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Application and Effectiveness of Ontology on Various Platform

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ABSTRACT

A survey has been conferred on the usage of ontology in various domains like Medical, Agriculture, geosciences, Education, Marine, Communication, Computer, Chemical, Defence, and Linguistic etc. Outline of the obtainable ontology developed in numerous domains is given and no try has been created to judge them. Only a broad picture of ontology applications in numerous domains practiced nowadays are delineated. In some cases details like variety of ideas, relationship, classes and subclasses outlined also are given. The survey indicated that hefty effort has gone within the development of ontology within the domains of medical, education, computer science. It's noted that rather restricted effort has gone into the development of ontology within the domains of power plants and atomic energy.

INTRODUCTION

Ontology is a precise formal specification of the terms within the domain and relations among them [1]. Ontology is employed to capture the information of any explicit domain to avoid ambiguity of terms. The foremost advantage of use of ontology is that it'll offer a globally distinctive symbol for all concepts. It's accustomed capture information in any given domain. Ontology describes the ideas in a very given domain and the relationships that hold between them. It helps to share common understanding of the structure of data among the users, to change reprocess, analyse the domain information. It enables to merge already existing information there by expanding it more [2]. Ontology for any domain is developed by formulating a collection of queries that the envisioned knowledge-based agent ought to be able to answer [3]. Supported these queries, one identifies a number of the concepts, sub ideas, relationships, options and instances that are outlined because the part of the ontology. Whereas sharing the domain information, ontology is employed to form the information interoperable and additionally reusable thereby having seamless exchange of data among the applications [4]. Ontology is developed to supply the common linguistics for agent communication in order that it acts as a bridge once 2 or a lot of agents have to be compelled to communicate or exchange info [5]. In any domain, controlled vocabulary of words from that domain is taken for information illustration. A controlled vocabulary could be a set of restricted words, used for describing resources or discovering information for any domain. When representing information for the domain, controlled vocabulary prevents misspellings and avoids the employment of capricious, duplicate or perplex words that cause inconsistent information. Ontology is enforced in the majority fields of study like medical, aviation, engineering, commerce, mechanical engineering, space, food, agriculture, linguistics etc. A survey was undertaken to list out the fields wherever the domain ontology is established. At our Centre, we've got initiated a program to develop ontology application for atomic energy Domain. In that context a survey of literature was disbursed that indicated that ontology has been outlined and applied in numerous domains. A survey of mistreatment of ontology in numerous domains is given during this paper. The survey of ontology application in numerous domains was based on the on the market analysis papers, referred journals, reports within the individual domains,

critical articles on the market on the benefits of ontology application and usage. This survey has been disbursed in domains like agriculture, education, medicine, defence, atomic energy wherever the usage of ontology is well-tried to be very useful. Solely a broad picture of ontology applications in numerous domains practiced today are surveyed and delineate. No try has been created to evaluate them. The Domains surveyed are listed in alphabetical order. Since the impact of ontology in numerous domains is extremely massive, we've got not tried the survey to be exhaustive.

The Ontology for Tourist

The ontology for tourists worries with a typical tourist's preferences. The ideas and their relationships for this ontology are derived from analysis in alternative models, an important element of business enterprise literature. Alternative models study factors that influence the choice of business enterprise services, such as what attractions a toured could like better to visit [5]. For this analysis, a group of things is extracted from the selection model literature victimisation the 64 papers listed in Appendix A (in addition to the references). Info concerning these factors includes their name, definition, and properties. The extracted factors and `sub-factors' within the original literature are used as ideas and sub-concepts, severally, within the ontology for tourists. The idea and sub-concept relationships are specified supported the context of the literature. The properties associated with the factors laid out in the first literature are treated because the properties of the ideas within the ontology. The derived ontology for tourists includes the subsequent main ideas at the primary level: most well-liked tour time, preferred tour budget, most well-liked tour transportation mode, and most well-liked activities of a tourer. Every idea could have multi-level sub-concepts and properties related to each ideas and sub-concepts. These ideas represent the factors that are systematically stratified the very best in terms of the frequency of their usage within the literature cited. This results in step with analysis findings that the selection of tourer attractions usually depends on a small number of common factors, like time, budget, and preferred activities [6], Personal prole info like age, occupation, personality and interests is additionally an element in alternative models. This issue, however, is mainly employed in a scenario wherever a toured doesn't establish their most well-liked activities. During this analysis, personal prole information isn't enclosed within the ontology for tourists, as most tourists are able to establish their most well-liked activities when they set up a tour on-line. [1] Plant ontology Database: describes the controlled vocabulary (ontology) for plants. It's a cooperative effort among model plant genome information developer and plant researchers to make and maintain the information. It also implements a linguistics framework to form meaning cross species and information comparisons [2]. Plant Anatomy consists of 30087 terms process a controlled vocabulary of plant's morphological and anatomical structures representing organs, tissues, cell sorts and their biological relationships based on spatial and biological process organization example stamen, gynoecium, petal, parenchyma, guard cell and plant structure. In natural object development stage consists of a controlled vocabulary of growth and biological process stages in various plants and their relationships. ONTOLOGY DEVELOPED within the DOMAIN OF natural philosophy a suggested upper merged ontology (SUMO) defines ontology for detector networks domain and link them through the higher rassling ontology. It defines about twenty five, thousand terms and eighty, thousand axioms regarding CPU memory, power offer, and radio and detector modules. The rassling ontology contains varied domains like computing services (networks, systems, and services), finance, geography, time, economy and transportations [2] ONTOLOGY DEVELOPED within the DOMAIN OF LIBRARY Ontology based mostly Chinese digital library resources carries with it Ontology of bibliographical relations, Ontology-based digital library data schema, brandy format and synonym finder. It also involves mapping information from brandy to the ontology, and reasoning regarding the info to determine the relationships [3]. Document

