Categorization of Academic Performance for improving E-education

Htet Su Wai, Daw Mar Mar Lwin
htetsuwai1912@gmail.com,dawmarmarlwin@gmail.com
Computer University (Maubin)

Abstract

The use of web interfaces across organizations' applications for cooperating and supporting has come to a dramatic increase in number of users to get effective systems. Current Web technologies employed to build up web portal in order to present serious limitations regarding information search, access, extraction, interpretation and processing. In this system, web portal is used to collect necessary information according to categorization to meet special needs of individuals concerning with students' education. In this paper, we present categorization of academic performance system for improving E-education to provide services to form a convenient, effective and unified system. Different students can have easy and intuitive access to their needed information and services through this academic portal. Students can simultaneously search education information such as suitable University with relevant location, their marks and applicable Universities through a single query via web browser by using rule-based reasoning method. This system also intends to develop resources from Universities' information in Myanmar.

Keywords: web technologies, academic portal, education information, rule-based reasoning

1. Introduction

Today, learning is changing as well, especially the technologies of learning E-education (also known as e-learning and online education) is the process of learning where computers are used at each possible step of the process: enrollment, instruction design, content delivery, evaluation, assessment and support. Accordingly, many academic performances for improving E-education are building, planning, or offering portals to individuals within their affiliated constituent groups: students, faculty, staff and alumni. In addition to promoting community interaction and communication, these portals offer a concentrically focused experience of individuals. All academic portals would like to stay in touch with their worldwide community and therefore have one common starting point for their fields and use the internet for free [4, 6].

For that reason, portal presents a unified, personalized, and customized view of the resources and services within organization to individuals affiliated with the performance. Within the academic performance, these resources and services include unstructured and structured Web content (pages and databases), online registration, online learning environments, and search engines and more.

Moreover, the portal concept of the Web has opened new possibilities to address some of the issues concerning the personal management of academic information and knowledge. The academic's task performance (research and teaching) must be used as the basis for the design of an appropriate academic information system. The personal management of academic information and knowledge can be seen as an essential part of the academic's task performance. Studies of how individuals organize their work, and also of the general nature of scientific information processing work can be relevant when designing a personal information system.

In theory, anyone can create a Web site by taking advantage of the power and flexibility of conventional Web servers and databases [1, 5]. Most academic web categorization systems have been designed to create web sites that serve a single, specialized purpose. Focusing on one overall function allows developers to make a number of assumptions about the nature of the site content, the types of users who will visit and manage the sites and the functions and behaviors. Therefore, by customizing search engines in this fashion and directing them to dependable sources of information, the Academic's portal would evolve increasingly "intelligent" automated systems and improve the success rate of categorization systems.

In this paper, academic web portal is created as categorization of academic performance system based on collection the necessary information for fresher in University students and their marks. Educational accountability demands, districts and states are required and report certain kinds of information about University students and how well they are attending the desire University on measures of achievement marks. Throughout, users can collaborate with others, access and student's relevant information, utilize a variety application. In other words, a portal is an all-in-one web site used to find and to gain access to other sites. In this system, a web site is considered as an entry point to other web sites, often by being or providing access to a search engine. Users can easier and faster register and minimize the overhead of information-seeking. With this academic portal, the user would no longer have to browse several different web sites to get desire University, but instead can obtain them directly through giving

relevant requests to the academic portal's user interface.

The rest of this paper is divided into four main sections. The first highlights description of the architecture in academic web portal facing the categorization of academic performance for improving E-education. The second elaborates on the opportunities that have become available for Universities as a result of the various initiatives in knowledge management. The third section addresses the categorization of information education providers to respond to these changes implementation from an information studies programme in Myanmar. The last section expresses the conclusion for this system

2. Description of Architecture in System

Many academic courses are studied by several groups at the same time. This system creates architecture of Academic Portal for managing education environments. Education materials can be administered at the level of the individual subject category which participating the subject marks. This architecture is an efficient mechanism that is managing these materials to offer opportunities for emphasizing unique anticipate University. This system allows students to manage a variety of education materials including state or division, district, place, subject category concerning with subject marks.

