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A Literature Survey on Semantic Annotation of Ubiquitous Learning Environment

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ABSTRACT: In contemporary technology, skill-based learning environments are used to promote the acquisition of practical skills, decision making, communication, and problem solving. For all these skills we need to provide a feedback to perform evaluation and also help the researchers to better understand the learning process. Here i have used the concept of semantic web based annotation, and also investigated the use of semantic annotation in the recording and subsequent understanding of such simulation environments. Then i have analyzed that this approach will be handled in both manually and automated evaluation system and the same was implemented and tested using some open source tools. Before that in this paper i have done a survey on some papers about the concept what they processed about the semantic in the ubiquitous environment.

Keywords: Skill based learning, SimMan, Ubiquitous**.**

I. CONTEXT AWARE UBIQUITOUS LEARNING ENVIRONMENTS FOR PEER-TO-PEER COLLABORATIVE LEARNING

Author: Stephen J.H. Yang
Publishing: 2006

A. *Introduction*

A ubiquitous learning environment provides an interoperable, pervasive, and seamless learning architecture to connect, integrate, and share three major dimensions of learning resources: learning collaborators, learning contents, and learning services. Ubiquitous learning is characterized by providing intuitive ways for identifying right learning collaborators, right learning contents and right learning services in the right place at the right time. Our context aware ubiquitous learning environment consists of three systems, namely peer-to-peer content access and adaptation system, personalized annotation management system, and multimedia real-time group discussion system. Since the effectiveness and efficiency of ubiquitous learning heavily relies on learners' surrounding context, in this paper, we will address a context model and context acquisition mechanism for collecting contextual information at run time. We have built a context aware ubiquitous learning environment and in this paper we will address how this newly designed environment can fully support the needs of peer-to-peer collaborative learning.

B. *Context Description*

To conceive context aware is an interactive model between learners and services, thus, we need to address the context description of learners and services. We have developed two types of context ontology for describing learners and services, they are learner ontology and service ontology.The interactive model is enacted by a semantic matchmaker that can perform semantic reasoning for context oriented service discovery and access based on the two context ontology.

C. *Peer-to-Peer Learning Content Access and Adaptation*

The peer-to-peer network makes each peer act as both client and server, so each peer can access and be accessed of material maintained on the peer. If a peer cannot find the material it required from its neighbors, the neighbors will query their neighbors for more resources, in such a way, the peer-to-peer network can find resources in a layered multicast to increase the hit rate of finding the material that the peer wants. There are two types of common communication in peer-to-peer architecture; one is the message exchange, and the other is file transmission. The message exchange is used for finding which peers possess the material the other peer wants, that is, finding who owns the resources. The file transmission is used for downloading or uploading material between two peers. Peer is like a

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neuron, it will relay/pass message, discovery service advertisement, and each peer is not only a messenger but also a service registry.

In addition to being both client and server, a peer can also be a mediator to refer a query to a related peer node based on the advertisement in its referral bank. The referral can be further classified into mediator peer referral and provider peer referral. The mediator peer is designed based on the "knowing whom to find help for." Our current approach of peer clustering and categorization is to organize peers into a tree structure and cluster similar peers into domain based on property (content provider) and capability (service provider). For example, within a school our peer-to-peer network is organized with an hierarchy of university, college, department, grade, and student which can be modeled by a tree structure.

D. *Multimedia Real Time Group Discussion*

Group discussion is another important learning issue in collaborative learning. A process in which small groups assemble to communicate with each other using speaking, listening, and nonverbal processes in order to achieve instructional objectives in their It also addressed the optimal group size for discussion to be between five and eight participants. Through the discussion, learners can review their ideas and get valuable opinion from another's aspect.

The purpose of group discussion is to form a learning group based on a specific topic for a learning objective. This involves group formation, the mechanism to form a group based on individual knowledge level and capability level as well as interest. There are two approaches of group formation; one is based on the learning objective, the other is learning on demand. For a specific learning objective, group members should have various knowledge and capability levels in order to complement each other and form a team work. For learning on demand, the grouping is based on certain needs, for example, post a question and looking for help. In this case, the collaborators with certain interests and knowledge are the priority choice.

Designing our message service from a group collaboration point of view, that is, to provide message services for group collaboration, such as discussion, instant messenger, message exchange, message filtering, push message, and message synchronization within a group. In our design of group collaboration, each peer is free to initiate a special interest group (SIG) and free to apply to join any SIG initiated by other peers in the peer-to-peer network. The peer who initiates a SIG is the default SIG manager who has the authority to grant a pass to other peers who are interested in joining the SIG. Typical SIG management includes granting a pass, maintaining the discussion and file sharing which has occurred in the SIG etc.

Our multimedia real-time group discussion system provides typical services such as group formation, email and instant message services for the entire peer-to-peer network, special interest groups, audio and video conference, electronic whiteboard, personal or group calendar services, personal ontology, groups, ontology for ontology management, and session management and synchronization management when peers reconnect to the network.

