

A Literature Review of Online Discussion Forum in e-Learning Scenario

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Abstract-- eLearning is the technology that enables people to learn anytime and anywhere. It comprises all forms of electronically supported learning and teaching and has evolved over a period of time. The advancement of web2.0 in e-Learning is increasing day by day. Web 2.0 is an important term that encompassing several new web technologies. Discussion forum is one of the most efficient web2.0 tool used for communication on internet by posting a question and waiting for comment or answer. It have lot of information in the form of user generated content which is stored at different locations. The purpose of the paper is to critically review the methods of posting a question and a comment on discussion forum. Various related work that have been done and their gaps in the use of online discussion forums for e-Learning are also discusses.

Index Terms-- eLearning, Crawling, Discussion forum, Formal learning, Forum portal, Inforamal learning Web 2.0.

I. INTRODUCTION

e-Learning is a fast, just-in-time, and non-linear learning process, which is now widely applied in distributed and dynamic environments such as on the World Wide Web [1]. Learning is categorized into two major categories: Formal learning and Informal learning.

Formal learning refers to hierarchically structured learning in which acquiring knowledge and skills at the official educational institutions through primary,

intermediate and higher education programmers And informal learning describes a lifelong process whereby individuals acquire information, knowledge, values, skills, behavior and attitudes from daily experience and the educational influences and resources from family neighbors and work place [2]. In the present times, it is estimate that there is 20% knowledge is through formal learning and 80% is through informal learning [3].

Web 2.0 develop the new concept of Web which provide services that strongly promote the development of communication, sharing of ideas, development and acceptance of new knowledge and skills. Web 2.0 services provide a new way for development of informal learning [2].

Discussion forum is a hierarchical or tree like structure. It contains numbers of sub forums, each Forum may have several topics. Within each forum's topic a new discussion started is called thread [4]. Online discussion forums are a valuable means to discuss ideas, get suggestions, exchange of information and share insights between people related to particular field of Internet [5]. The continuous user interaction on an online forum becomes a virtual community for members to share thoughts on subjects of their interest without face-to-face contact with each other [6].

Discussion forum motivate learners in two ways. First, active discussion forum have every minute new

content, and thus, make it more attractive for a users to come back later. Second, whenever a learner expressed his own opinion then it tends to defend this opinion against others. Hence, active learners will contribute quite regularly [4]. The main purpose of this paper is critical review of all the work related to discussion forum and problems on the methods of posting or comment on it.

II. FEATURES OF DISCUSSION FORUM

There are various features of discussion forum available through which we can interact and communicate with others, share their ideas and suggestions. Features are as follow:

Table I
Features of discussion forum

Parameters	Discussion forum
Locus of control	Open to collaboration i.e. Decentralized and group
Post	Are owned by groups with equal responsibilities
Aim	Aim is to provide support to public to discuss on any topic.
Content (Static/dynamic)	It provide static content: once posted the posting doesn't change (answers are provided by others)
Way of display	Content is organized and presented in different ways
Comments or answers	Both are required
Intent	The intent is decision making (used more to provide support)
Login required to see the content	Optional
Uploading/ Downloading	No allowed
Personal profile	Optional
Content posts	Queries and answers
Examples	Yahoo answers

III. LITERATURE REVIEW

Discussion forum is become essential tool of web 2.0. Various authors have discussed the design of discussion forums, and how discussion forums work. Some of the major works are discussed below:

Andrew Arnt et al. states that large messege and posts may produce information overloading problem. This problem can be resolved by moderator which is based on naive Bayes classifier that can be trained by a set of moderated comments in an online forum and then used to predict, with high accuracy, the expected moderations of unlabeled comments in that same forum. This classifier can then be used to augment the existing moderation scheme, addressing inherent scarcity problems [5].

Yulei Zhang et al. creates a Dark Web Forums Portal which is a heterogeneous forum that collected data from different Jihadist forums. System designing of dark web forums portal containing Data acquisition, Data preparation, several analysis functions including single and multiple forums searching, browsing, statistics analysis, multilingual translation, and then social network visualization. This forum used for providing the information to the users quickly and effectively [7].

Mikolaj Morzy. Introduce a framework for mining Internet forums which is to provide users with automatic means of discovering useful knowledge from these vast amounts of textual data. It consists of two levels of analysis: statistical and network analysis. For each level of the analysis the basic statistics used to construct a given level have been identified. The statistics identified are topic, post and user which are used to define activity, controversy, popularity and other work [8].

Namita Mittal et al. describe that In the web forum, crawling is used to collect the relevant information from different webpages. It crawls all the pages URLs that represent web forum. Out of these pages some of them are redundant pages, invalid pages and some require the authorization to access the login pages. For the efficient and effective searching, remove all those URLs pages having those errors and reconstruct the web forum. Other errors may be connection error, text error and number error. To overcome these problems, it convert HTML page into DOM tree and generate wrappers which used cluster based on similarity between templates. It separate and remove redundancy and errors among the pages for effective and efficient information retrieval from web forums [9].

Qing gao states special and effective vertical crawler for web forum. This crawler is different from General and focused crawler in which general crawler is used to meet common users demand and focused crawler is used for filter useless information. Vertical crawler can get structured information from web pages, filtering out the useless information and show users the most valuable web resources. It adapts the template based processing method for regular expression to get structure information like title, author, number of replies that are saved into post information table [10].

According to the *Kavin chai et al.* due to rapid increase the amount of user generated content (UGC), it is very difficult to identify the quality of the content. The main problem is insufficient rating given to large amount of content. A novel method is proposed to determine the post usage to evaluate the

quality of the content in forums. Post usage can be identifying user rating through usage behavior [11].

Guoying Wang and Jiyu Cheng states that all the data given by users in terms of posts or comments in online forums is the rewards in user contributed data. It may be possible that more reward is due to some fake contribution by users. Various possible frauds in online forum are junk post, advertisement post, dummy replies and dummy rates. These frauds are useless and have no contribution to a forum. There are some frauds tolerance parameters to measure fraud feature of user contributed data like post minimum length, interval, Average rate, replies etc. it calculates user contribution score (UCS) and using these frauds tolerance parameter, it recognizes fraud-tolerant user contribution score (FUCS) [12].

IV. RESEARCH GAP

With the explosive growth of Internet, discussion has become an essential communication media for exchanging information and ideas over World Web Wide. Some of the problems like information overload are generated. If the forum becomes very populated, many people post queries and comment on others query then it becomes very difficult to find best comments. Some post or thread may be unanswered generate unwanted data. In the user generated content, it become very difficult to find the quality content. Other problem is to find relevant information from the excessive data available on a discussion forum. Information retrieval is another big problem since there is plenty of useless information which cateorised into three categories: Invalid pages, Replicated pages and login pages.

V. CONCLUSION

The development of Web 2.0 technologies encourages people to share individual opinions. Web users can participate in a discussion forum platform to express themselves and interact with other users on specific interests. This contribute to a lot of user generated information which is distributed over many forums. Due to this, it is not easy to find specific information from discussion forums. A review of various methods of posting, commenting, searching the queries and the way to answer the questions (i.e. queries) on online discussion forums from different researchers has been done. The research gaps in the previous work are examined and are listed above.

VI. FUTURE ENHANCEMENT

Discussion forums have lot of information in the form of user generated content which is stored at different locations. This distributed information can be aggregated at a single place and can be used by users for learning. Additionally, collaboration with other web 2.0 tools like weblogs, Wikis and RSS etc can be done to enhance the power of eLearning. Also, people spend lot of time on social networks, so it is advisable to combine discussion forum with social networking sites for better learning experiences through which user can easily access the information of the forums.

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