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Recruitment Based On Ontology with Enhanced Security Features

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----------ABSTRACT----------

Candidates Selection for a particular Company's Recruitment process can be done based on Ontology. For this selection to be done, the companies(HR) should follow a registration process with enhanced Security features. After this, HR's can search and view candidates based on their requirement like Area-Of-Interest, Aggregate Percentage and so on. The details of the candidates selected by the HRs can be mailed. After the recruitment process done for a particular year, the company profile, candidate details can be scrapped which helps in Memory Management. The activities involved in this system can also be logged.

Keywords–*users profile, areas-of-interest, aggregate percentage, annual refresh, personalized web information gathering.*

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I. INTRODUCTION

Ontology has been known as a database of terms that justified a domain to be used and shared in a global area (Borst, 1997). Ontology becomes a model of real word to represent a domain of knowledge. This new technology has been used in the Semantic Web although the original word of ontology is being borrowed from the philosophy discipline, which defines the concepts of things. Thomas (1993) explains the real definition of ontology is a systematic account of existence, however in computer science, ontology is a representation of precise specification to form a concept.

Thus, ontology is described as formal specification of terms in the define domain and identifying any relations existing in between the terms. Ontology enables people or machines to retrieve the desired information with an understanding of the meaning of terms used in the domain and share common vocabularies used in the same domain (Wang et al., 2008a). Therefore, the use of ontology is about using, reusing and sharing domain knowledge of terms concept. Many ontology classes have been developed recently and are kept in a database to be used or referred to by others as knowledge/resource sources. Ontology are not only used in the field of Semantic Web but also in many others fields such as artificial intelligence, software engineering, biomedical informatics, library science, and information architecture. Information and knowledge are increasingly becoming shareable and searchable resources, particularly in the current digitized world. Since 1996, the World Wide Web (WWW) has become a primary source for information offering online resources that are available 24/7. Traditionally library is an important source of information, particularly as academic resources and has become important source of reference for academic researchers.

Library classification system has migrated from Dewey Decimal Classification System (DDC) to a new digitized format such as Online Public Access Catalog (OPAC) system that can be accessed through the web. The OPAC system is based on known-item search (Antelman et al., 2006). However human interpretation is still required when records matching the search criteria (such as keywords) are returned to determine its relevance and usefulness. For example, in searching for a programming textbook, which we do not know the exact title, we tend to type the word programming in the search box. When search results are returned, we scroll down the list of titles to look for the one that we search for. This is commonly encountered by students who are inexperienced in literature search.

1.1 OBJECTIVE

The main objective of this project is to develop a system for recruitment. This system helps us to search, view and select candidates based on the user's requirement. This system also enhanced with security features which protects the system from unauthorized viewing. Also covers Annual Refresh which improves Memory Management.The explosion of data leads to the problem on how information should be retrieved accurately and effectively. To address this issue, ontology's are widely used to represent user profiles in personalized web information gathering. As a model for knowledge description and formalization, ontology's are widely used to represent user profiles in personalized web information gathering. When representing user profiles, many models have utilized only knowledge from either a global knowledge base or local knowledge base. Ontology model learns user profiles from both a world knowledge base and local knowledge base. A non-content based customized ontology model is proposed for knowledge representation and reasoning over user profiles.

1.2 SCOPE OF THE PROJECT

Candidates Selection for the particular Company's Recruitment process can be done based on Ontology. For this selection to be done, the companies (HR) should follow a registration process with enhanced Security feature. After this, HR's can search and view candidates based on their requirement like Area-Of-Interest, Aggregate Percentage and so on. The details of the candidates selected by the HRs can be mailed. After the recruitment process done for particular year, the company profile, candidate details can be scrapped which helps in Memory Management. The activities involved in this system can also be logged.

