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Ontology Based Searching Techniques In Web Environment

M.Florence Dayana^{*1} and R.Rathna Deepa²

¹Department of Computer Applications, Bon Secours College for Women
email: florencedayana@gmail.com¹

²M.Sc Computer Science, Bon Secours College for Women, Thanjavur.

ABSTRACT

Ontology infers the relationship of elements dependent on its conduct and gives a typical vocabulary to furnish a common conceptualization of space with formal and express detail. Semantic Web upgrades the present Web to the cutting edge in which machines are improved to comprehend the importance of information as opposed to perusing the information, defeating the present issues of Web. Semantic Web Mining coordinates Semantic Web and Data Mining, which are the two approaching territories of research. Semantic Web utilizes Ontology as its key element to characterize the semantics of elements. This paper introduces the design and key layers of Semantic Web, Structure and Operations of Ontology and the working of RDF, Ontology and Semantic Web Rule Language with a commonsense Scenario.

KEYWORDS: Ontology,conceptualization,commonsense scenario

***Corresponding author**

Ms.M.Florence Dayana

Head & Assistant Professor,

Department of Computer Applications,

Bon Secours College for Women

Email: florencedayana@gmail.com¹

I. INTRODUCTION

To give a superior method for interoperability, numerous arrangements, devices and utilizations of Semantic Web innovations have as of late made accessible and its Intelligence is utilized in the fields of Education, Health Science, Ecommerce, and Artificial Intelligence and so on... This paper portrays the significant phrasings of semantic web and ontology in detail. Semantic Web elevates Web to work in a way that speaks to data all the more seriously for people and PCs too. The significance of semantic web rose to beat the shortcoming of the present web. "It empowers the depiction of substance and administrations in a machine-decipherable shape, and empowers commenting on, finding, distributing, promoting and creating administrations to be robotized and changes from machine-coherent frame to machine-justifiable form". Ontology goes about as a vital job in Semantic Web. Ontology depicts data by its temperament of being or presence of substances. It makes a mutual comprehension of normal spaces and works in settling the issue of interoperability between frameworks, items crosswise over various associations. . It is an expansion of Web through benchmarks by the World Wide Web Consortium (W3C). The Semantic Web is named as the Web of Data that gives a typical system enabling information to be shared and reused crosswise over application, endeavor and network limits. WEB 1.0: It allowed us only to search for information and read it. The client cooperation and substance commitment was .Tim Berners-Lee considers the Web1.0 as "read-just" Web. Web 1.0 was alluded as the original of Internet. Web 1.0 was essentially characterized as Web containing static pages and utilized for substance conveyance reason as it were. Extremely constrained. WEB 2.0: It allowed us only to search for information and read it. The user interaction and content contribution was Web 2.0 is the Second Generation Web. Web 2.0 is called as People-centric web and participative web. Web 2.0 facilities reading and writing on the web which makes the web transaction bi-directional. It encourages Participation, Collaboration and Information Sharing. Web 3.0 is designed to be an Intelligent Web that is focussed to overcome the current drawbacks. WEB 3.0: Web 3.0 is a semantic web which refers to the future web. In Web 3.0, computers can interpret information similar to humans and intelligently produce and distribute useful content customizing to the needs of users. "The Semantic Web provides a common framework permitting data to be shared and reused across different applications and enterprises. Table.1 presents the comparison of Web1.0, Web 2.0 and future Web, Web 3.0. Web 3.0 is the Third Generation Web. Web 3.0 can be also stated as "executable Web". Web 3.0 is to define structure data and link them in order to make more effective discovery, automation, integration, and reuse across various applications.

