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CHEMISTRY-INSPIRED FRAMEWORK FOR OPEN EDUCATION RESOURCES

Afra Almas, Dr. Shameem Akhter

ABSTRACT

Open education resources are open province learning substances largely and uniformly used in online and conventional education surroundings. To make the usage of O-E-Rs simple, a new chemistry-inspired framework associates learning substances to subsidize, improve, and detect appreciated possession with the aid of education community. This object offers an advanced chemistry-inspired-framework for connecting learning entities specifically; educators can form "learning molecules." In addition, various essential requirements for instance teaching and learning requirements can close or operate the creation of these learning substances through "bonds". Finally, this object describes a quotation procedure for learning substances to create a healthier atmosphere for their production and practice. One of the indispensable encounters for O-E-R convention is defining how optimum to illustrate the learning objects.

I. INTRODUCTION

Contributing to UNE-SCO, O-E-R is "numerous sorts of education substances with open license that are available on public domain." A similar explanation offered by OER commons is, O-E-Rs are "coaching and learning resources that we may generally operate and reoperate at no cost, and approving the requests on demand." Attracting a wider viewpoint, education substances obtainable on the Internet can be retrieved and/or used abundantly or within assured authorizing limitations, such as Creative-Commons-licenses. The training community around the world has been consuming such possessions in various controls and for numerous resolutions. With uncovered resource authoring tools, the cost of producing O-E-R based video lectures is very effective. OERs are also primarily appropriate for teaching computer science itineraries, which noticeably provide themselves to digital resources. O-E-Rs can also be used to teach hardware-based itineraries, which provide the learners flexibility in time and locality. O-E-Rs are also helpful to instruct the learners in complex medical settings and the people with disabilities can also take advantage from this. According to the current work, in a social networking surroundings organizational support and disputes associated to speech, verbal communications, as well as standards are the principle issue influencing the assignment and application of O-E-Rs.

To achieve learning substances, repositories are repeatedly used to accumulate learning-object information. In addition, various methodologies have been anticipated to maintain learning-object association. The Content Object Repository Discovery and Registration/Resolution Architecture contain learning substances that can be systematized with a reusability hierarchy for effectively fetching as well as reusing learning substances.

Connected with these foregoing methods, the estimated chemistry-inspired-framework is more suggestible and creative. The purpose is to attach learning items through miscellaneous kind of bond and learn them from a new point of view. In other terminology, "learning molecules" can be build by relating learning objects utilizing a chemical response such as computing system, to a large extent like molecules are made up of large number atoms in surroundings.

II. LITERATURE SURVEY

1. EDMUNDO "Guest Editorial: Open Educational Resources In Engineering Education: Various Perspectives Opening The Education Of Engineers." 2014

The authors studied the current use of O-E-R in designing and training . A subject related definition, open licenses, utilizes and reusability, humanizing discoverability, open preparations, opening up O-E-R stores and datasets, and O-E-R superiority are on the entire issue that must be overseen and comprehended. O-E-R actions will formulate it practicable for instructing employees to focus on the genuine method of instructing and on the

teacher substitute collaborations that are the indisputable center of cultivating and adapting, instead of on the constant construction of informative resources. The sustem provides relatively moderate but strong information, offers an astounding prospect for everyone to split, utilize, reprocess, and modify information and is very simple to access. It m**akes the students susceptible against potential entanglements.**

2. HENRI PIRKKALAINEN " Understanding Social Oer Environments—A Quantitative Study On Factors Influencing The Motivation To Share And Collaboratem." 2014

The authors have tended to O-E-R hindrances in one of the main quantitative examinations on the subject. Their prominence was on social OE-R conditions where educators are the principal clients. The outcome established that parlance and social precincts was the most stranded indicator in the absence of stimulation. A moderately analogous level of contact was illustrious in absence of hierarchical assist and superiority viewpoint. With the help of this study application, suppliers and informative establishment can probably lower the difficulties that perversely impact the inspiration of instructors to contribute and collaborate in social circumstances around O-E-R. An efficient appliance to complement previous kinds of learning resources and create edification more transparent i.e. crystal clear is the main advantage of this study. They cannot illuminate all issues that have impact on motivation and is insignificant to comprise into explanation of all imminent obstacles