II. LITERATURE REVIEW

2.1 EMERGING OF ACADEMIC INFORMATION SEARCH SYSTEM WITH ONTOLOGY-BASED APPROACH (2013) NORASYKIN MOHD ZAID, SIM KIM LAU : The motivation of this paper is to propose the development of an ontology-based information retrieval system to assist inexperienced research students at a local university in Malaysia to search for academic resources in the local language context. There are two types of ontologies according to two dimensions of perception: the amount and type of structure of the conceptualisation and the subject of the conceptualisation. The first dimension, according to Heijst et al. (1995), includes: (i) terminological ontologies, (ii) information ontologies, and (iii) knowledge modeling ontology; whereas the second dimension includes: (i) domain ontologies, (ii) generic ontologies, (iii) representation ontologies, and (iv) application ontologies. The first dimension with terminological ontologies is referred to as ontology that defines the terms to represent knowledge in the domain of discourse, such as medical or biological domains. Information ontologies are defined as records structure of a database, which is a flat structure, unlike the knowledge modeling ontologies, which have a richer structure of database, such as involving distinction and decision-making processes. To refer to the second dimension of ontologies, domain ontologies refer to specific particular area while generic ontologies refer to domain ontologies across many areas. Representation ontologies are supposed to be naturally present in general contrast to application ontologies, which are specifically designed to the particular application such as the Marine Metadata Interoperability Project (MMI)

Holsapple and Joshi present five approaches to ontological design: (1) inspiration, (2) induction, (3) deduction, (4) synthesis, and (5) collaboration. Inspirational approach starts the design idea by collecting individual personal views and creativity to construct the domain context. Inductive approach is based on the observation and analyzing of current or specific domains to apply to particular domains. Deductive approach adopts some general principles to construct a new domain while the synthetic approach applies some potential characterisation from the existing ontologies. With the collaborative approach, the approach relies on human participation, which involves individual reflection and viewpoints to get along with the collaborative process. How these ontologies can be developed depends on how or what method is being used. Uschold and Gruninger (1996) conclude that there are five steps in the process of ontologies development: (i) identify purpose and scope, (ii) building the ontology, (iii) evaluation, (iv) documentation, and (v) guidelines for each phase. In the second step of building ontology, it includes: (a) ontology capture, (b) ontology coding, and (c) integrating existing ontologies (Uschold and Gruninger, 1996). The first step in building the ontology is by considering when there is a clear idea on what ontology is going to build, and then the domain of the ontology can be set with purpose and scope of the domain identified earlier. This idea can then be extended to the second step of developing domain ontology by providing information of ontology capture, coding and with attention to consider using an existing ontology.

The third step is important to identify whether the ontology is in a good form of classification and relationship in its domain to bring effectiveness of knowledge sharing. In the forth step, the idea of having documentation is to allow knowledge sharing by preparing the problems faced in existing ontology with the important assumption together with the concepts definition based on type and ontology purpose. In the last step, the initial guidelines are provided which consists of clarity, coherence and extensibility. Some other methodologies for building ontology have also been discussed by Fernandez-Lopez et al. (1997); and Corcho et al. (2003a). Corcho et al. (2003a) have review and compare the main methodologies for building ontology such as METHONTOLOGY (Fernandez-Lopez et al., 1997) and On-To-Knowledge methodology (Steffen et al., 2001). Fernandez-Lopez et al. (1997) propose the ontology development process to start with planning, specifying, knowledge acquisition, conceptualising, formalising, integrating, implementing, evaluating, documenting and maintaining the process. This methodology is used in most ontology development processes (Lopez et al., 1999; and Brusa et al., 2008) and has also been extended to allow collaborative edition of ontologies at the knowledge level (Arpírez et al., 2001). On-To-Knowledge methodology takes into consideration the process of ontology development from the early stage of setting up the project until the final level of the application which consists of: feasibility study, ontology kickoff, refinement, evaluation and maintenance (Steffen et al., 2001).