In this system, we present the architecture for building categorization of academic performance system that can be adapted to several runtime environments. Our architecture is structured in three layers: presentation, services and data layers. All the layers are independent, making the system more flexible and scalable. This architecture gives support for adding easily new services and features. Also, this system allows its users to develop their own services (apart from the existing services), without knowledge about the internal working of the system, just using open frameworks on which all the services are based. In Figure 1, we shows the description of the architecture with its the different layers and interconnections.

In this architecture, **the data layer** includes all the elements of the system that store data in a physical device. The data layer is composed by a database management system, although any other storage system that can interchange information with the next layer according to the specified interfaces could be used. The tasks of this layer are to store, update and retrieve data, creating a central point for any data access.

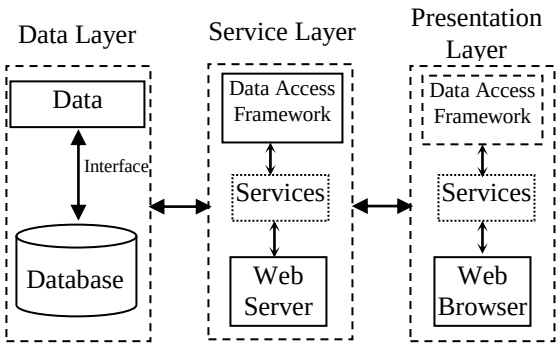

Figure 1: Architecture of Academic Portal

The connection with **the service layer** is a key issue because the attainment of total independence between both layers is an aspect very important. The independence between these layers means that categorization of academic performance system will be able to change the database management system (the core of the data layer) without any changes in the services layer. In this system, we use the SQL database type of interface between databases and services.

The main task of the services layer is to provide all the services requested by the presentation layer, using if it is necessary, and the data layer for accessing stored information. The services layer is the independence among the other layers. The elements of this layer are a Web server, a set of service and data access framework. The services are provided by a Web server that is the interaction point with the presentation layer. In addition, the services layer includes Graphic Interface Framework which must generate the HTML code that is sent to presentation layer. Using this functionality, this framework uses HTML to generate the graphic interface. Of course, the presentation layer can be able to interact using this new standard of communication.

The presentation layer interacts with the services layer and it is the interface between the users and services. In our system, this layer will be composed basically by a Web browser that allows users to see the results of their requests to the different services. This layer is presented for all the users, but is the simplest layer at the same time. In any case, this layer can be more useful if it could be able to execute services that come directly from the services layer. This means that the presentation layer will have a part of services layer running on its same machine. But not all the services can go to this layer, just specific services that can be executed there. These services will not need any interactions with the Graphical Interface Framework since they are just applications running on the monitor, but may need to interact with Data Access Framework.

From a generic point of view, the main advantage of this architecture is the flexibility provided by the independence between the different layers. More specially, this architecture forces the academic performances to access the data layer through the data access interface, which makes possible to perform many changes on the database without having to change the services. This architecture is the fact that the data access and the graphic interface

components are both frameworks so this system describes new academic services without having to know anything about the data [7].

3. Design of Academic Portal System

Educational performances are facing intense pressure to increase operational efficiency and effectives demonstrated in a measurable increase in student and faculty achievement. With academic web applications, the user navigation follows the predefined hypertext structure. Therefore, finding contents requires the user understanding of the Web site outline. The academic web application with educational performances provides alternative paths to published data and increments the possibilities for the user to find the contents he is interested in. Therefore, we propose academic web portal system for categorization in subject matters from extracting the personalized student's assessment records based on user profiling including state or division, district, place, subject category along with concern subjects' marks. Therefore, an academic web portal system according to categorization the subjects for improving E-education is illustrated in Figure 2.

