A Study on Semantic Network Model for Multimedia Big Data

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ABSTRACT
Semantic link network arealso called as semantic data model.

Which is used to manage various web resources and different types of semantic relations among them. The web resources are represented by the nodes, and the semantic relations of the different types of nodes are represented by the link, that is how they are similar to each other. As on the World Wide Web there are more contents which are accessed by searching the different types of multimedia resources thus the e-learning concept is used by many schools and colleges so there must be some mechanism which gives the accurate result.

A self-organized semantic data model is used to organize the resources and also the loosely coupled data to aquery. This paper proposes to reviewthe different techniques for multimedia resources semantic linking. Also it used to automatically discover the different semantic nodesin the whole network which is of semantically linked to each other resources because of that resources operations can be executed. Semantic relations are automatically discoveredin the whole network which contains resource by which all the queries can be given and result is obtained.

General Terms
Semantic, linkeddata, nodes.

Keywords
Semantic links, Big data, Multimediaresources,Reasoning rule.

1. INTRODUCTION
Now a days the web contains large data so there are lots of multimedia resources. Semantic Web aims at extending the current Webby adding semantics and reasoning mechanisms to support intelligent applications Connections among web assets are necessary elements of the Semantic Web [10]. Wise application can recover more helpful data from semantic connections. The document situating is a critical piece of standard web crawlers, in semantic web crawler's relationship positioning play anessential part for the Semantic Web [1].

Among the conceivable models for the Semantic Web, Semantic Link Network (SLN) is a semantic information model to oversee Web assets and semantic relations between assets. Its hubs speak to Web assets and its semantic connections speak to semantic connections.SLN model can bolster social using so as to think an arrangement of thinking standards [11]. New semantic connections can be determined by thinking principles. Numerous researchersabout have focused on the hypotheses and uses of SLN model in recent years. A conveyed development and sharing component was suggested [12] and also produce for building SLN in joint effort. A programmed revelation methodology of semantic connections among archives has been created in [13]. The related relations between records were talked about on the pivotal word level, while relationship between the subjects was employ to boost intelligent searching.

2. SEMANTIC LINK
In order to do semantic linking various work has been done some of them are

2.1 Instance matching techniques
2.1.1 Reasoning association among relationship
2.1.1.1 Finding reasoning associations
Two kinds of elements are contained in the SLN they are: semantic nodes and semantic links. Abstract concept is a semantic node. A Semantic link is a directed edge which is attached to semantic relation types between two semantic nodes. The reasoning associations between the semantic links are reflected by the reasoning rules.Suppose types of semantic link in the SLN are α, β and.γ.The γ reasoning associates with the α and β if there exist a reasoning rule $\alpha\times\beta\rightarrow\gamma$ in the reasoning association graph let α and β be the types of semantic link then if α reasoning relevant to the β if it consist the directed path from the β to α.

2.1.1.2 Calculating reasoning association Degree
The SLN graph is formulated between the semantic link types by the reasoning association which is called as reasoning association graph. The semantic link reasoning rules are used to decide the reasoning association graph of semantic link. In the reasoning association graph there aretriangles which are related to the reasoning rule, the reasoning preconditions are displayed by the dashed arrow and semantic link reasoning association are shown by the solid arrows. Also the reasoning graph can be converted into Bayesian networks which are the specific type of graphical model [1].

2.2 Annomation and sugartube
2.2.1 Annomation
Means using the vocabularies which are defined in the Linked Data cloud are used to annotate the video resources which allow users to semantically annotate.

2.2.2 Sugar Tube
Which is used to allow different users to browse the educational video resources which are semantically linked from different network resources with web information. In this method the linking of information is done to the

knowledge net. The relations are there for linked data. The different ontology based languages are used which are RDF and OWL which are used to describe different experiential concepts and also the relations. The linked data is used to describe videos dynamically and precise singular relations among the distinct features are made. The e-learning, searching is improved by this relations [2].

2.3 Semantic data mining and reasoning layer

The mining and reasoning processes are:

2.3.1 Syntaxparsing

It is basic reasoning process.Syntax based keywords are matched with URI identifier from open data cloud by syntax parsing. For place syntax parsing the Genome service is used and for person syntax searching the World History service is used Example if the search word is given that "Cap Canaveral' then the Genome RDF service is activated to search 'Cap Canaveral' string.

2.3.2 Annotation inferencing

The searching result can become more accurate with the help of reasoning annotation processing. This uses the tree structure of ontology semantic annotations.

