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Guest Editorial

The traditional information systems worked on well-defined and closed data repository, with dedicated hardware and software resources for catering to the requirements of specific audience. Thereafter evolved the Web-based Information systems, which worked on heterogeneous, dynamic, and distributed data serving diverse and unfamiliar audience using web navigation tools and techniques. The world wide web (WWW) was designed as an open information space enabling hyper-linking of webpages in mesh architecture. It is a self-growing virtual space as anyone can host a webpage and hyper-linking does not require permissions. This has led to a plethora of contents and functionalities which is not only useful for human-to-human communication but also human-to-machine, and machine-to-machine interactions. However, the usefulness of the web Information space for software agents is restricted by the design of web explicitly for human inception. Semantic Web is the approach to develop technologies, techniques, protocols, and processes to present the information in a form that can be processed by machines. The process of 'tagging' or embedding 'metadata' supports not only conversion of software codes to intelligent agents but also provides unambiguous cues to the human user. Semantic web is characterised by context awareness, persistent and sharable annotations and ratings, more real-time data, persistent and sharable categorisation, ability to access the trustworthiness of documents and ease to find answers to questions.

The Web has inundated with Semantic Web-based services. Semantic Web, in the form of Semantic Digital Libraries, Semantic Search, and Social Collaborative Networks, etc., is a great enabler for the librarians and information science professionals. Several usages of Semantic Web for the LIS professional has been discussed in various papers in this issue. The Semantic Web also brings about a revolution in the publishing industry through the Web services model by establishing a bind-publish-find relationship between service requestor, service provider, and service registry. These areas of applications are also of direct relevance and should be further explored by the researchers as publishing and Information Retrieval goes hand-in-hand.

There was an overwhelming response from the contributors for the Special Issue of *DJLIT* on Semantic Web. Among all the contributed papers, seven papers have been selected for this issue. I would like to thank all the authors who have contributed papers for this special issue. We would also look forward for contributions in the forthcoming issues from those authors, whose papers could not be included in this issue.

The paper titled "Semantic Web Applications" gives a brief introduction about Semantic Web and building on the reasons of its emergence, explains the advantages and applications of Semantic Web. The role of Sematic Web in E-business, social networking and knowledge management has been explained in depth. It describes the applications related to these fields and introduces the ongoing research in these areas.

The review paper titled "Semantic Web-driven e-Learning System" introduces a semantic e-learning architecture to provide services to students and instructors. It reviews the Semantic Web-based work related to e-learning on an international platform. The proposed e-learning architecture provides various facilities to the students like composing the course contents of his interest, information about syllabus, intimation about class schedules, submission of assignments, taking tests and quiz, and review their academic advancements. The faculty can audit the usage pattern of the students to gain insight in their course selection and performance. Faculty is supported in this architecture by providing techniques for composing exercises, release assignments, planning teaching schedule, disperse study material and compose progress reports. The paper also mentions about ongoing future projects being planned by the author to provide a collaborative e Learning platform to the students in the form of discussion forum to evolve a mutually agreed course content.

The paper titled "Future of the Social Semantic Digital Library" draws parallel between the development of the libraries from classical-to-digital modes and finally evolving as information centres and the journey of computer science from machine language to WWW and subsequently to the Semantic Web. The path from the WWW to Web 2.0 and the present journey towards Web 3.0 has been elaborated with examples of services offered in each. The paper explains how

Cutter's rule is applicable to the World Wide Web to deal with information overloading. The similarities of Semantic Web and digital libraries had been brought out to put forward the point that semantics can be used in almost all the basic tasks of a library like building the collection, cataloguing, reference, and circulation. It has been explained with examples that how the basic library services can be supported further with Semantic Web. The authors opined that in addition to the information overhead, there are a number of other overheads like vastness of the Web, vagueness of the information, uncertainty of results and inconsistency of data and these are the challenges to the information centres as well as to the WWW to be solved. To tame these overheads and utilise the resources in the best possible manner, the digital libraries should move towards semantic digital libraries, and finally to social semantic digital libraries, in future. The paper ends with a note motivating librarians to be participative in the semantic web movement.

The paper titled "Semantic Web Model for Design and Operation of Network Control Centre" demonstrates creating an ontology and models of a Network Control Centre (NCC). The paper has explained the manner in which OWL can be used to create a semantic view of a concept. The author in introduction explains Semantic Web, XML, RDF, and OWL and their inter-relationships in the Semantic Web architecture. Then it provides hands-on to the readers on using a graphical RDF/OWL editor namely Altova Semantic Works 2011. The tool has been used to model the process, flow and framework of a typical network control centre in an organisation. It demonstrates creating RDF schema, referring the existing ontologies, defining the classes, defining instances of the classes and defining properties. The paper models the generic activities carried out in a NCC alongwith the roles, designations, and qualifications of the personnel carrying out operations in the Centre. The infrastructure in the form of hardware and software of the NCC have also been modelled. The modelling helps to infuse intelligence in the software agents, enabling them to draw inferences. This is a practical application-oriented paper.

The paper titled "Identifying Implicit Semantic Relations through Distributed Representation for Effective Text Retrieval" has brought out the complexity in retrieval of a relevant text document based on a user-defined query. This is attributed to the fact that the user-provided keywords are hardly sufficient to understand the information need of the user, incomplete queries issued by the user, problems in query translation while crossing the language barrier when the query is in one language and the document is in some other language. The contribution of latent semantic indexing in improving the relevance of retrieved documents has been explained. Random indexing, as an alternative to latent semantic indexing, has been explained with its feature vectors. The core of the paper describes the applications of distributed representation in digital libraries, cross-ingual information retrieval, textual case-based reasoning and text classification, each of which has been explained well with suitable examples and related research work in the field.

The paper titled "Advanced (X) HTML5 Metadata and Semantics for Web 3.0 Videos" starts with the history of publishing online videos and their associated metadata. The journey from the pre-Web 2.0 era using Dublin Core metadata on MPEG-7 videos to HTML5 to provide semantics and markup to the videos has been covered. The paper describes the process along with sample code and related attributes to embed video along with semantics. The compatibility of the embedded video with certain browsers has also been dealt. It also touches on the microdata concept in HTML 5 which can be used to label licensing information for copyright compliance and provides two detailed examples of usage of machine readable video metadata in Facebook Share and Yahoo!SearchMonkey

The review paper titled "Semantic Web: A Quantitative Analysis of World Publications Output (2001-2010)" has done an analysis of the research performance in the field of Semantic Web from 2001 to 2010. Scopus Citation Database was the source of data for the study. The authors have done a detailed analysis on the overall publications output, country-wise, institutional, and author-wise contributions. It also lists the most preferred publications and conferences in the field as well as the most cited papers and the collaborating countries.

I would like to thank Director DESIDOC for relying on me for the special issue of DJLIT on Semantic Web. The dedicated efforts of the Editor-in-Chief, *DJLIT* and his team has made it possible for issue to come out in its present format. I would end by instigating a debate on Semantic Web vs Text Mining as a food for thought for the researchers because Semantic Web and Text Mining have similar applications and capabilities in inferencing, but use entirely different set of algorithms, tools and technologies.

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