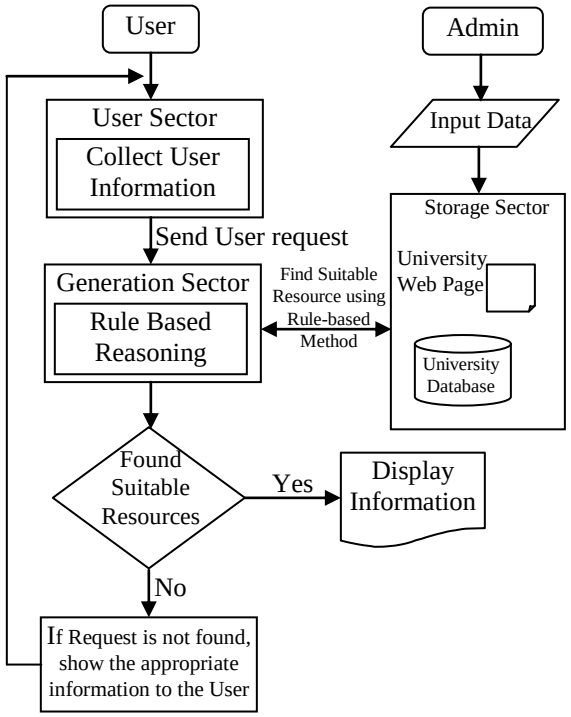

Figure 2: Overview Design of the System

This academic portal system consists of the following sectors: a user sector (collection user information), a generation sector (portal services by using rule based reasoning), a communication sector (finding suitable resources from education database), and a storage sector (acquisition and processing for retrieval and knowledge in academic, achieves etc). The academic web portal can be seen both the user (student) and the admin (staff) in educational information.

(i) User Sector

User Sector is sophisticated web search engine that is available for end users. The academic must be able to manage all his information and knowledge in an integrated manner with the aid of a seamless electronic environment [2]. Therefore, this user sector must support the academic's unique way of searching electronic information. In addition, this sector may be as an interface as through which data is passed back and forth between the user and computer.

(ii) Generation Sector

The generation sector has knowledge products that can be created by web editors and published on the Web. Also, this sector must provide for user's education records indexing of a variety of information sources by using rule based reasoning method.

Another function of this sector is also provided portal services with an alternative means of retrieving dependable information beyond the capacity of academic web sites. Its goal would be to give highly focused search engines adapted to the technical languages of the various academic specialties. This sector tried to retrieve information from education database. This sector also involves different rules to generate apply information for students.

To create a rule-based reasoning for a given problem, the following factors are:

(i) A set of facts represents the initial working area. This should be anything relevant to the beginning state of the system.

(ii) A set of rules should encompass any and all actions that should be taken within the scope of a problem, but nothing irrelevant, The number of rules in the system can affect its performance.

(iii) A condition that determines that a solution has been found or that none exits. This is necessary to terminate some rule-based method that finds themselves initiate loops otherwise.

Accordingly, in rule-based, it contains all of the appropriate knowledge encoded into IF_THEN rules and used to decide what content to represent knowledge which is presented as production rules in the form of condition-actions pairs: "IF this condition occurs, THEN some action will occur. Rules may appear in different forms. Some rules for Kayin and Kayah State in Table 1 and Table 2 are as follow:

Table 1: Rule Based Reasoning for Kayin State

Rules	Descriptions
R_{kayin1}	**IF** State/Division="Kayin" **THEN** District= "Hpa-An";
R_{kayin2}	**IF** District= "Hpa-An" **THEN** Place="Hpa-An"||"Hlaingbwe"|| "Phapun"||"Thantaung"||"Myawady" || "Kawkayeik" || "Myaingkalay";

R_{kayin3}	**IF** Place= "Hlaingbwe" **THEN** SubjectCategory="1"‖"2"‖"3"‖"4"‖ "5" ‖ "6" ‖ "7"‖ "8";
R_{kayin4}	**IF** Check Input Marks **THEN** Best Major="GTC"&& Best University= "Hpa-An GTC";