system (DCSO) consists of 4 modules: Keyword Extraction, ontology Construction, Document Classification and Document looking. In this system formal thought analysis (FCA) technique is employed for the analysis of knowledge. Nearly 525 documents within the space of information management are retrieved from the Electronic Theses and Dissertations System. Amongst these, 360 documents act because the coaching document and one hundred sixty five documents for testing purpose [2]. Ontology in Biomedical Modern biology could be a data-producing, data-driven science. Biological databases covering the domains of sequence, structure, phenotype, and plenty of different varieties of biological data are core resources for medicine analysis. Recent advances in biology, as well as fast development of high-throughput technologies, have cause the exponential growth of databases housing data concerning the sequences, functions and localizations of genes and proteins for a good vary of organisms. The bottleneck is so now not the assembly of knowledge, but the integration and analysis of this knowledge. so as to create biologically meaningful discoveries, researchers need the flexibility to question and extract the biological information offered from a range of sources, and to integrate this data in meaningful ways in which. However, there are variety of obstacles that create such integrated analyses difficult. Recent years have seen a growing trend towards the event and adoption of ontologies for the management of biological data. Ontologies and controlled vocabularies for numerous domains of the medicine sciences are developed, largely in an endeavour to supply a shared language for human activity biological data. Ontologies are viewed by the medicine community as a strong suggests that to represent, analyse and integrate biological data. More traditionally, however, abundant of the initial basis of biology is within the classification of domains. Associate in nursing early example of the classification of organisms are the taxonomies developed by Karl Linne. The controlled vocabulary of Mesh terms used by Enters at the. NCBI portal1 of the National Library of drugs are another example of wherever a structured set of terms are wont to classify publications and index them for looking. From a biologist's perspective, a controlled word with structured relationships is useful in several domains. It provides an even and defined language and provides structured access to attainable terms and relationships. The major recent activity of ontologies in biomedicine has been mostly to provide a typical word for a range of domains (discussed later during this chapter). Sure-fire activity of ontologies relies upon multiple factors including their usability, style and on their broad adoption by the community. There has been some dialogue over whether or not one blanket ontology or smaller domain or task-specific ontologies are a lot of helpful Ontology in Ubiquitous Computing Applications For developing an abstract model for the ever-present computing application domain, rather than victimization the whole BWW ontology, an additional targeted ontology I derived, by taking into thought the necessities of the target application domain. Therefore, associate degree applicable set of ideas is chosen by applying elimination and specialization processes. In an exceedingly similar perspective (Rosemann and inexperienced, 2000), argue that taking into consideration the objectives of the modelling tasks in an exceedingly specific drawback domain similarly because the form of users to be concerned will assist in developing new ontologically primarily based specific modelling grammars. Within the next section we extend the construct of factor to the construct of Entity and also the construct of Composite factor to the construct of close Ecology. New ideas are introduced like the Plug and junction so as to supply careful illustration of the interaction among entities. The most advantage of this method is that the targeted ontology is based on a well-established ontology with theoretical foundations. Additionally, in order to speak clearly and comparatively simply the ideas of the derived conceptual model, we have a tendency to develop an outline of the ontology constructs victimization a meta-model. Through this meta-model, the understanding of the ontology constructs and how they relate to every different are often explained clearly. We've used the UML meta-language for that purpose.