2.3.3 Reasoning mechanism

The reasoning mechanism is developed by which the browser can show the semantically relevant content which is related to the current browsing [2].

2.4 Aself-organized semantic data model

2.4.1 Primitive semantic space

It is used to determine the semantics of semantic links, the classification tree are used to representtherelations, reasoningrules, data types. The root concept is there in classification tree which is classified by its sub concepts. In an SLN there is a semantic node which can be represented as name, field or schema.

2.4.2 Metric space

The matric space is used to value the semantic nodes also it is used to value the semantic links. The value of semantic link contains the following factors;

1. Two ending nodes value 2. The time at which it occurred in the SLNand 3. It is participated in the reasoning.

The probability over SLN is also determined by the metric space.

2.4.3 AbstractSLN

The abstract SLN contains the abstract semantic nodes and the abstract semantic links thus with the help of abstract relations they are connected.

2.4.4 Instance SLNs

The Instance SLN contains the semantic nodes and also it contains the links which are instantiated from the abstract SLN.Several SLN instances can be generated by the abstract SLN.Thus it can be generated by instantiating semantic links and semantic nodes [3].

2.5 Operations of SLN

1. All the semantic nodes are located and are linked to the node. All nodes are displayed if all nodes are linked to the given nodes.

2.For a given node which is belongs to, the semantic community is located

3.For a setof node which is belongs to, the semantic community is located

4.For a semantic link which is belongs to the semantic community is located

5. For a given pair of semantic nodes locate the semantic path

6. The semantic community has been located that includes semantic community and semantic node.

7. The semantic link is deleted. If the semantic link is inserted then the semantic link which appeared in the SLN is deleted. If the semantic link and the two semantic nodes are inserted then the semantic link belongs to two semantic nodes is deleted.

8. The semantic link is added to the SLN, which is added to the two nodes.

9. The remote semantic node in the SLN is deleted.

10. For the SLN the semantic link is added. The semantic node, semantic link and target semantic node are consider in the SLN and the semantic link is added between the semantic node and target semantic node [3].

2.6 Automatic Image Annotation

Automatic Image Annotation means for the digital images or tags or keywords the metadata is automatically assigned in form of captions by the computer systems.

Using annotations and semantic tags the searching techniques for image are working. Inthis training dataset is loaded into the system to process the input image. The image get split into number of images on the basis of scaling with red,blue,green and another colors histograms. Then by using datasets this images are compared and the unwanted features in the images are left unnoticed and similar features if present then the tags are added and tags are annoted automatically are retrieved back [4].

2.7 Instance matching techniques

2.7.1 Value matching

This is used to identify equivalence between values occured.Thus it is determine whether the two values are same.The output is produced by a giving score which denotes the degree of equivalence between two values. For the instance matching the value matching act as buildingblocks.

2.7.2 Individual matching

In this the establishment of link is done between two resources and the main goal is matching similar resources. The different resources are defined with their properties and their relations with another resources. The individuals are described by their relations to others and also there properties.

2.7.3 Dataset matching

From the two datasets the pair of individuals are taken along with their attributes and the decision is taken that whether they are equal or not. Thus the mapping between the two dataset is done for analyzing, in this pairwise matching of individual is done [5].

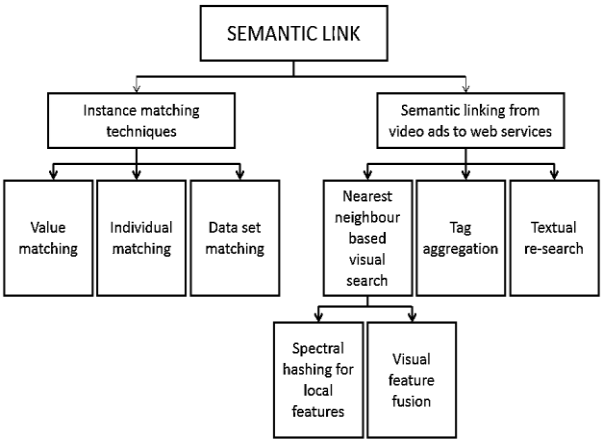

Fig 1.Semantic Link Techniques

2.8 Semantic Linking From Video Ads To Web Services

Images which are displayed as a result on the first few pages are only correct. Also the same images or scene may appear in a large number of varieties of the appearance. Thus the semantic link between the video ads and the web services is build.