The ontology-based search system is developed based on an ontology-based mind-map. The mind-map is developed from the academic programmers profile of the faculty in this case study. The Education Faculty aims to produce future teachers with knowledge and experiences related to the teaching profession. Thus, research topics are often conducted on issues related to teaching and learning based on specialized and professional subjects offered at the faculty. The mind-map is developed by considering the relationship between major components of teaching and learning as specialized subject offering, for example mathematics, physics, chemistry, living skills, sports science, Islamic studies, computer science and Teaching Language as a Second Language (TESL). The mind-map is organized in a hierarchical structure to be translated to an ontology structure. The mind-map is developed using the inductive approach of ontology design (Holsapple and Joshi, 2002). With an inductive approach, the researcher observes, examines and analyses the sample domain of interest to develop the required ontology.

III. DATA FLOW DIAGRAM:

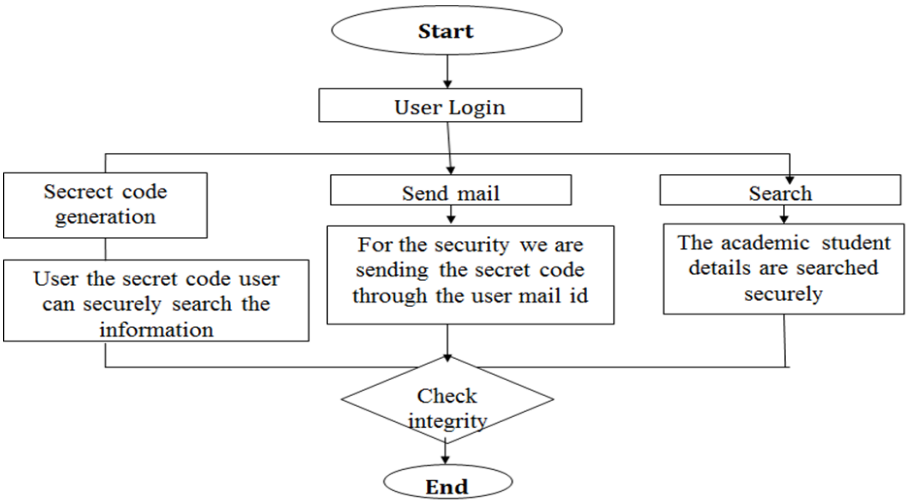

FIGURE 3.1 SYSTEM DATA FLOW DIAGRAM

The data flow diagram fig.3.1of this project starts as HR of a company login into the page. For this the HR will initially go for a registration process which will result with a secret code being sent to his mail. After viewing the secret code he will log on to the search page by providing the user name and secrete code. Then only he will be able to view the details of candidates. Each time while logging new code will be generated. Without this code he cannot enter into the search page. For security we are sending the secret code through the user mail id.

Next comes the search page it will display the college names the user have to choose the college name which he needed and then that college details will be displayed. In order to view the staff details he should choose staff option and for viewing students details choose students button. The search option will allow you to select candidates based on certain categories such as areas of interest and aggregate marks. If the HR is interested in a candidates profile he can select him and that consultant candidates details will be sent to HR's mail id, so that later he can view it for any future reference. After that, if the HR wanted to choose some other college he can simply go back and choose the college available in the option. The details of the candidates will be refreshed periodically in order to enhance memory management. One more important security feature is that all the details of the user will be logged i.e., who is viewed the details, at what time he viewed it, and so.

The Check Database Integrity task checks the allocation and structural integrity of all the objects in the specified database. The task can check a single database or multiple databases, and you can choose whether to also check the database indexes. The Check Database Integrity task encapsulates the DBCC CHECKDB statement. Database Integrity Check is the SQL Server Maintenance Solution's stored procedure for checking the integrity of databases. Database Integrity Check is supported on SQL Server 2005, SQL Server 2008, SQL Server 2008 R2, SQL Server 2012, and SQL Server 2014.