3. GARY C. JENSEN and ALISON REGAN "Open Courseware And Shared Knowledge In Higher Education". 2002

The unexpected emergence of interactive media modernization and, significantly more, on-line originality is requiring modification in sophisticated education is studied. This inescapable change can be defaulted to commerce activities or efficiently required after in shared intellectual learning group that precede open source code. By distributing data in habits that are equivalent correspondent of science, scholastics can revitalize the screening call through the fast progression of instructional process. The information pedestal will grow up rapidly and unpredictably and provides a peer investigated criterion for promising practice in instructing prominence. It provides less security in forthcoming online courses.

4. KEITH HARMAN & ALEX KOOHANG "Discussion Board: A Learning Object". 2015

In the proposed work they discussed about the entity that contain piece of information or sub- questions that comprise of smaller parts or sub-objects. Moreover, a barter board as a learning object is a sub-question or inflammation of a superior learning object. It is just a question of contextualization. This is essential information since it affirms what has been realized in the writing about learning objects. They authorize the development of learning substance in rudiments because the object is independent and can be used in any allocation medium irrespective of acquaintance, skill and etiquette.

5. KUN HUA TSAI & TI KAI CHIU "A Learning Objects Recommendation Model Based On The Preference And Ontological Approaches". 2006

They proposed a adaptable recommendation exhibition for convalescing and proposing to a student the applicable learning objects. The proposed model authorizes e-learning frameworks to commendably recycle and share learning objects disseminated by different charters. It operates specific cosmology to construe what apprehending object a student should examine and what comprehending objects an outline should search for logically. This technique can evade the heft from oscillation comprehensively and convey adaptive and amended probation for each user.

6. JEHAD NAJJAR & ERIK DUVAL "Towards Interoperable Learning Object Repositories: The Ariadne Experience". 2003

The ARI-AD-NE solicitation profile has been plotted into IE-EE LO-M, and significant swappable LOM XML metadata junctures for ARI-ADNE metadata have been distributed. This work constructs the interoperability between usages in light of the LO-M standard. This draft copy stretches the formal determination of names, potentials and entreating of information apparatuses. Thus, they yanked this basic array to recognize various examples and terminology valuations of ARIA-DNE when it is accurate. It provides increased interoperability among ARIA-DNE and other Learning Object Repositories and is certifies to share and to exchange learning objects and their metadata.

7. NE-IL Y. YE-N, TIMO-THY "Ranking Metrics and Search Guidance For Learning Object Repository". 2010

They enriched the past works, predominantly on the Reusability Tree, in light of S-C-O-R-M and C-O-R-D-R-A. In the proposed system they used information quarrying encroachments for time arrangement data together the imperative information. Using the projected element, it can promote the reusability of L-O's. Moreover, to help patrons in the observing appearance, they refurbished the deviousness of Germaneness Feedback and amalgamated it with the heaviness of L-Os that they anticipated. Provides a unique device for repository and support users in convalescing relevant data by studying their autopsies. It doesn't afford genuine objects, like the recommendation methods to users.

