, the understanding of formatting of Quran, text pattern and sources must be developed. Each document must be formatted in a different way relevant to the meaning of verse with translation interpretation.

The second approach to develop the ontology is through metadata, which initially develops the general ontological methods for Islamic knowledge. Then metadata for the relations is defined in the Fig. 3. However, this method cannot be implemented properly due to the fact that existing documents are not as text documents.

8. Quran Ontology and Knowledge Retrieval

Traditional approaches used for digging the information from Quran are given misled or incomplete information. The following research paper sheds light on these major flaws and provides a better approach of knowledge retrieval based on ontology. Ontology makes use of classification and distinguished formation to speak to a semantic web of Quran. The semantic insinuates as the chain of significance of division (*ju'uz*), section (*surah*) and verses (*ayah*) (Allemang & Hendler, 2011) (Ahmed & Atwell, 2016). Often references in Quran verses are characterized by sections and divisions. The searching of information in Quran involves a grouping of verses in scattered data. Tests shows that proper grouping of information characterized from the appropriate grouping of concept.
The motivation behind this paper is to create a Quran philosophy in view of topics or subjects and to characterize semantic looking strategy.

9. Quran Ontology Model

To demonstrate all the constituent of Quran in a semantic way and create a path by ramifications mapping of subjects on the related verses of Quran, shown in Fig. 3. Figure shows

the Quran ontology structure such as classes, themes or subjects, relationship among the themes and the individual verses are defined in Table 1 and Table 2 shows all the Ontology classes statistics. The model of Quran ontology can be defined as follows: Quran Ontology Model = (CT, CS, P, I1, I2, I3 … In), where:

CT	Class for principal topics in Quran
CS	Class (subclass) for sub-subjects in Quran
P	Properties for connection between classes to another class/sub-class
I1, I2, I3 …In	In In – Individual for verses that alluded by the subject

Given the subjects of Quran learning, the Quran philosophy can be built utilizing CT, CS, P and I1, I2, … In. this class is built enemy each fundamental idea or topic and in addition sub-subjects. In any case, property P is made for the space of P which sets to the class comparing to the essential idea of CT and CS. Every connection of P is a characterized class that is made. The class that is made is characterized in the frame: Cp C1 C2 … Cn, where C is the class that speaks to the idea that is mapped to property P. Each class Ci is gotten from a subject or sub topic.

Table 1. The Quran Ontology Structure

TERMS	**ONTOLOGY STRUCTURE**	**QURAN KNOWLEDGE THEME**
ROOT	Main class	Quran
THEME (S)	Class/ Subclass	Iman(Faith) , Akhlaq (Morality)
SUB THEME (S)	Class/ Subclass	Iman ALLAH, Hari Akhri (Last Day, Judgement day), Kitab (Book), kitab Allah (Book of ALLAH), Malaikat (Angel), Masalah Ghaib (Unseen Issue)
DIVISION, CHAPTER, AND VERSE	Class/ Subclass	Para Nabi dan Rasul(By way of a prophet Dan is a messenger), Akhlaq (Akhlaq yang tercela, Akhlaq yang terquji)
RELATIONSHIP	Property	Link between classes to classes, classes to subclasses and subclasses to subclasses. Example: Iman (class), wajib (Obligatory to) (Sub class) Hari Akhir (subclass)

Table 2. Ontology classes statistics

Class	**Instances count**
Topic	1811
Chapter	114
Verse	6236
Word	77,430
Pronoun	24,674
Pronoun Reference	852
Living Creation	234
Location	69
Events	219

10. Methodology

A detailed analysis of Web Ontology Language (OWL) is essential to discuss before talk about the methodology. Ontological modelling is devised with a goal of enlisting all the concepts of specific domain in hierarchical manner, so that the relation between the super-class and sub-class remains well-defined. It also develops the relation between these concepts (Abdelaal & Md Rashid, 2016). This knowledge representation helps in logic-based formalism. The present version of OWL is OWL2 (Tashtoush, Al-Soud, AbuJazoh, & Al-Frehat, 2017). In case of the modelling of Quran, we followed the below mentioned steps:

- Gone reading through the Quran thoroughly many times. Quranic translation in English was used by Sahih International.
- Found all the verses related to the domain “Nature”.
- Filter the verses, where the nature used as a metaphor.
- Developed the system to extract the concepts and keywords and making their relationships with each other.
- First created RDF triples based on filtered data, then ontology was built using these RDF triples.
- Used SPARQL to make queries to the ontology to check if it finds the relevant verses or not. When it worked the test, ontology was converted into a complete full-fledged ontology.

