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Accuracy of Retrieval Files in Learning Objects using Cloud E-Learning

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***Abstract*—** Everything stored on the cloud could potentially be a knowledge source used for e-learning. Given learners' profiles, desires and feedback on what they have already learned, a new form of personalized e-learning emerges, namely Cloud E-Learning (CeL). CeL should be able to choose from structured to totally unstructured learning material but needs to make them useful for each individual. Existing metadata standards cannot facilitate composition of personalized learning paths as a series of learning objects. In this paper, we present the structure of CeL Learning Objects (CeLLOs), which include an additional set of metadata suitable for each phase of CeL development.

***Keywords*-**Cloud E-learning, computing for Education, Electronic Learning

I. INTRODUCTION

E-learning In recent years, the flood of information, successive change and the growth of knowledge at a fast rate which resulted from the information revolution in which we live now. The world is living large scientific and technological revolution; it had an impact on various aspects of life, the education one of these aspects. The concept of web-based learning and the use of Internet in teaching and learning have received increasing attention. People use the Internet and new technologies every day for information, communication, entertainment, obtaining goods and services, and learning. With the increasing availability of the Internet, we are now able to change what and how we deliver the learning experience to students across time or space, which has led to the evolution of E-learning. Therefore, the education is became demanding to search for new methods of teaching and models to meet the many challenges at the global level. These methods including the increased demand for education. With the shortage of educational institutions, and increase the amount of information in all branches different knowledge. It's clear the E-learning model help the learner to learn in right place and time through interactive content based on multimedia (text – image – audio – video) that offers through E-learning is a new type of Education patterns imposed by the scientific and technological changes taking place in the world to this day. Traditional methods and techniques are not able to keep pace with this development, so there is a need to adopt another kind of education which is the E-learning [1,2,3,4,5]. Cloud Computing is a technology that is fully dependent on the Internet [6,7] which provides many of computational resources via the network and provides the end users many important services such as processing and storage. Cloud Computing is a computing platform that offers computing power for scientists when they are exceeding institutions' local computing capabilities [8]. Cloud Computing has moved the user from being attached to a single machine to the Internet [9, 10] therefore, the user is freed from thinking about the file's physical location.

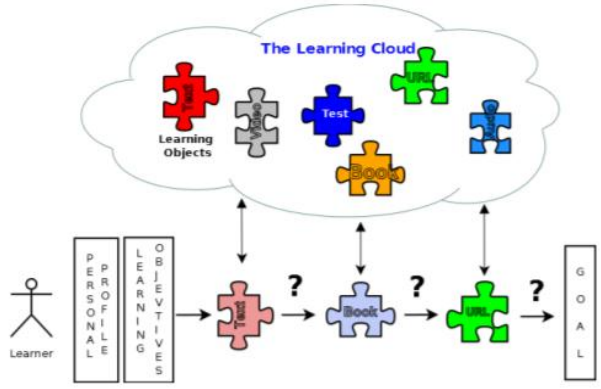

Figure 1: Learning material coming from the learning cloud fail to form a coherent learning path

Cloud e-Learning (CeL) is a new paradigm for e-learning in which learners are presented with an automatically generated learning path that utilizes any suitable sources from the cloud [1]. CeL is considered as an advancement of e-learning and aims to provide personalized services that will increase interaction between users who share a pool of experiences and knowledge. CeL should suggest structured courses that match learner's preferences and cognitive level. The Learning Cloud comprises of different

sources for CeL and everything stored in it can potentially be used for learning purposes. The main goal is to automatically generate a personalized learning path of learning objects that reasonably meets the profile and desires of the learner. Before any personalization is even considered, the main problem CeL needs to address is the heterogeneity of electronic resources that form the Learning Objects (LOs). Candidate LOs suffer from: (a) no or little semantics/annotation, (b) variety of granularity, and (c) no means for gluing them together in adaptive order to create a coherent course. Such learning materials can hardly fit together [2] in a sensible learning path because of their different standards (Fig. 1). For instance, an LO may not fit with another LO directly, because of different metadata standards or different learning objects standards or inconsistent intended learning outcomes and desired cognitive level.

II. LITERATURE SURVEY

Krenare Pireva et.al [1] presented an e-learning system based on web services whose main goal is to enable the system to interoperability between different hardware components. Choose a range of e-learning services required (online reporting, registration, metadata, grades and coursework).

E.-M. Kalogeraki et.al [2] presented an online service that relies on E-learning lifecycle ELL and its services. All functionality that needed for the interaction between provider and requester that defines in lifecycle. Here the concentration was given primarily in the change of advanced resources into a learning object in an interoperable path by methods for web to improve the learning operation.

Giovanni Casella et.al [3] displayed web benefit based thin client design for e-learning framework that utilizations Run Time Environment (RTE) in SCORM to follow learning process with a reasonable middleware segment. The main target of this framework is to lessen the workload on customer side and to actualize the communication on HTML. The Middleware is comprising of three parts: Sequencer, Tracer, and Deliverer. The utilization of middleware enhances interoperability and the e-learning framework can be reached out with new features.

Xiaofei Liu et.al [4] concentrated on the best way to integrate and coordinate Web Services on the e-learning application. They utilized J2EE as infrastructure for this integration. The proposed framework consists two types of architecture the functional and service. The functional defines all segments that make up an E-learning framework and the items that must be moved among these segments.