8. RAFAEL DE-SANTIAGO AND AND-RE RA-ABE "Architecture for Learning Objects Sharing Among Learning Institutions—LO-P2P". 2010

The aim is to introduce the LOP-2P engineering: full dedicated a cumens about the strategy would be problematic to cover in a introverted article. Thus, this paper announces the primary acmes and rules of the engineering, with the goal of demonstrating the reasons and viability of the LOP-2P. LOP-2P structural design has the commitment to share Learning Objects with an allowed license of usage. Permits network interoperability. The c**onsequences in shortage of concentration in studying is the problem associated with this study**

III.   SYSTEM ARCHITECTURE
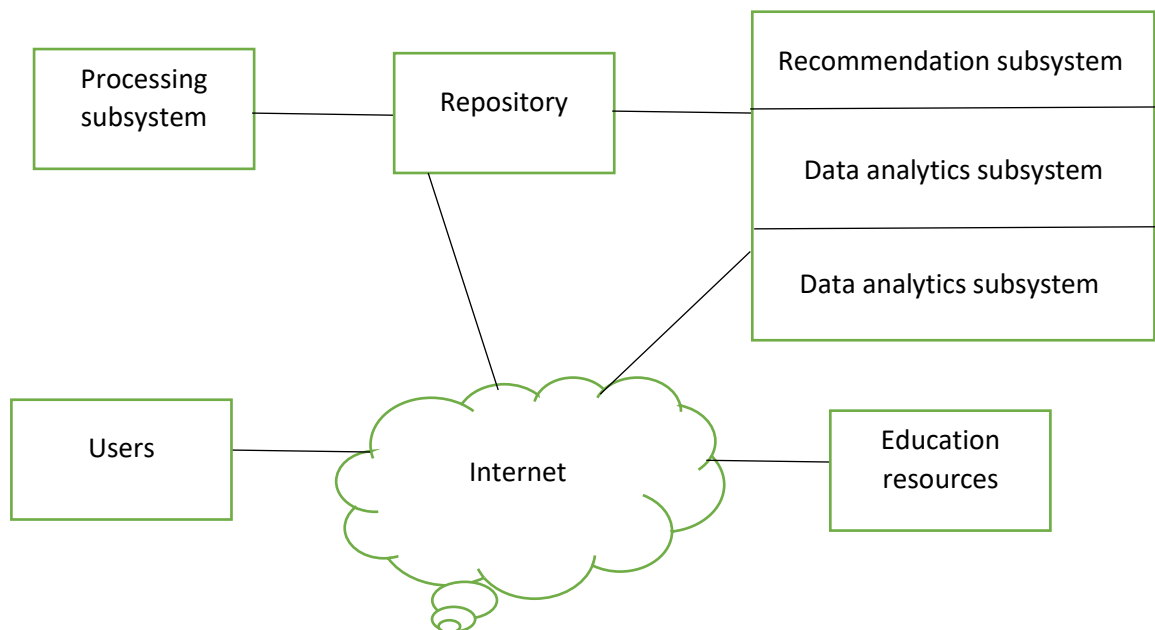
Fig 4.1.1: System Architecture

The learning substances metadata are stored in the repository while the actual training material resides in the author's system. The submitted training material undergoes peer analysis to ensure quality control. The learning substances are then searched over the internet to make them accessible to the users. User requests and learning substances are handles by the subsystem in the back end. Other functions such as suggesting learning substances to user, examining user performance using data analytics and delivering societal networking functions are supported by the supplementary subsystems.

Algorithm

In calculation of Electrons and atom we use following concept

101 and 101 form the strongest reinforcement/covalent
101 and 010 can form the strongest complementary/ionic bond.

Micro-attributes can be expressed in decimal numbers—for example, the binary number
111 = 7.

Energy 101
Energy factors (inner) = 1
(outer) = 0.5
reinforcement/covalent bond 1 + 0.5 = 1.5.

Electron
101= one in the first orbit and one in the last orbit, and there is no electron in the second orbit.
001= one in the last orbit, and there is no electron in the first orbit and second orbit.
011= one in second orbit and one in the last orbit, and there is no electron in the first orbit

O1: {a, b, c};
O2: {a, b, d};
O3: {e, f};
O4: {b, e}.

b = 3/4 or 0.75.
a ,e = 2/4 or 0.5.
c, d,f = 1/4 or 0.25.