II. METHODS AND MATERIAL

Related Work R. Rubini and Dr. R. Manicka Chezian made a near report on the positive development of Web from Web 0.0 to Web 5.0. Auna Gerber et al. talked about in insight regarding Semantic Web, Web Ontology and its advancement procedure. Ian Horrocks talked about the capability of the Semantic Web and its future, trusting Semantic Web can help the advancement of human learning overall in future. Mohammad Mustafa Taye gave a diagram from the advancement of the Web from Web 1.0, Web 2.0, Web 3.0 and Web 4.0 and their qualities were likewise portrayed presuming that the Web is moving towards a savvy way. R. Akil Sindhu and Dr. R. Manicka Chezian gave an investigation on Search motor design, instruments and distinctive methods for age and improvement of Search motors. T. Berners-Lee et al. dissected the distinctive variants of the semantic web design and the one of a kind highlights of each layer. K. Vanitha et al displayed the upsides of Semantic Web over the present methodology with numerous models delineating grammatically with OWL and RDF linguistic uses and portrayed the highlights of the Web Ontology Languages introduced numerous important terms of Semantic Web and Ontology so as to give an essential comprehension of the hypothesis and applications depicting the Ontology structure and interoperability capacities. Nupur Choudhury

METHODOLOGY The Semantic Web is appropriated and heterogeneous. It has conveyed the advancement of the Web to a more elevated amount. Tim Berners-Lee, who developed the World Wide Web, has taken a shot at the Semantic Web expressing "Semantic Web is certifiably not a different Web yet an augmentation of the present one, where the data is given in a very much characterized importance, improving to make shared condition for PCs and individuals to work in collaboration. Consequently, Semantic Web means to make data accessible on the Web reasonable by people and PCs centering to improve its ease of use as a vehicle of cooperation and to guarantee its substance can be comprehended by machines. Web Services use HTTP to show the substance of a page while Semantic Web centers to produce machine intelligibility by semantically speaking to the data or data in assets.

- i. URI: The Uniform Resource Locator is the subset of URI which is the Uniform Resource Identifier. A URI typically describes the mechanism to access the resource by assigning unique names to the resources.
- ii. Unicode: Unicode provides a unique number for every character using 16 bits per character to represent 65,536 (2^{16}) unique characters. It is the standard computer character representation.
- iii. Extensible Markup Language: Extensible Markup Dialect (XML) characterizes a lot of tenets for encoding archives in a configuration which is both intelligible and machine-lucid. It is

characterized by the W3C's XML 1.0 Particular. It is utilized for exchanging information over the Web. It gives adaptable content arrangement and utilized in various Programming improvement exercises.

- iv. Logic: The building of the system is done based on the logic provided by the structure of Ontology.
- v. Ontology Vocabulary: Philosophy is a dialect which gives a typical vocabulary and language structure for distributed information, giving a semantic depiction of the information. Philosophy can be characterized as a gathering of terms used to depict a particular space with the capacity of induction. By and large it is called as a determination of a conceptualization". Cosmology centers area information and makes semantics expressly conventionally. It empowers interoperation between Web applications from various zones or from various perspectives on one territory.
- vi. Rules: Rules Interchange Framework (RIF) is added in the third version of Semantic architecture's layer. RIF is made as a draft specification for a rule language under RDF schema and ontology as its base. Semantic Web Rule Language (SWRL) is initiated by W3C as a Rule language is required above Ontology.
- vii. SPARQL: Simple Protocol and RDF Query Language is a query language similar to SQL used for querying RDF data.
- viii. Trust: Trust concerns the trustworthiness of the information on the Web to confirm the assurance of its quality.
- ix. Metaphysics Vocabulary: Philosophy is a dialect which gives a typical vocabulary and sentence structure for distributed information, giving a semantic depiction of the information. Philosophy can be characterized as a gathering of terms used to depict a particular space with the capacity of induction. As a rule it is called as a particular of a conceptualization". Cosmology centers space information and makes semantics unequivocally conventionally. It empowers interoperation between Web applications from various regions or from various perspectives on one region.
- x. The Resource Description Framework (RDF): Resource Description Framework is a simple modelling language providing a standard model for data interchange on the Web. RDF generates the linking structure of the Web to use URIs to name the relationship between things as well as the two ends of the link which is usually referred to as a "triple". It uses URI to identify the Web resources and forms a graph model describing the relation between the resources. Resource Description Framework Schema has been added additionally with RDF

as a layer in the later versions. Fig.1 presents the key layers of Semantic Web Architecture and its growth from Version 1 to Version 4 along with its layers.