2.8.1 *Nearest Neighbor Based Visual Search*

To search the related images which are collected from the web the stable global feature and also the local key points are used. The Naïve Bayes Nearest Neighbor (NBNN) classifier is involved for searching the visually appeared similar images.

2.8.1.1 Spectral Hashing for Local Features

With massive scale dataset of native options the combine wise similarity search is process impractical. The basic plan is to formalize information as a graph ,therefore one will get closure to neighbors by hashing the query and retrieving parts projected into same holder.

2.8.1.2 *Visual Feature Fusion*

The linear weighted voting is the intuitive way for fusing the visual features, hence as all features are not useful so the weight must be dynamically adjusted. Example for cell-phone shape feature is important rather than the color feature. Hence the feature selection for the each query is dynamically adjusted.

2.8.2 Tag Aggregation

Whatever result is displayed In that there are different kinds of images. Thus for refining the result the context text information is used. Thus two types of tags are used, identification tags and other tags. The tag aggregation is done by the former. Thus the k-lines clustering algorithm is selected for organizing the identification tags into semantically uniform clusters. By using vector space model the similarity matrix of tags are computed and TF (Term Frequency is selected.

2.8.3 Textual Re-Search

While doing the content based search the semantic gap between the visual search and real semantics are limit to the application. The textual re-search are selected with the tags of the top-n classes which is provided by the process of clustering. Then many keywords for the textual re-search are selected. By using the common weighted technique TF-IDF (Term Frequency–Inverse Document Frequency), the salience score of each word is calculated.

From the top ranked words the key words are selected and are involved for the textual re-searching the tag database for selecting the product images which contains most similar tags [6].

2.9 Integrating Content And Link Similarity

This is an alternative way for approximating the semantic similarity which is based on integrating the content and similarity of the link. Thelink between pages isthere in that the importance of the link on a path is adjusted using weighting factor. For that the link IDF value is used to discount the similarity if and only if link is pointed to page with more in links. Secondly the lexical similarity is used between the all pages for weaken the importance of that links, those links which are connecting the pages with the low content similarity [7].

2.10 Schema Reasoning Of Citation Semantic Link Network

The reasoning is divided into: basic and global reasoning. Basic reasoning are used to deduce the citation relationship among the nodes, but citation relationship of two semantic nodes of the CLSN can be deduced by using the global reasoning. In CSLN there can exist a semantic path between two nodes if and only if the citation semantic relationship for the two nodes are there. To deduce the citation semantic link path the reasoning rules are used. The global reasoning is the recursive reasoning process, so whatever the citation semantic relationship is there is need to be deduced again only when new citation semantic relationship is deduced. Semantic searching and retrieval is done between the semantic nodes based on CLSN [8].

2.11 Methodology to generatesemantics for links

2.11.1 Representing images as semantic graphs

The different techniques havebeen developed for representing images example segmentation graph and relationship graph. This are more helpful for image processing.Quadtrees are used for representing images and are display as a tree In quadrant the image is divided into 4 quadrants which are of equal size. Again each sub-Quadrants are divided into 4 sub-quadrants the process is displayed as a pyramid model. There are 4 pre-defined quadrants for the locations of the quadrants, this is used to describe the relative relationships to form the links in the network supporting semantics and also the links. Until the required unit blocks property are achieved the process of division is continued recursivelly.The extent limit of the distribution over an images is the last limits of the quadrant divisions. The quad tree of an image is obtained, then the graph is generated for describing the image by the means of structural information for example relationsbetween the different objects.

All the leaf nodes represents the nodes of the graph in the quadtree with their attributes. Links are used to represent the neighborrelations between the unit blocks. The characteristics of the key point in that region are described by the node and link.

2.11.2 Approximate Kernel Matching

The PMI that is Point Wise Mutual Information is used to quantize dependency also the association between the visual words on their co-ocurrences.The semantic of visual vocabulary are automatically learned with the help of diffusion maps. To measure the semantic similarity between

different nodes the substitution probability is used for doing the accurate comparison of the node and the edges. Then those attributes that are associated with the each node in the SLN for that two different visual word labels are handled.

Depend on the co-occurrences of the words if the two different words are independent then there co-occur is given by product of probability distribution and if they are independent and they will co-occur then there joint probability distribution is more than former [9].

3. CONCLUSION

Now a days there are lots of multimedia resources being generated and to organize this data is a challenging task. This paper is a review on various methods which are used for organizing multimedia resources to facilitate accurate retrieval result. Thus the semantic link network techniques are studied which are important to retrieve the accurate result from web.

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