Editorial

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Biographical notes: Nikos Palavitsinis has a Diploma in Information Systems for Management from the Athens University of Economics & Business and an MSc in Geographical Information Systems from the Agricultural University of Athens. He is currently a PhD candidate in the Department of Computer Science at Universidad de Alcala de Henares, working on issues around metadata quality in repositories. He is also working in Agro-Know Technologies, focusing on events' management and planning and in parallel he also consults the data team of Agro-Know Technologies related to his expertise on metadata quality.

Joris Klerkx is a research expert at the Human Computer Interaction Lab in the Computer Science Department of KU Leuven, Belgium. His research interests include user experience design, data visualisation, open data, infographics, multitouch displays, mobile devices, and their applications in the fields of technology-enhanced learning, science 2.0, music, and (personal) health. In that sense, he has contributed to several European research projects, such as MACE, ASPECT, ICOPER, and STELLAR. He is currently involved in the INTERREG IVa project EMuRgency, on increasing awareness about the problem of cardiac arrest; the FP7 project weSPOT, on inquiry-based learning; and the IWT-SBO project PARIS, on personalised advertisements.

Xavier Ochoa is a Principal Professor at the Faculty of Electrical and Computer Engineering at Escuela Superior Politécnica del Litoral (ESPOL) in Guayaquil, Ecuador. He coordinates the research group on Teaching and Learning Technologies at the Information Technology Center (CTI) at ESPOL. He is also involved in the coordination of the Latin American Community on Learning Objects (LACLO), the ARIADNE Foundation, the Latin American Open Textbook Initiative and several regional projects. His main research interests revolve around Learning Technologies, Learning Analytics and Informetrics.

1 Introduction

A growing body of learning infrastructures and aggregators is making digital learning resources available to any user searching for educational content on various topics, through federations of learning repositories. The fundamental reasons behind this trend include growing educational demands in all countries, the limited capacity of face-to-face education, the effort and cost involved in building multimedia learning materials, and the new possibilities offered by the internet.

Through the vast number of existing repositories, millions of learning resources are being made available; a fact that raises various research topics having to do with,

amongst other things, the technology that supports them, the standards being used to describe learning objects, the quality of learning, metadata within the repositories, etc. Openness of content and sharing of resources are also part of the ethical but also very technical issues that arise for learning repositories and learning infrastructures in general. The general aim of this special issue is to assess the current status and technologies, as well as to outline the major challenges and future perspectives, related to the development of learning repositories and wider infrastructures. It aims to provide an overview of the state of the art in this field by including a wide range of interdisciplinary contributions. Overall, it aims to outline the rich potential of repositories for learning as an application field for advanced metadata- and semantic-driven systems and services.

Twelve submissions were attracted to this special issue, from all around the world. Ten of them were considered being of high quality and for that reason, two parts of this special issue will be published. The first set of five papers that were prepared is included in this one; the other five will be included in the second part.

2   Contributions

The first paper is 'Learning resources in federated environments: a broken link checker based on URL similarity', by Tien-Dung Le. His work describes a solution that ensures a balance between the number of learning resources in a repository and the number of checking requests performed to check the availability of these resources. This solution has been validated and an implementation is regularly executed to assure the availability of learning resources in the Learning Resource Exchange (http://lreforschools.eun.org). This paper also presents the learning resource location distribution in the LRE, a short discussion about other solutions, and results of the proposed solution.

The next paper is 'Relevant learning objects extraction based on semantic annotation', by Boutheina Smine, Rim Faiz and Jean-Pierre Desclés. This paper proposes a model that aims at automatically annotating texts with semantic metadata: learning category of textual segments. The model is built up from two parts: the first part consists of a semantic annotation of learning objects according to their semantic categories, while the second part uses automatic semantic annotation that is generated by the first part to create a semantic inverted index, which is able to find relevant learning objects for queries associated with semantic categories. The paper also describes the implementation of a system called SRIDoP, allowing the effectiveness of the proposed model to be verified.

Then comes the paper 'A contextual semantic representation of learning assets in online communities of practice', by Lamia Berkani and Azeddine Chikh. This paper presents an ontology-based framework for a contextual semantic representation of learning assets within a Community of Practice of E-learning (CoPE). The main objective of the paper is to semantically describe the CoPE's learning assets using contextual semantic annotations. Two types of semantic annotation are considered: (1) objective annotations, describing the learning assets with a set of context-related metadata, and (2) subjective annotations, to express the members' experience and feedback regarding these same assets. The paper is illustrated with a case study of the applied framework in a semantic adaptive wiki that aims to foster the knowledge sharing and reuse between the CoPE's members.

The following paper, 'Semantic query answering in digital repositories: semantic search v2 for DSpace', by Dimitrios A. Koutsomitropoulos, Georgia D. Solomou and Theodore S. Papatheodorou, describes the semantic search service for the popular DSpace digital repository system. Semantic Search v2 introduces a structured query mechanism that makes query construction easier as well as several improvements in system design, performance and extensibility. Queries are targeted towards the dynamically created DSpace ontology, containing constructs that enable knowledge acquisition among available metadata. Both an empirical and a quantitative evaluation were carried out. The authors conclude that the system can bring semantic search closer to inexperienced users and make its benefits evident in the context of digital repositories, such as new querying dimensions, thus forming a paradigm production services can built upon.

The last paper, 'Towards an automated system for intelligent screening of candidates for recruitment using ontology mapping (EXPERT)', by V. Senthil Kumaran and A. Sankar, presents EXPERT, an intelligent tool for screening candidates for recruitment using ontology mapping. EXPERT has three phases in screening candidates for recruitment. In first phase, the system collects candidates' resumes and constructs an ontology document for the features of the candidates, such as personal information, current employment, past employments, education, skill, interest and their goal. Job openings/job requirements are represented as ontology in the second phase, and in the third phase, EXPERT maps the job requirement ontology onto the candidate ontology document and retrieves the eligible candidates. The paper discusses the results of an experiment that proves that this model improves the accuracy of matching candidates with job requirement.

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