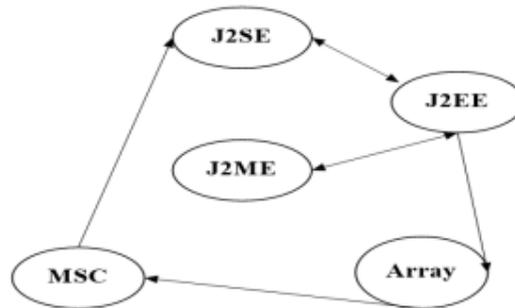


Figure 1. Resource Description Framework

It is additionally utilized in information the executives applications. The RDF data model's methodology is as Subject-Predicate-Object articulations. These articulations are triples including Subject-PredicateObject speaking to the connections between two assets, the first being a Subject and the other one being object and the connection is considered as Predicate .Object is delineated with a precedent and it is triplet shape is displayed as a table. The Resource Description Framework (RDF) is a metadata data demonstrate having a place with group of World Wide Web Consortium (W3C) details . It is utilized as a general technique for theoretical depiction or demonstrating of data that is connected in web assets, utilizing an assortment of sentence structure documentations and data serialization positions. Subject Predicate Object MSC Has subject J2SE MSC Has subject J2EE MSC Has subject J2ME J2SE,J2EE,J2ME Has chapter Arrays MSC Has programs Arrays This is accomplished by giving extra importance to increasingly "uncommon" assets, including rdfs: Class, rdfs: subclassOf, rdfs: subPropertyOf, rdfs: space and rdfs: go the rdfs: Class asset is the class of all RDF classes. A gathering of RDF proclamations are a named, coordinated multi-chart, depicting the connection between the assets. Fig.2 gives the example RDF portrayal of the substances: Programming Books, Books and its ISBN Number. RDF is a unique model with a few serialization groups (i.e., document positions), henceforth the manner by which triple is encoded fluctuates from organization to design. RDF Vocabulary Description Language (RDF Schema) stretches out RDF to incorporate the fundamental highlights required to characterize Ontologies.

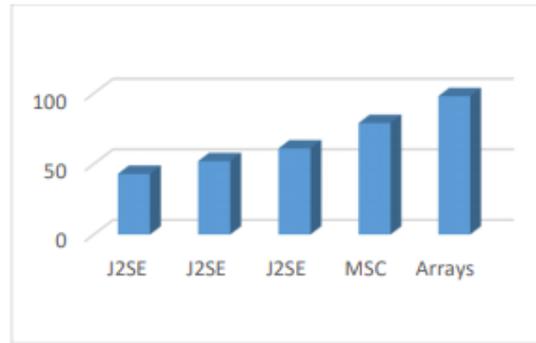


Figure 2. Bar Chart

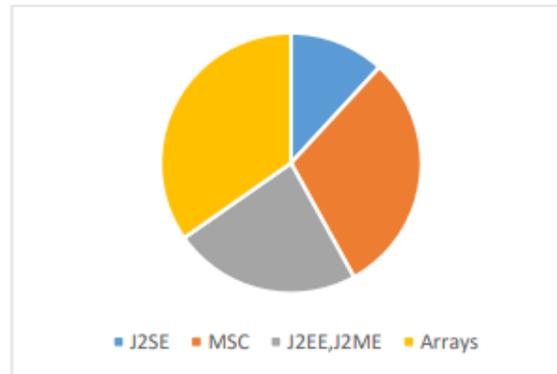


Figure 3. Pie Chart

III. RESULTS AND DISCUSSION

The positive effect of Semantic Web can acquire greater progression different areas. In this way, in future, real fields, for example, e-learning, e-government, e-library, internet business and so forth can accomplish more noteworthy usage with the expansion of the present Web to the Semantic Web. There are many Open Source Tools accessible to fabricate Ontology, which is the foundation of the Semantic Web. As Semantic Web broadens the present Web from machine-lucid to machinejustifiable frame, it has conveyed the assessment of Web to a larger amount, defeating the present issues, for example, data over-burden and association in Web. This paper centersaround the Semantic Web system and its significant phrasings alongside the idea of Web Ontology Language and Semantic Web Rule Language with precedents.

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