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EVOLUTION OF THE WORLD WIDE WEB: FROM WEB 1.0 TO WEB 4.0

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ABSTRACT

The World Wide Web as the largest information construct has had much progress since its advent. This paper provides a background of the evolution of the web from web 1.0 to web 4.0. Web 1.0 as a web of information connections, Web 2.0 as a web of people connections, Web 3.0 as a web of knowledge connections and web 4.0 as a web of intelligence connections are described as four generations of the web in the paper.

KEYWORDS

Web 1.0,Web 2.0, Web 3.0, Web 4.0.

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THE CLOUDY FUTURE OF GOVERNMENT IT: CLOUD COMPUTING AND THE PUBLIC SECTOR AROUND THE WORLD

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ABSTRACT

Cloud computing is fast creating a revolution in the way information technology is used and procured by organizations and by individuals. In this article, we examine what cloud computing is and the importance of this new model of computing. We then examine non-military uses of cloud computing in governments across the globe, from the Unites States to Europe and Asia. Then, we look at the resource – people and computing – issues involved in shirting to cloud computing. The author then presents his six-step "Cloud Migration Strategy" for governmental agencies to shift to cloud computing. Finally, we look "over the horizon" to the implications for public sector organizations and the information technology community as the cloud computing revolution progresses.

KEYWORDS

Cloud computing, information technology, public sector, government, workforce, change.

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Ant colony Optimization: A Solution of Load balancing in Cloud

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ABSTRACT

As the cloud computing is a new style of computing over internet. It has many advantages along with some crucial issues to be resolved in order to improve reliability of cloud environment. These issues are related with the load management, fault tolerance and different security issues in cloud environment. In this paper the main concern is load balancing in cloud computing. The load can be CPU load, memory capacity, delay or network load. Load balancing is the process of distributing the load among various nodes of a distributed system to improve both resource utilization and job response time while also avoiding a situation where some of the nodes are heavily loaded while other nodes are idle or doing very little work. Load balancing ensures that all the processor in the system or every node in the network does approximately the equal amount of work at any instant of time. Many methods to resolve this problem has been came into existence like Particle Swarm Optimization, hash method, genetic algorithms and several scheduling based algorithms are there. In this paper we are proposing a method based on Ant Colony optimization to resolve the problem of load balancing in cloud environment.

KEYWORDS

Cloud computing, Load balance, Ant colony optimization, Swarm intelligence

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AUTOMATICALLY CONVERTING TABULAR DATA TO RDF: AN ONTOLOGICAL APPROACH

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ABSTRACT

Information residing in relational databases and delimited file systems are inadequate for reuse and sharing over the web. These file systems do not adhere to commonly set principles for maintaining data harmony. Due to these reasons, the resources have been suffering from lack of uniformity, heterogeneity as well as redundancy throughout the web. Ontologies have been widely used for solving such type of problems, as they help in extracting knowledge out of any information system. In this article, we focus on extracting concepts and their relations from a set of CSV files. These files are served as individual concepts and grouped into a particular domain, called the domain ontology. Furthermore, this domain ontology is used for capturing CSV data and represented in RDF format retaining links among files or concepts. Datatype and object properties are automatically detected from header fields. This reduces the task of user involvement in generating mapping files. The detail analysis has been performed on Baseball tabular data and the result shows a rich set of semantic information.

KEYWORDS

Ontology, Tabular Data, CSV, Semantic Web, RDF, Linked Data.

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SELECTION MECHANISM OF MICRO-SERVICES ORCHESTRATION VS. CHOREOGRAPHY

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ABSTRACT

Web services is a special case of a service-oriented architecture (SOA), which is, basically, a representation of web application,,s functionality. Web service is more of a generalized concept that implies whole functionality as a whole but Micro service handles only the single specific task. MSA is emerging as an excellent architecture style enabling the division of large and complex applications into micro-scale yet many services, each runs in its own process, has its own APIs, and communicates with one another using lightweight mechanisms such as HTTP. Micro services are built around business capabilities, loosely coupled and highly cohesive, horizontally scalable, independently deployable, technology-agnostic, etc. On the other side for the business dynamic requirement these micro services need to be composed for the realization of enterprise-scale, and business-critical applications. Service composition is combining various services together to provide the solution for the user dynamic queries. There are two methods for the micro service composition i.e. orchestration and choreography. In this paper, a health case study is performed for the selection mechanism of orchestration method and choreography method in various situation.

KEYWORDS

MSA, Composition of services, SOA.

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An Approach For Transforming of Relational Databases to OWL Ontology

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ABSTRACT

Rapid growth of documents, web pages, and other types of text content is a huge challenge for the modern content management systems. One of the problems in the areas of information storage and retrieval is the lacking of semantic data. Ontologies can present knowledge in sharable and repeatedly usable manner and provide an effective way to reduce the data volume overhead by encoding the structure of a particular domain. Metadata in relational databases can be used to extract ontology from database in a special domain. According to solve the problem of sharing and reusing of data, approaches based on transforming relational database to ontology are proposed. In this paper we propose a method for automatic ontology construction based on relational database. Mining and obtaining further components from relational database leads to obtain knowledge with high semantic power and more expressiveness. Triggers are one of the database components which could be transformed to the ontology model and increase the amount of power and expressiveness of knowledge by presenting part of the knowledge dynamically.