Table 2: Rule Based Reasoning for Kayan State

Rules	Descriptions
R_{kayan1}	**IF** State/Division="Kayan" **THEN** District= "Loikaw";
R_{kayan2}	**IF** District= "Loikaw" **THEN** Place="Loikaw"‖"Demoso"‖ "Hpruso"‖"Shadw"‖"Bawlakhe"‖ "Hpasaung" ‖ "Maesae"‖"Mawchi";
R_{kayan3}	**IF** Place= "Demoso" **THEN** SubjectCategory="1"‖"2"‖"3"‖"4"‖ "5" ‖ "6" ‖ "7" ‖ "8";
R_{kayan4}	**IF** Check Input Marks **THEN** Best Major="Computer" && Best University= "Loikaw Computer";

(iii)**Communication Sector**

It generates in change of accepting HTML form and it transfers to web page analyzer for analyzing the page [3]. Education material is delivered via the Web (e-education). Web page analyzer tries to obtain HTML form from user sector. In the web pages, most need information is densely located under certain web page tags, such as <table>, <tr>, <td>, <th>, etc. It finds need information in the web page tags and sends to the knowledge base system.

As a result, academic knowledge base system contains the knowledge about University information, supports the generating information and should be set up according to the standard of that domain and be provided continuously in functions. In this system, we use www.Unversity(Portal).com, www.Myanmar Universities.com as an application area.

(iv)Storage Sector

The education management of academic information and knowledge can be seen as an essential part of the academic's task performance. Studies of how individuals organize their work, and also of the general nature of categorization of academic processing work can be relevant when designing for improving E-education. Thus, education information and knowledge are stored electronically and made available on the Web. E-education is developed to manage the categorization of academic performance.

Most of the students' offers are the ability for academic performance to customize education information they receive and the way in which it is displayed on the screen, the categorization of this information, and the integration of information from University database. This database collects the data that are 44 subject fields: Medicine, Maritime, Dental, Pharmacy, Aerospace Engineering, Pharmacy Technology, Nursing, Education, Traditional Medicine, Economics, Physics, etc with their marks at two states: Kayin, Kayah and two divisions: Mandalay, Ayeyarwaddy in two academics (2008-2009 and 2009-2010).

Students have full control on what is going on with the subject fields they give anything for attending (both mandatory and elective subject fields). Each student can customize his/her own view about what information (university, searching desire University etc) is going to be displayed. In this system, we use SQL quires language to extract the education information from University database.

A SQL database most often contains one or more tables. Each table identified by name (e.g., University). Tables contain record (rows) with data. University database consists of University table. In University table, there are State/Division, District, University Name, Place, Subject Categories, Major and Marks. With SQL, this system can query a database and have a result set returned. Therefore, SQL language also includes syntax to update, insert, and delete records.

4. Implementation of the System

Ordinary web site can access directly to single web server. But portal site can access Web server via portal service and it can be connected with more than one Web server. This system provides users efficient access to electronic resources and retrieve information. Categorization of academic performance system is divided into two portions, namely, user side and admin side.

In storage sector of this system, the administrator performs inserting, deleting and updating processes for categorization of academic performance web pages in University database. In user side, this system usually collects the education information by using University database. As a result for user sector, user sends the requested information to the academic portal services. This portal service finds the suitable resources in the University Database by using rule based reasoning method.

During processing, in generating sector of this system, this service gathers information from the user such as state or division; district related to state or division, University name, place or township, type of subject category, and subject marks concern with this subject category and then sends the user request to the portal services. And then, this system has received the detailed information from the user, produced the Best Major and Best University for the user as illustrate as Figure 3.