We read Quran couple of times, understand the meaning of each given verse, and went through some referential books to see what it really meant and its context. Then we collected the verses of our own desire, filtered them and made a cross check of these verses. Next triples were made per the verses. Each nature related verse is divided into a core concept and a relationship since three times, are made up of concepts and relationships. Then for the physical implementation of our model we used OWL and RDF, protégé OWL editor. We have compiled all these concepts under OWL basic concept. We have also created some sub categories, as Allah, City, Holy Book, Quranic Nature, and Quran Verse.

Our main working classes are Quranic Nature and Quran Verse. Under Quranic Nature, subclasses are Astronomical Bodies, Artifact, Food, Landscape, Living Being, Minerals, Signs of Allah, Super Natural, Time, and Weather.

These subtypes have even further subtypes. Quran Verse contains the verses number as it subclasses. These verses have association with Quranic Nature's subclasses. Ontology classes and objects Properties are mentioned in Figure 4. The code is available on GitHub[4].

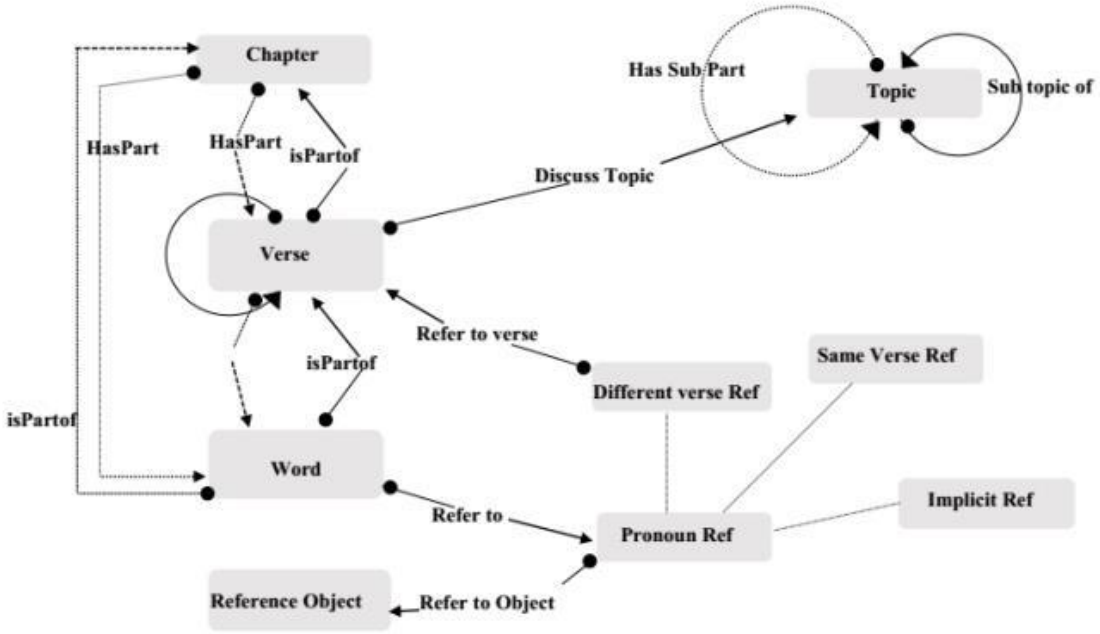

Figure 4. Ontology classes and objects Properties

We have assembled Allah, City, Holy Book out from the Nature of Quran because of their specialty, but they have a relation with the nature of Quran. To relate the concepts of Quranic nature with the Quranic verses we likewise have utilized some converse connections (Object Properties) called has part and is a piece of, shown in Figure 4. For instance, in section 2, verse number 50 it is stated:

"*And [recall] when we parted the sea for you and saved you and drowned the people of Pharaoh while you were looking on.*"

In this way, we have separated ideas and connections and made triple as shown in Figure 5.