3.2 ARCHITECTURE DIAGRAM

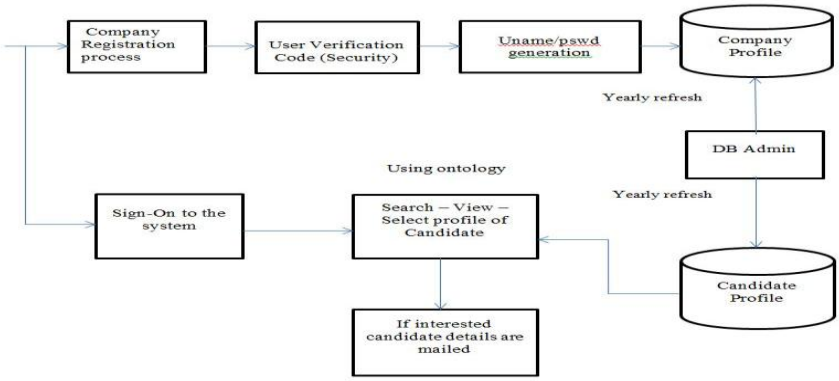

FIGURE3.2:SYSTEM ARCHITECTURE DIAGRAM

IV. SYSTEM IMPLEMENTATION

4.1 MODULES AND ITS DESCRIPTION

1. User Profile
2. Random Code Generation
3. Send Mail
4. Searching the academic details

4.1.1 USER MODULE: In this module, Users are having authentication and security to access the detail which is presented in the ontology system. Before accessing or searching the details user should have the account in that otherwise they should register first.

4.1.2 REGISTRATION: In this module if a user wants to access the data which is stored in a cloud server, He/she should register their details first. These details are maintained in a Database. If a User have to register first, then only he/she has to access the data base.

4.1.3 LOGIN: In this module, any of the above mentioned person have to login, they should login by giving their username and password.

4.1.4.RANDOM CODE GENERATION: Random Code Generation System, which helps user to organize his passwords in a secure way. In order to solve this problem users normally use same code for every account. But this will be dangerous in some cases. This project is designed for solving this problem. Random code Getting System, which helps user to organize his code in a secure way, using this application user can put all his passwords in to single database which is protected with a single master key or a key file. Random code Getting System users to select more random, and difficult code to guess. The proposed system work to organize his passwords in a secure way.

4.1.5 SEND MAIL: The Mail will be sent to the end user along with random code, so as to end user can Login securely. And the user can search the academic details of the student and the staff in the security way.

4.1.6 SEARCHING THE ACADEMIC DETAILS: Authorized user can search the academic details of the student and the staff in the university in the security way. The amount of web-based information available has increased dramatically. How to gather useful information from the web has become a challenging issue for users. Current web information gathering systems attempt to satisfy user requirements by capturing their information needs. For this purpose, user profiles are created for user background knowledge description .User profiles represent the concept models possessed by users when gathering web information. A concept model is implicitly possessed by users and is generated from their background knowledge. The cohort of inexperienced research students faces two main problems when using current system comprises of keyword search. Firstly the language barrier-limiting students' capabilities to conduct keyword search in foreign language (such as English). Secondly limited research experience in querying often results in obtaining irrelevant search results. The proposed semantic search system aims to apply ontology-based search to overcome the above two problems. The paper presents the first phase of system development; ontology design and ontology development tool.

V. CONCLUSION AND FUTURE ENHANCEMENT

Ontology enables relationships between keywords and terms to be defined. Ontology allows desired information to be retrieved by sharing common vocabularies with an understanding of meaning of terms in the domain. Hence ontology is best suited for this project and it enhances security, integrity and memory management and all these things are modulated in this project. By sending the security code to user's mail id security is maintained, by refreshing the candidate details periodically memory management is maintained and by logging the details of the user who is visiting the candidate details once again security and integrity are ensured. Support to graphical view and viewing multiple college details will be the future enhancements.

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