Web application for monitoring the scientific activity of employees at SUNP

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Abstract

In this paper, we present a web application for processing scientific activities of the employees at the State University of Novi Pazar. There is a need for processing the scientific work of researchers for variety of purposes: election to the posts, reappointments and promotions. This web application offers an automatic storing of scientific papers, the ones being performed manually previously. Thus, all published papers can be presented according to different criteria (author, department. year) and put into a list of papers due to the selected criteria .

1 Introduction

State University of Novi Pazar (SUNP) has a huge number of staff in teaching process doing research at the same time. Today, scientific papers of all those authors are available somewhere on the Internet, although every author has printing version of his or her paper. Collecting a list of scientific work in journals and conferences is hard and time consuming job if you are using paper form. Scientific paper availability on Internet gives us possibility to collect bibliography as a list of reference more easily.

At the moments of election, reappointment or promotion, University needs list of references for specific author. If bibliographies have not been updated for a long time, there is a need to collect all that information. In addition, in accreditation process, accreditation board requires review of scientific activity for whole university, specific department or specific member of university staff.

There are many web applications available free. Most of those applications are allowed to add, update, delete, import, export and search a certain scientific paper. But, specific needs cannot be satisfied using only this free application. For instance: paper categorization, scoring of authors work, querying by attributes mutual for paper published by authors belonging to different departments, etc. For this purposes, we developed web application called eRadovi. This Web application is developed in order to provide effective way for getting lists of references and in order to increase time for getting this lists of references.

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2 Motivation

Scientific activity and managing scientific references is very attractive issue occupying attention in academic circles. According to this, a large number of web based application for managing scientific activity are developed. We will focus analyzing the most popular freely accessible web search engine and bibliographic database, Google Scholar.
Scientific results are scored different in different countries according to the rules established by the relevant institution in that country. In Serbia, the book of regulation consist of rules for scientific results, categorization and scoring are established by the National council for scientific and technological development in 2008. These rules for categorization are the base for grouping papers according to the criteria. [1].
There are nine groups of results marked by M: M10-M90. For example: works published in scientific magazines of international importance (M20), Proceedings of international scientific meetings (M30). The group (M30) consists of: Invited talk at an International Conference printed in its entirety (with an invitation letter as prove) (M31), and other five type of results M32, M33, M34, M35, M36. Other group of result (M10, M20M80) contains from three to nine types of results (for instance: M23, M65, etc,).
There are many applications available free. As we mention in the introduction, almost all needed function are available but one important is not. For example, if we want to search all scientific paper in our University belonging to M23 type of results, that is not possible even we have all scientific paper for all authors from our University available. These applications have no possibility for specific fields needed for search and querying purposes. Specific field would be: institution (or university) and department.
The most popular free web application for managing scientific papers is Google Scholar. This application includes searching, finding, locating and learning about key scholarly literature in any area of research. Like other free Web application, this also doesnt include specific custom fields for the purpose we mentioned in introduction.

3 eRadovi application

Using the book of regulation for measuring scientific activity in Serbia, the goal of this application is to group all scientific papers in State University of Novi Pazar into these categories according to the type scientific paper belongs to. This Web application is available at http://eradovi.np.ac.rs. Application is optimized for Google Chrome, Mozilla Firefox and Opera web browsers.

3.1 Architecture

Application architecture is a three-layered architecture consisted of: user interface, application logic layer and data layer. User interface is enabled trough the Web browser. Users can search, display but also import or delete own paper data through web browser.
Application logic is implemented trough logic modules that are used to manage user activity and connect different application layers. Module for authentication is loaded during the user login and it ensures that the pages appear to users depending on their privileges. Also, MD5 encryption algorithm is used to provide security

of user data. Other modules can be either passive or active depending on user-assigned functions. For example, authors have access to the following modules: Add Result, Show Results and Edit Profile. Administrators can access functions of the following modules: Add Author, Show Authors and Search Results.