0.75 + 0.5 + 0.25 = 1.5.

complementary/ionic bond 110100 and 001011 = 0.75+ 0.5 + 0.5 + 0.25+ 0.25 + 0.25 = 2.5

Genetic Algorithm:

Genetic algorithm is capable to report multifarious difficulties with many variables and a large quantity of possible significances by fantasizing the evolutionary method of "survival of the fittest" to reach a distinct goal. They galvanize by engendering many random responses to a problem, eliminating the foulest and cross-self-fertilizing better responses.

A genetic algorithm maneuvers through a cycle of two phases:
1. Constructing and preserving a population of resolutions to a problem.
2. Choosing the upgraded elucidations for recombining with each other.

Steps:

In all of the work presented below, energy evaluations were performed using an empirical force field. The energy of a particular arrangement of atoms is calculated according to

$$E = E_{stretch} + E_{bend} + E_{torsion} + E_{nonbonded},$$

where the total energy of a molecule is represented as a sum of terms representing bond stretching, bond angle bending, dihedral angle, and non-bonded energies. The bond length term is represented by a harmonic potential of the form

$$E_{stretch} = \sum^{bonds} k_s (l - l_0)^2,$$

where ks, l and l0 represent the bond spring constant, the bond length, and the ideal bond length, respectively, and will vary for each pair of atoms in the molecule, depending on their type as well as electronic state. The bond angle bending term is also represented by a harmonic potential

$$E_{\text{bend}} = \sum^{\text{bonds}} k_{\text{b}}(\theta - \theta_0)^2,$$

where kb, h and h0 represent the bending constant, bond angle, and ideal bond angle for each bonded combination of three atoms. The non-bonded interaction term contains a van der Waals term and a coulombic term

$$E_{\text{nb}} = \sum_i^{\text{atoms}} \sum_{j=1}^{j<1} \varepsilon\left[\left(\frac{r_0}{r}\right)^{12} - 2\left(\frac{r_0}{r}\right)^6\right] + \sum_i^{\text{atoms}} \sum_{j=1}^{j<1} \frac{Q_i Q_j}{D r_{ij}},$$

where e is the Lennard-Jones well depth, r0 the optimal interatomic distance, r and rij represent interatomic distance, Q the atomic charge, and D is the dielectric constant. Because the simple van der Waals interactions do not adequately model the twisting of a molecule about a rotatable bond, a dihedral angle twisting term was explicitly included in most force fields as

$$E_{\text{twist}} = \sum^{\text{dihedrals}} V_i(1 + s_i \cos n\omega),$$

where Vi represents the height of the periodic torsional barrier, si is 0 for staggered and 1 for eclipsed minima, n is the periodicity of rotation, and x is the dihedral angle.

IV.   IMPLEMENTATION
List of modules
The modules in this project are:
- **Author/Lecturer**
- **Editor**
- **User**

The key system objects in the proposed chemistry-inspired framework are the learning substances, they acts like atoms, which can be interconnected to form molecules via bonds. The macro- and micro-attributes are assigned to each learning substance to function like nucleus and electrons, respectively. The micro-attributes are subject specific and usually provide details . The automatic computing or fusion process is used to construct micro-attributes and each learning molecules is represented using predefined X-ML tags embedded in the metadata. These keywords can be defined by the contributor, through crowd sourcing and/or by generating them via data or text mining based on the learning object metadata information.

Module description
1. Author: Author allocates education resources of a running object during a consolidated repository. Exclusively, the repository stocks the learning entity metadata built on the foot of macro and micro traits. There are four sorts of suppliers: author, enhancer, integrator, and recommender.
2. Editor: When writer upload any file the request will go to editor. Editor verifies the file by scrutinizing each and every content of the file and by checking whether the keywords uploaded by the writer are related to the content of file. If editor accept the file then the file will be uploaded in repository and if he rejected the file it will be removed.
3. User: User admittance the process above the internet to chase for culturing molecules. The backside includes the scheme so as to precede the learning entity and user request. There is also a supplementary subsystem to sustain other function for instance applauding erudition objects to user.