III. CLOUD E-LEARNING

Cloud e-Learning (CeL) is a new paradigm for e-learning in which learners are presented with an automatically generated learning path that utilises any suitable sources from the cloud [1]. CeL is considered as an advancement of e-learning and aims to provide personalised services that will increase interaction between users who share a pool of experiences and knowledge. CeL should suggest structured courses that match learners' preferences and cognitive level. The Learning Cloud comprises of different sources for CeL and everything stored in it can potentially be used for learning purposes.

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In CeL, we envisage a process that takes these unstructured learning materials and adapts them for being able to create a coherent sequence. In current e-learning approaches, structured LOs are stored in repositories (LORs) and they can be used within the context of their repositories to create personalised learning paths. On the contrary, in CeL, the heterogeneity of unstructured or semi-structured electronic sources makes customised learning a challenging task.

IV. METHODOLOGY

Lately, developers and computer engineers have created and developed different systems of learning, like the systems of learning management that meets the needs of the users are inexperienced. In any case, those created or developed systems of learning management have a great deal of problems. For instance, there is a difficulty in manage process for distributed management on the web to cover all user's requirements in the same time. Hence, we need to build up and develop a system of learning management as well as our own programs. The most imperative issue is the high cost of improvement. The cost of expanding (adding) system requires greater investment. Service and maintenance needs are one of the most costs

problems. Therefore, we offer a new model of e-learning that depends on caching and cloud computing concepts to solve those problems. The proposed model utilized crawling process and caching replacement policy algorithms. We used Precision and Recall method to evaluate the efficiency of the proposed system. The comparison between the proposed system and existing systems is required to prove its efficiency. As well as, the testing of proposed systems is important to prove its efficiency, reliability and usability. In this module, it consists of two steps that employ three algorithms. The first Step, crawling process of URLs from World Wide Web to find files about queries based on most frequently used. Because of need to reduce the amount of data retrieved, the file crawling algorithm where used along with filtration process sending results to the database the Fig. 2 and Fig. 3 show this process.

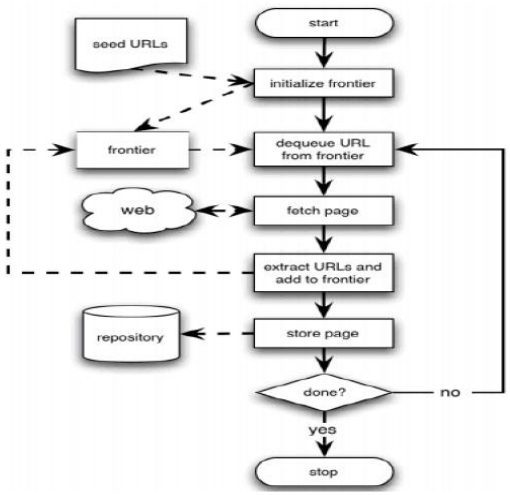

Figure 2: Show the steps of crawling algorithm

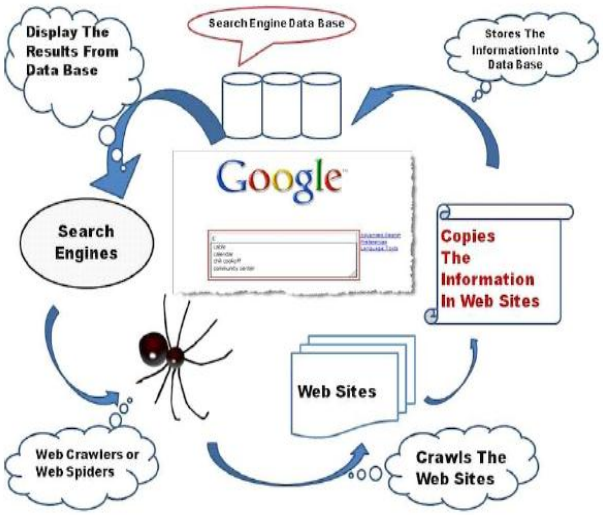

Figure 3: Show web crawler process

The Second Step, crawling data indexing (data from step1) into database. In this module, (indexing module) two algorithms are used. Firstly, K-means algorithm to cluster the similar files of similar queries together in one category to decrease time required for retrieval process. Secondly, using cache replacement policies such as Least Recently Used (LRU) and Most Frequently Used (MFU) to increase performance and decrease time needed to retrieve relevant files.

Let study the following case: as a user session begins, a use case is shown to illustrate the system's behavior to clarify how user queries are digested by the system. A user requests a query to access some information that belongs to a certain category such as art or science…etc., normally, additional information about his profile (username, password, IP address, gender and email) are sent along with the query request for tracking purposes to the system interface. Results of the requested query may be come from one of the three storage locations.

The first storage locations are the cache if and only if category of the requested query stored in the cache because of that category is common category (frequently accessed category and most recently used). This will return a response from the system (requested information) regarding that query.

If the requested information is not in cache, a cache miss is issued and the system will look in the next storage location.

The second storage location, if queried category is not in the cache (a cache miss is issued) then the current storage location is changed to the system's database diverting the current query to access the content of the data base to get the category from system's database, these two region in indexing phase (online part). If query category is not in the system's database (a database miss issued diverting the query to online cloud).

V. CONCLUSION

We have proposed in this paper a new system to solve some problems or a challenge that faces the e-learning through build an efficient e-learning system in many terms such as accuracy, data retrieval, availability, reduces development cost. And when applying the system (the proposed system) is got the best results compared to other systems, especially in terms of speed in the retrieval of files and relevant results ratio (Precision), low irrelevant results (error). Moreover, it is flexible and adaptable from user's perspective when creating profiles and the accessibility for all E-learning materials regardless of where they are, flexibility from system's perspective where the local management, maintenance and control of hardware and software.

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