[4] https://github.com/raheelmarx/

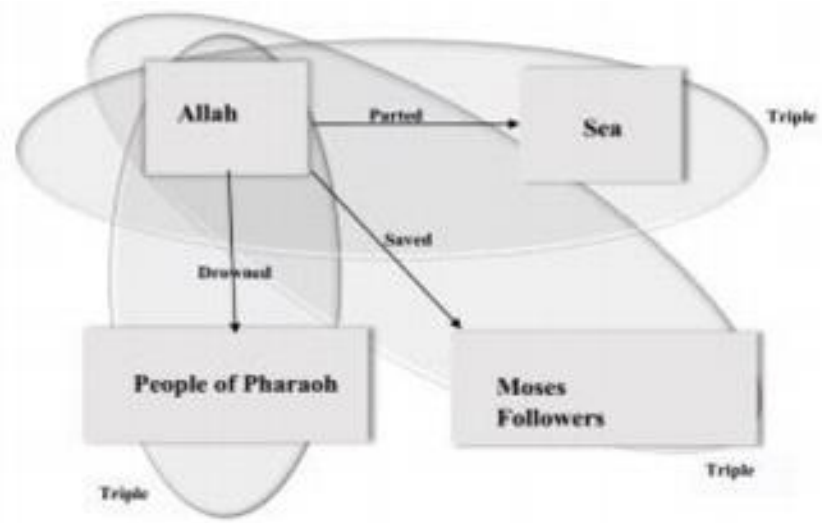

Figure 5: Triple of verse 2:50

We have taken strong parts as thoughts (classes) and the partner word between two segments as relationship (Object Properties). Along these lines, this is as of late the fundamental learning triple and we relate this data with the verse/verse-number using *hasPart* and *isPartof* relationship as in Figure 6.

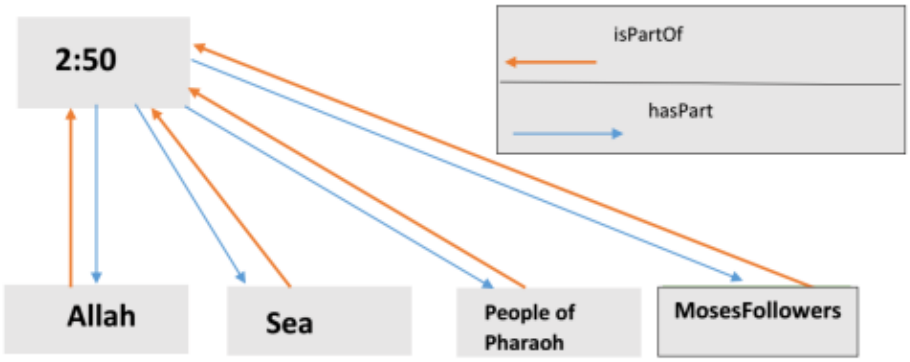

Figure 6: Triple Representation of verse 2:50

11. Evaluation

To assess the importance of the pursuit instrument, we will begin by examining an example search inquiry, at that point we will execute a bunch of explanations and afterward assess the outcomes by contrasting them and other examination tools. For the example question we will utilize a two words inquiry: “Cave Man” and got the following outcome, (see Table 3).

Table 3: Experimental Results

Word	33 results
Root	13 results
Synonym	0 results
Topics	16 results
Pronoun	11 results

By dissecting the outcome, we find that the question by pronoun gives the most important outcome on the grounds that the inquiry by word or by root discover the sections that contains just single word of the inquiry in this way a portion of the returned verses discusses various subjects.

To see the advantage of the semantic methodology, the same query had been executed for some most popular Quran search tools and results are as under. Quranicresearcher and quran.ksu.edu.sa depend on precise word search so they don't discover any outcome when we utilize a question with numerous words. Altafsir.com utilizes furthermore of looking on Quran text it investigates distinctive Quran explanations. Quran.com utilizes various types of the words and it searches consistently for all the words utilizing the Quran text and a huge arrangement of Quran explanations. Alfanous.org permits to remember various structures and equivalents of the word for the inquiry cycle.

We note that when we search with numerous words, we don't regularly discover verses with all the catchphrases, in the other hand looking by pronoun and topic is more exact and returns the most precise outcomes.

12. Conclusion

Quran is the most blessed book on the planet for all Muslims. For exploration and extraction of information from Quran intensifies the need of authentic and reliable search engine-based applications based on keywords, sentences, or topic. The information present in the Holy Quran is scattered and extracting information from it with certain context requires a strong framework. The previous methodologies that use keyword search do not help to extract information with cross references and contextual information. The proposed approach fills this gap and it comprises two sub-parts: improvement in Quran ontology, and improved semantic search algorithm with contextual information.

Quranic ontology refers to the retrieval of information from the Quran, based on keyword. So, we use this ontology in linking the interrelated information that is spread in different chapters of Quran. Our approach achieves the more rigors Quran ontology, and also expedite the query searches. To support the analysis, the query searching methodology has saved the Quran information with relevant contents and context with acceptable accuracy.

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