User is also able to plea correlated erudition object, all erudition molecules using certain purposes, circumstances plus boundaries. The dispensation subsystem subsequently grips the request and capitulate the consequences to the user, who can access the edification resources on the internet.
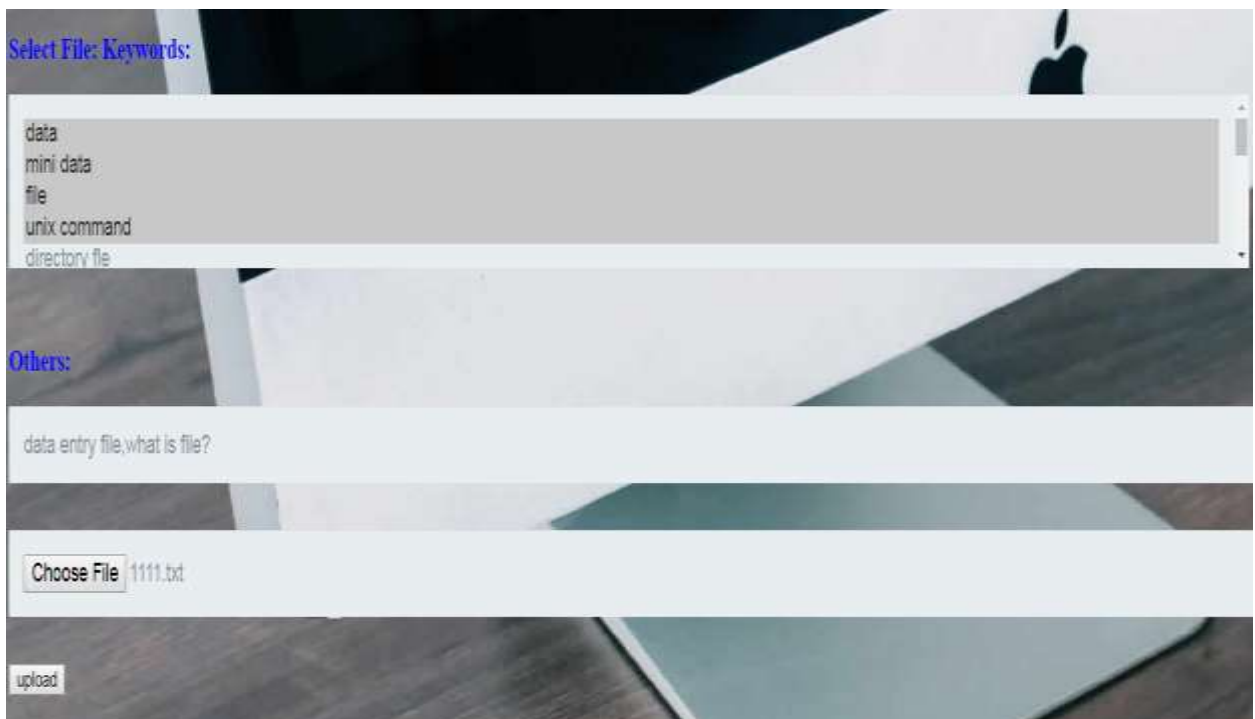
V. INTERPRETATION OF RESULT