II. GENERATING SEMANTIC ANNOTATIONS FOR FREQUENT PATTERNS WITH CONTEXT ANALYSIS

Author: Qiaozhu Mei, Dong Xin, Hong Cheng, Jiawei Han, ChengXiang Zhai

Publishing: 2011

A. *Introduction*

In this paper, we propose the novel problem of generating semantic annotations for frequent patterns. The goal is to annotate a frequent pattern with in-depth, concise, and structured information that can better indicate the hidden meanings of the pattern. We propose a general approach to generate such an annotation for a frequent pattern by constructing its context model, selecting informative context indicators, and extracting representative transactions and semantically similar patterns. This general approach has potentially many applications such as generating a dictionary-like description for a pattern, finding synonym patterns, discovering semantic relations, and summarizing semantic classes of a set of frequent patterns. Experiments on different datasets show that our approach is effective in generating semantic pattern annotations.

Existing frequent pattern mining work usually generates a huge amount of frequent patterns without providing enough information to interpret the meanings of the patterns. Some recent work introduced post processing techniques

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to summarize and compress the pattern set, which shrinks the size of the output set of frequent patterns but does not provide semantic information for patterns. We propose the novel problem of semantic pattern annotation (SPA) generating semantic annotations for frequent patterns. A semantic annotation consists of a set of strongest context indicators, a set of representative transactions, and a set of semantically similar patterns (SSPs) to a given frequent pattern.

A general vector-space context is used for a frequent pattern which is to propose the algorithms to exploit context modeling and semantic analysis to generate semantic annotations automatically to every function. The context modeling and semantic analysis method we presented is quite general and can deal with any types of frequent patterns with context information. The method can be coupled with any frequent pattern mining techniques as a post processing step to facilitate interpretation of the discovered patterns. We evaluated our approach on three different dataset and tasks. The results show that our methods can generate semantic pattern annotations effectively. As shown in our experiments, our method can be potentially applied to many interesting real world tasks through selecting different context units and focusing on candidate patterns for SSPs. Although the proposed SPA framework is quite general, in this paper, we only studied some specific instantiation of the framework based on mutual information weighting and cosine similarity measure. A major goal for future research is to fully develop the potential of the proposed framework by studying alternative instantiations. For example, we may explore other options for context unit weighting and semantic similarity measurement, the two key components in our framework.

III. A SEMI AUTOMATIC SEMANTIC ANNOTATION AND AUTHORING TOOL FOR A LIBRARY HELP DESK SERVICE

Author: Antti Vehvilainen, Eero Hyvonen, Olli Alm

Publishing: 2011

A. *Introduction*

This paper discusses how knowledge technologies can be utilized in creating help desk services on the semantic web. To ease the content indexer's work, we propose semi-automatic semantic annotation of natural language text for annotating question-answer (QA) pairs, and case-based reasoning techniques for finding similar questions. To provide answers matching with the indexer's and end-user's information needs, methods for combining case-based reasoning with semantic search and browsing are proposed. We integrate different data sources by using large ontology's of upper common concepts, places, and agents. Techniques to utilize these sources in authoring answers are suggested. A prototype implementation of a real life ontology based help desk application is presented as a proof of concept. This system is based on the data set of over 20,000 QA pairs and the operational principles of an existing national library.

B. *Ranking Annotation Concepts*

Previous sections analyzed situations where a semantic annotator produces too few relevant annotation concepts. A reverse problem with automatic semantic annotation is that often too many irrelevant concepts are suggested. Especially if the input text is long, a considerable number of possible annotation concepts are usually found. In such cases it is useful to rank the concepts according to their likely relevance, and provide the end-user with a simple mechanism for evaluating and deleting the irrelevant annotations. Opas uses the idea of searching for semantic cluster(s) from the term set for determining the relevance of indexing concepts: terms in semantic clusters are ranked more relevant than semantically isolated terms. For example terms doctor, sickness and medication form a semantic cluster.

IV. A SEMANTIC APPROACH TO ANNOTATION OF LEARNING OBJECTS

Author: E.A.VIMAL, Dr S.CHANDRAMATHI

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A. *Introduction*

This paper is to design and develop the semantic annotation model for e-learning document and to find the presence of the concepts in the document. The awareness of the semantic web needs the widespread availability of semantic annotations for the obtainable and new documents on the web. Semantic annotations are to label ontology class instance data and plot it into ontology classes. Here, we are first applying the stop word removal technique and considering other contents of the documents to create the concept matrix and also we are considering the index terms to create a separate concept matrix. The concept matrix which are developed using the contents and the index terms are then combined to find the level of the presence of specific concepts in a particular document. This technique is implemented in Java and we have identified the percentage level of the presence of the concepts in the sample documents.

The important techniques which we have included in this paper are as follows:

- It considered the index terms of the documents to identify the concepts present in that document with more accuracy.
- Calculated the concept matrix based on contents and the index terms of the documents by applying the contents and index terms in the word net and we have used the techniques like matrix reduction and final resultant matrix to combine both the concept matrix.
- Calculated the importance measure for both the concept matrixes based on the contents of the document and the index terms to identify the concepts in a document with good precision.
- The added certain weight values for the concept matrix based on contents and the concept matrix based on index terms in the final resultant matrix technique to improve the accuracy.

V. CONCLUSION

The above four paper were discussed the various contribution of the ubiquitous computing. By this we can conclude that this type of learning is quit simpler to be in real time and also have higher quality. With this we can conclude that by this survey the ubiquitous learning environment have the best way in the learning environment, also i make this type of learning in the semantic way by using the concept of semantic annotation with some techniques in the speech recognition will be my future work to be carried out.

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BIOGRAPHY

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