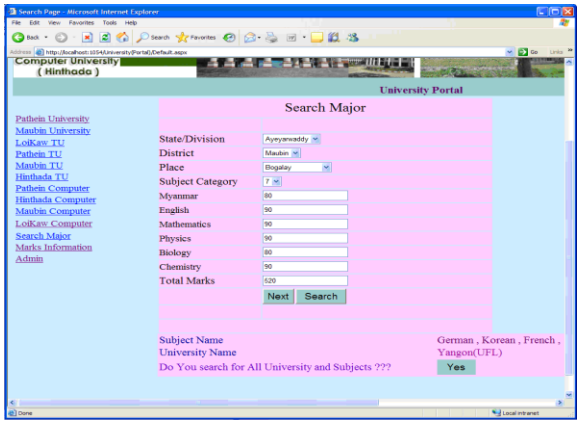

Figure 3: Best University Search Result Page of System

If the user wants to search again the relevant University in this system, this portal service also generates the applicable Universities concerning with state or division; district related to state or division, University name, place or township, and permitting Universities according to his/her marks as shown in Figure 4. This system is developed using C#NET language and also used Microsoft SQL 2005 to build the database. For the interface of the system, Microsoft ASP.NET is used. To handle the index and relevant information, Microsoft Server is applied.

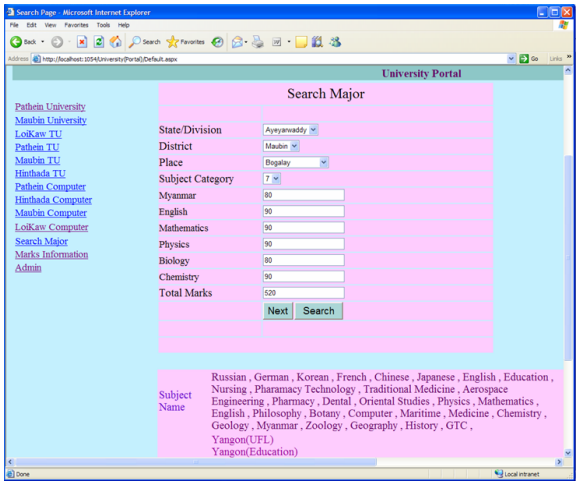

Figure 4: Generating Applicable Universities Result Page of System

5. Conclusion

This system examines the possibility of using the concept of a Web portal to support the academic's task performance. The architecture (see Figure 1) was identified as a conceptual structure for the study. During the handing out, this architecture was validated as a sufficient system to explain the categorization of academic information and knowledge. The current knowledge practices (collection, retrieval, organizing, processing, creating, communication, and categorization of academic information and knowledge) of these academic were investigated. The results give an indication of the different academic practices and improvement of E-education that can be supported by an academic portal.

The portal gives access to the following information sources: e-journals, e-articles, e-reserves, e-achieves, e-books, e-dissertations, library catalogues and the university's research database. The development of this system is being driven by the need for management and web engineering methodologies to accommodate the movement to higher user numbers; distributed and decentralized managed application and systems; user-centered orientations and the provision of integrated web applications.

Reference

[1]A. DeSimone, "Directory Services: The Foundation for Web Portals".

[2]A. Olabisi Sheyin, "e-Education in Nigeria: A Proposal for College Level Technology Capacity Building", *EuroJournals Publishing* Inc., Vol.36, No.2, pp.269-279, 2009.

[3]H. Pienaar, "Design and Development of an Academic Portal", Academic Information Service, University of Pretoria, South Africa.

[4] J. Mark Pullen, and P. M. McAndrews, "A Web Portal for Open-Source Synchronous Distance Education", Networking and Simulation Laboratory, C3I Center, George Mason University.

[5] N. Thai-Nghe, A. Busche, L. Schmidt-Thieme, "Improving Academic Performance Prediction by Dealing with Class Imbalance", Information Systems and Machine Learning Lab, University of Hildesheim.

[6]S. Foo, A. S. Chaudhry, S. M. Majid, and E. Logan, " Academic Libraries In Transaction-Challenges Ahead", Division of Information Studies, School of Communication and Information, 31 Nanyang Link, Sigapore.

[7]V. Stuikys, R. Damasevicius, M. Montvilas, V. Limanauskiene, and G. Ziberkas, "Education Portal Development Model for Implementation for Change", *Information Technology and Control*, Vol. 36, No.3, 2006.