Fig 7.1: Author's page

It permits the author to upload the file and while uploading it display all the keywords which are in history to user so that they can use that keyword as filename while examining and moreover they can add keywords in for file.
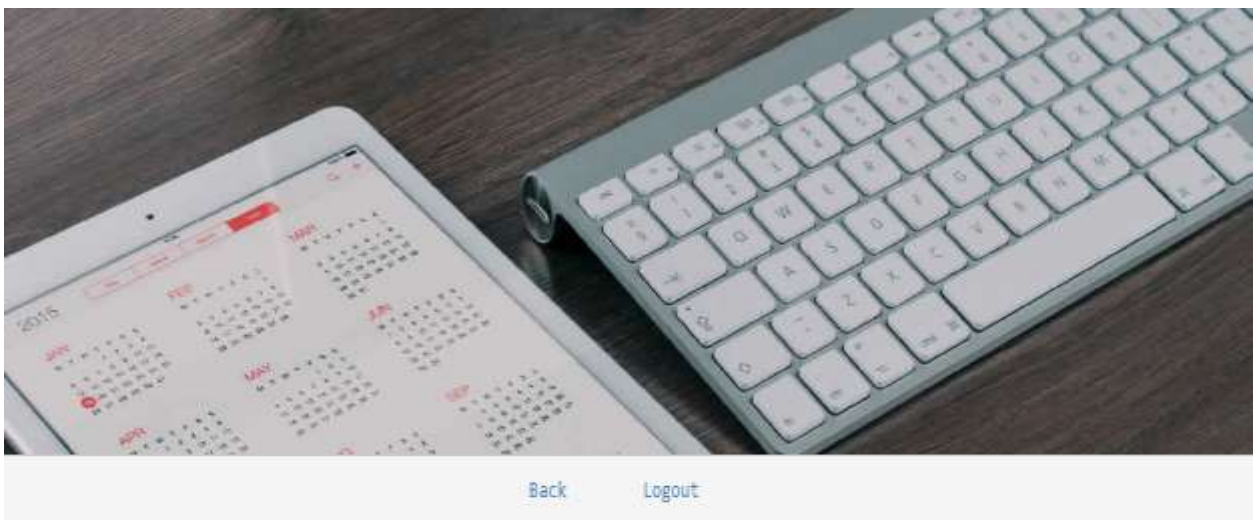

Fig 7.2: File upload

Here, it displays how the keywords are added while uploading the file and based on these keyword user will get the file with the support of electron.
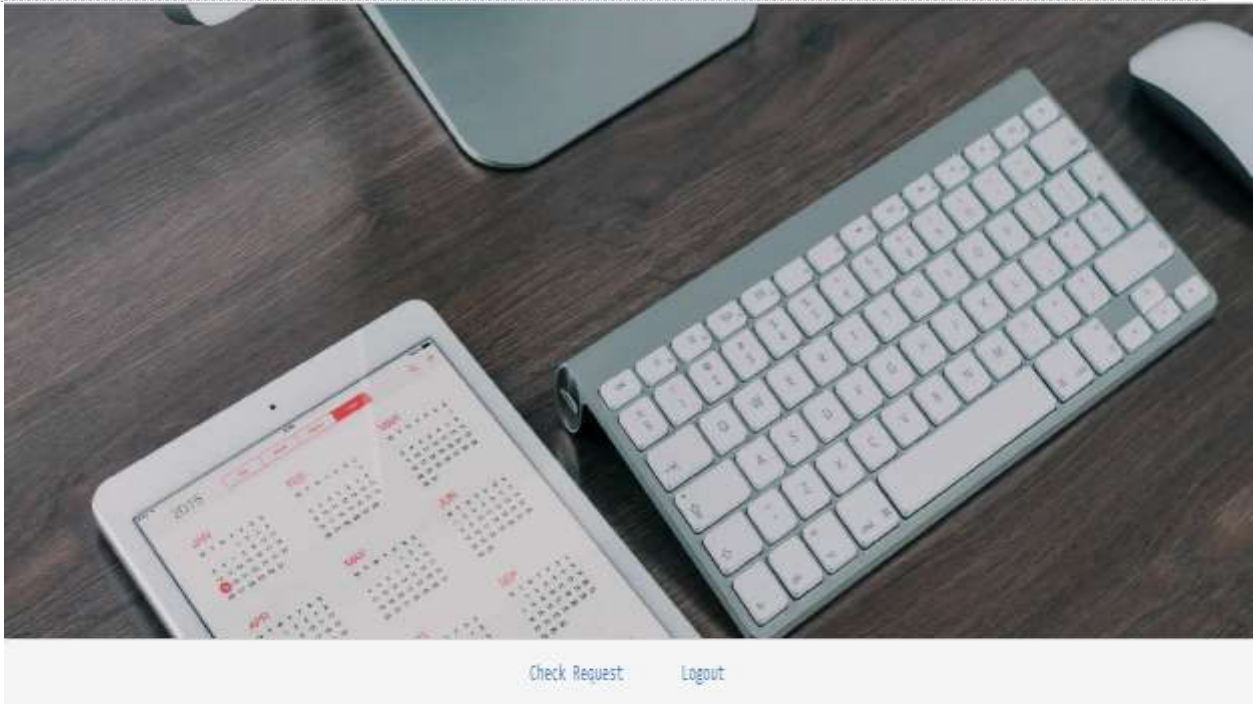
Fig 7.3: Editor's page