KEYWORDS

Relational Database, Reverse Engineering, Ontology, OWL, Trigger.

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Semantic – Based Querying Using Ontology in Relational Database of Library Management System

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ABSTRACT

The traditional Web stores huge amount of data in the form of Relational Databases (RDB) as it is good at storing objects and relationships between them. Relational Databases are dynamic in nature which allows bringing tables together helping user to search for related material across multiple tables. RDB are scalable to expand as the data grows. The RDB uses a Structured Query Language called SQL to access the databases for several data retrieval purposes. As the world is moving today from the Syntactic form to Semantic form and the Web is also taking its new form of Semantic Web. The Structured Query of the RDB on web can be a Semantic Query on Semantic Web. The SPARQL is the Query Language recommended by W3C for the RDF(Resource Description Framework). RDF is a directed, labeled graph data format for representing information in the Web and is a very important layer of the Semantic Web Architecture. In this paper we consider the Library Management System (LMS) database, taking some tuples of the LMS Relational Schema. We discuss how the RDF code is scripted and validated using RDF Validator and how RDF Triples are generated. Later we give the graphical representation of the RDF triples and see the process of extracting ontology from the RDF Schema and application of the Semantic Query.

KEYWORDS

Semantic Web, Ontology, Semantic Query, Relational Database.

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Question Classification using Semantic, Syntactic and Lexical features

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ABSTRACT

Question classification is very important for question answering. This paper present our research work on question classification through machine learning approach. In order to train the learning model, we designed a rich set of features that are predictive of question categories. An important component of question answering systems is question classification. The task of question classification is to predict the entity type of the answer of a natural language question. Question classification is typically done using machine learning techniques. Different lexical, syntactical and semantic features can be extracted from a question. In this work we combined lexical, syntactic and semantic features which improve the accuracy of classification. Furthermore, we adopted three different classifiers: Nearest Neighbors (NN), Naïve Bayes (NB), and Support Vector Machines (SVM) using two kinds of features: bag-of-words and bag-of n grams. Furthermore, we discovered that when we take SVM classifier and combine the semantic, syntactic, lexical feature we found that it will improve the accuracy of classification. We tested our proposed approaches on the well-known UIUC dataset and succeeded to achieve a new record on the accuracy of classification on this dataset.

KEYWORDS

Question Classification, Question Answering Systems, Lexical Features, Syntactical Features, Semantic Features, Combination of Features, Nearest Neighbors (NN), Naïve Bayes (NB), Support Vector Machines (SVM).

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SEMANTIC DATA INTEGRATION APPROACHES FOR E-GOVERNANCE

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ABSTRACT

Increased generation of data in the e-governance R&D process is required to generate the expected services in terms of enhanced e-services productivity and pipelines. The inability of existing integration strategies to organise and apply the available knowledge to the range of real scientific, business and governance issues is impacting on not only productivity but also transparency of information in crucial safety and regulatory applications. This requires focusing on normative models of e-governance that typically can assert horizontal (inter-agency) and vertical (inter-governmental) integration of data flows to represent the most sophisticated form of e-government delivering greatest payoff for both governments and users. The new range of semantic technologies based on ontology enable proper integration of knowledge in a way that is reusable by several applications across governance business from discovery to ministry affairs. The objective of this paper is to provide an insight on the necessary and sufficient knowledge base to deal with data integration using semantic web technologies applicable for e-governance based on exploratory research using literature survey. It assumes that reader has the capability of understanding some basic knowledge on E-governance, Relational Database Management, Ontology, and Service Oriented Architecture and Semantic Web Technology.

KEYWORDS

Data Integration, E-Government, Ontologies, Semantic Web, Semantic Data Integration.

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Architecture of an Ontology-Based Domain-Specific Natural Language Question Answering System

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ABSTRACT

Question answering (QA) system aims at retrieving precise information from a large collection of documents against a query. This paper describes the architecture of a Natural Language Question Answering (NLQA) system for a specific domain based on the ontological information, a step towards semantic web question answering. The proposed architecture defines four basic modules suitable for enhancing current QA capabilities with the ability of processing complex questions. The first module was the question processing, which analyses and classifies the question and also reformulates the user query. The second module allows the process of retrieving the relevant documents. The next module processes the retrieved documents, and the last module performs the extraction and generation of a response. Natural language processing techniques are used for processing the question and documents and also for answer extraction. Ontology and domain knowledge are used for reformulating queries and identifying the relations. The aim of the system is to generate short and specific answer to the question that is asked in the natural language in a specific domain. We have achieved 94 % accuracy of natural language question answering in our implementation.

KEYWORDS

Natural Language Processing, Question Answering, Ontology, Semantic Role Labeling.

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