Context Management method

A present computing application generally consists of associate degree infrastructure wont to capture context and a collection of rules governing however the appliance ought to respond to changes during this context. so as to isolate the user from the method of context acquisition and management and on the opposite hand offer her with a present computing system that allows the composition of context-aware applications we have a tendency to propose that the system is organized in an exceedingly hierarchy of levels. The design approach for composing context-aware present computing applications needs to be backed by associate degree engineering methodology that defines the proper formulation of the context and behaviour. The motivation for this method emerged from the actual fact that artifacts in present computing setting could also be in several "states" that change consistent with the artifacts' use by users and their reaction relies each on users' wishes and these states. The first step during this context management method is that the acquisition of the low level context, that is that the data given by the sensors (Lexical Level). A set of sensors are connected to associate degree object in order that to live numerous object parameters, e.g. the position and also the weight of associate degree object placed on an increased table. because throughput of disagreement completely different} sensors that live constant object parameter might differ, e.g. sensors may use totally different system of weights and measures, it's necessary to interpret the sensors' output to higher level context data (Syntactical/Representation Level). Aggregation of context is additionally potential which means that semantically richer data could also be derived supported the fusion of many measurements that return from totally different same or heterogeneous sensors. For instance, so as to see if an object is placed on a table needs observance the output of table's position and weight sensors. Having no heritable the required context we have a tendency to are {in a during an in associate degree exceedingly in a very} position to assess an object state (Reasoning Level) and judge applicable response activation (Planning Level). Adopting the definition from Artificial Intelligence, a state could be a logical proposition defined over a collection of context measurements (Russell and Norvig, 2003). This state assessment relies on a collection of rules defined by the object developer. The reaction could also be as easy as activate an mp3 player or send associate degree SMS to the user, or it may be a fancy one like the request of a specific service, e.g. a light-weight service. Such a call could also be supported native context or might need context from external sources similarly, e.g. environmental context, location, time, different artifacts. The low (sensor) and high (fused) level information, their interpretation and also the native and international decision-making rules are encoded within the application ontology. The fundamental goal of this ontology is to support a context management method that's supported a collection of rules that confirm the manner that a call is taken and should be applied on existing knowledge delineated by this ontology. ONTOLOGY DEVELOPED within the DOMAIN of stories In the News domain, data extraction doesn't think about the page structure however the results of this data extraction cooperates with the pre-defined metaphysics. The net pages downloaded with the employment of .NET's application program part are fashioned into a DOM (Document Modelling) tree. Ontology of news domain consists of following sub ideas like navigation page, seed page, content page, navigation page marker path, content page marker path, title, time, image and content [3].

Ontology in power plants

A Safety Assessment Management data system for Power Plants primarily based developed on shopper server model. It has been employed in powerhouse of Dating cluster Corporation in China and reported to be satisfactory. Data of equipment fault was captured by data transformation, collecting original literature and information, characteristic relations among basic glossaries that contain advanced data, determining the foundations [4]. Steam Turbine (ST) ontology is formed by desegregation and merging with existing databases. It allows

sharing the knowledge through a shared metaphysics for the upkeep of a turbine [4].

Metaphysics developed within the domain of transport

The main elements of the pallet transfer system are conveyor belts that deliver things from one place to a different, index stations, identification units (RFID) for identification of passing pallet units, and intersection units. This can be employed in ontology to represent locations whose attributes provides the details of locations accessible by it

CONCLUSION

A survey on usage of metaphysics in numerous domains is given in this paper. The survey is predicated on the obtainable literature and not tried to be either complete or complete. No attempt has been created to judge them. It is seen from the survey that metaphysics has been applied in many domains encompassing agriculture, education, medicine, defence, aviation, engineering and linguistics etc. From this survey it is inferred that in depth work has been reported within the medical domain. Work has been worn out defining metaphysics from small organism to macro organism. The metaphysics development covers ideas associated with database of patients and diseases with multilingual support. This would pave the thanks to share knowledgeable medical data without any boundaries. Within the domain of education, efforts have been towards making systems that aid learning method along with formal teaching. From preschool to higher education, metaphysics has been extensively outlined to attain person freelance data primarily based system. Within the laptop domain, the metaphysics development has evolved significantly, in shaping ideas regarding hardware and software package systems, image process, videos and audios and neural networks.

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