Once the author uploads the file, the file appeal will go to editor so that he can confirm whether the file encompasses accurate data based on the keywords.

Fig 7.4: Editor action page

Editor will have the power to receive or discard the file if the file does not encompass accurate information related to keywords.

Fig 7.5: User search page

It displays the keywords based on the electron bonds values which has maximum values. Based on the electrons value, user will get the precise data which they appeal.

Fig 7.6: User Result Page

Based on the keywords, user will acquire the data and with the support of electron it will display precise information to user.

VI.   CONCLUSION

The proposed chemistry-inspired structure has the prospective to open up entrancing research clashes. Further kinds of bonds for instance probabilistic or inexplicit bonds can also be inspected to describe the connections between learning substances. Additionally, prolonging the demonstrative paradigm, learning how more multi-layered learning molecules could be designed, taking into deliberation other issues such as critic and user rankings, will help the model to evaluate. Finally, the proposed system can offer supplementary functions such as manufacturing learning molecules collaboratively over social networks and scrutinizing the user performance through data analytics.

VII.   FUTURE ENHANCEMENT

- It might be attracting and inspiring to study how noble assessment and operator ratings could be efficaciously joints for enhancing the quality assurance of the learning articles.
- It would be advantageous to comprehend it better how joint filtering methodologies used in E-commerce.
- It can be applied to endorse learning objects or learning glimmers. As the system can track the operator performance, as it makes all the valuable information available for the purpose of recommendation.

REFERENCES

[1]   E. Tovar and N. Piedra, "Guest Editorial:Open Educational Resourcesin Engineering Education: VariousPerspectives Opening the Educationof Engineers" 2014.
[2]   H. Rehatschek, U. Leopold, and S.Kerschbaumer, "Introduction of OERat the Medical University of Graz:Practical Tips to Introduce OER witha Minimum of Additional Budgetand Efforts," 2014.
[3]   R. Navarrete and S. Luján-Mora,"OER-Based Learning and Peoplewith Disabilities," 2015.
[4]   H. Pirkkalainen, J.P.P. Jokinen, andJ.M. Pawlowski, "UnderstandingSocial OER Environments: A QuantitativeStudy on Factors Influencingthe Motivation to Share andCollaborate," 2014.
[5]   IE-EE Std. LearningObject Metadata IE-EE, 2002.
[6]   X. Ochoa and E. Duval, "QuantitativeAnalysis of Learning Object Repositories," 2009.
[7]   F.H. Lin, T.K. Shih, and W. Kim, "AnImplementation of the CORDRAArchitecture Enhanced for SystematicReuse of Learning Objects," 2009.
[8]   N.Y. Yen et al., "Ranking Metricsand Search Guidance for LearningObject Repository," 2010.
[9]   R. de Santiago and A.L.A. Raabe,"Architecture for Learning ObjectsSharing among Learning Institutions 2010.
[10]   A. Zouaq and R. Nkambou, "EnhancingLearning Objects with an Ontology-BasedMemory," 2009.

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