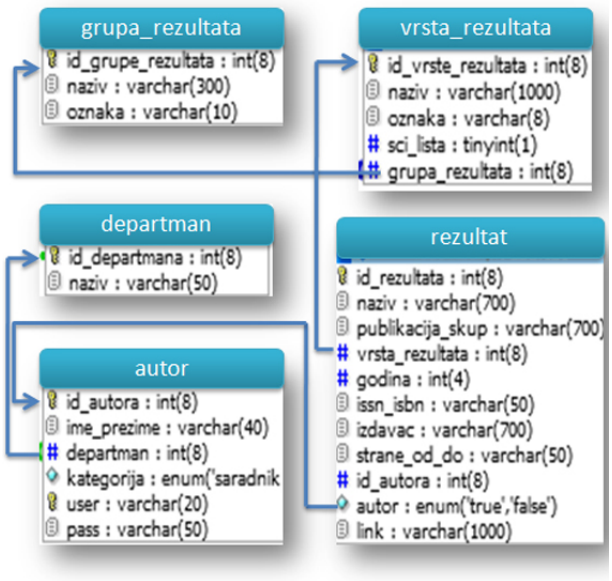

Figure 1: Database structure

The functionalities hidden within the modules allow users to interact with application and achieve their specific goals. Module Add Author is designed to manage authors accounts. It integrates functions that allow administrator to add authors, and module ShowAuthors allows administrator to see all authors accounts saved in database. Search module combines functions that show scientific papers that satisfy certain condition (year, author name, department name, type of result, group which result belongs). Edit Profile module takes care of change of personal data and login information for authors. Add Result module allows entry and deletion of scientific paper, and Show Results shows authors publication saved in database. Database forms the last application layer and provide necessary data. It is used for storing data about registered users (administrators and authors) and publications. Publications are categorized according to [1]. Author can choose category between M10 and M90. For example, publication can be: paper presented on the international conference printed entirely (M33), national conference printed as abstract (M64), etc. Database consists of five tables. Its structure is shown on Fig 1. These are: department, author, result, type of result and group of results (in Serbian, departman, autor, rezultat, tip rezultata and grupa rezultata, respectively). Table departman holds names of ten departments of State University. Then, table autor keeps data about users, table rezultat holds data about scientific works, and tables vrsta_rezultata and grupa_rezulata defines which group or type certain publication belongs.

For application development several technologies are deployed: HTML, CSS, PHP, MYSQL, and for encryption and secure logging using MD5 algorithm.

3.2 Functionalities

There are two types of users: users with privileges to search papers and add author (administrator) and users with capability to add information about publication and only see own stored data. Adding authors - Creating authors account implies defining athors username, initial password, rank (profesor, asistent etc.) and department title. This funcionality is available only to users with administrator privileges. Searching - Searching can be performed based on different criteria such as: author name, paper title, publication year, and department name and publication category. Criteria could be used separately or combined in order to get precise results as much as possible. This funcionality is available only to users with administrator privileges. Showing authors - This funcionality is available only to users with administrator privileges, and it provides seeing all authors data stored in database. Adding result is funcionality available to authors, and it provides adding title, publishing information (journal, conference and book), publisher, information if user is author or coauthor of publication, year of publishing, number of pages, ISBN and link on web. Showing results is funcionality available to authors, and it provides showing information for all results that belongs to author. Editing profile is funcionality avaiable to author, and it allows user to change account information, like password.

3.2.1 Example: Adding Result (author)

In order to use adding result functionality, author must be logged in. There is an option DODAJ RAD in upper right corner that allows adding a new result. After choosing this option, next screen appears as shown on Fig 2. When logging is successful and when result is added, page depicted on Fig 3 is opened, and it shows all authors scientific papers stored in the database.

Figure 2: Adding result

Figure 3: All stored results

3.2.2 Example: Searching result (administrator)

In order to perform searching saved results in the database, logging of administrator is necessary, and it can be done on same way as authors logging, as we describe in previous section. Successful login leads to page with three options: SPISAK SVIH AUTORA (en. All Authors), DODAJ NOVOG AUTORA (en. Add new author), and PRETRAGA RADOVA (en. Search results), Then, last option Pretraga Radova should be chosen, and next page opened is page on Fig 4. For example,

Figure 4: Form for searching all results on different criteria

if values for field are: Filter: Svi radovi; Autor: Adela Crnisănin; Godina: 2011; Departman: Svi departmani, all scientific papers whose author is Adela Crnisănin, and which are published on year 2011 will be listed Fig 5. Another example of showing data related to an author is given in Fig 6 with link to publisher data.

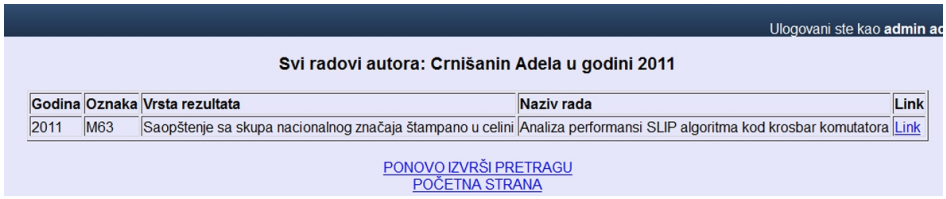

Figure 5: An example of search on author and year criteria

Figure 6: An example of Authors list of publication (left) and original publisher site using link (either web site or doi bookmark)

4 Conclusion

Improvements will include adding contribution of each scientist to research community according to his/her engagement in Editorial board, Conference chairman, Program committee, reviewer, etc. Application allows authors to see their papers only, whilst people inside University management with special user privileges may use all data. In order to promote University, it is a possibility to extract some important references e.g. from M10 and M20 categories and show them at the University Web site, for example by departments, or any other usual criteria. Finally there is a possibility to export all references in BiBTex format.

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References

[1] The Official Gazette of the Republic of Serbia. The rules of procedure and the manner of evaluation and quantitative presentation of scientific-research results of researchers. (18/10):18–25, March 2008.