Guest Editorial – New Directions in Advanced Learning Technologies

Paloma Díaz¹, Ignacio Aedo¹ Cuevas and Kinshuk²

¹Computer Science Department, Universidad Carlos III de Madrid, Spain // pdp@inf.uc3m.es // aedo@ia.uc3m.es
²School of Computing and Information Systems, Athabasca University, Canada // kinshuk@ieee.org

ICALT, the International Conference on Advanced Learning Technologies, brings together people who are working on the design, development, use and evaluation of technologies that will be the foundation of the next generation of e-learning systems and technology-enhanced learning environments. In its 8th edition the theme selected was “Learning technologies in the Information society” with a view to encourage the exploration of the role of learning technologies in the transformation from the information society to the knowledge society where everybody (independently of race, sex, abilities, capabilities, ...) can be benefit from technologies to enhance her learning process. This opens a world of opportunities for analyzing the use of technology in learning environments that take into account the characteristics and expectations of different kinds of users and different kinds of learning experiences, whether formal or informal, individual or cooperative, life-long or short term. A total of 98 papers were accepted as full papers in the main ICALT conference, what makes a 23.47% acceptance rate. From these papers the editors of this special issue selected a number of contributions that went through a peer review process. We’d like to thank all the reviewers that contributed with their judgment and comments to select the papers in this issue; their names listed below in recognition of their efforts. After the review process, 12 papers were finally selected to illustrate the advances in three relevant areas: Personalized educational systems, Computer supported collaborative and social learning and New generation of educational technologies.

Personalized educational systems are aimed at adapting the educational experience to meet different kinds needs, goals and preferences. This is an important area of research and development where different approaches can be applied to understand how the differences impact the learning process and which kind of tools have to be used, whether computer based or not, to make it more efficient. In this issue two of the papers selected in this category deal with the learning styles of students. Firstly, Sabine Graf, Kinshuk and Tzu-Chien Liu propose in “Supporting Teachers in Identifying Students’ Learning Styles in Learning Management Systems: An Automatic Student Modelling Approach” a tool to identify the learning styles of online students; a valuable information that can assist teachers in understanding how to shape the learning experience for each student. Secondly, in “Student Learning Styles Adaptation Method Based on Teaching Strategies and Electronic Media”, Ana Lidia Franzoni and Saïd Assar provide a framework to select the best teaching strategy and electronic materials according to the learning style of the student. The third paper is included in this category, “Automatic Recommendations for E-Learning Personalization Based on Web Usage Mining Techniques and Information Retrieval” by Mohamed Koutheair Khribi, Mohamed Jemni and Olfa Nasraoui, deals with collaborative filtering for e-learning recommendations. The authors use web mining techniques and scalable search engine technology to obtain the recommendations from a massive repository of educational resources.

The second group of papers are related to Computer supported Collaborative and Social Learning. CSCL has been a classical topic in education as in many occasions learning occur when interacting with other peers and the mechanisms to create and motivate the groups, as well as the kind of activities and teaching strategies to apply makes up a broad research area. Two papers in this issue deal with group formation. In “A Framework for Semantic Group Formation in Education”, Asma Ounnas, Hugh C. Davis and David E. Millard describe a framework that given a number of constraints defined by the teacher proposes groups based on the use of semantic data about the students features. In “InstanceCollage: a tool for the particularization of collaborative IMS-LD scripts”, Eloy D. Villasclaras-Fernández, Julio A. Hernández-Gonzalo, Davinia Hernández-Leo, Juan I. Asensio-Pérez, Yannis Dimitriadis and Alejandra Martínez-Monés go deeper into the problem of creating efficient groups in the context of IMS-LD. In “Toward a Semantic Forum for Active Collaborative Learning”, Yanyan Li, Mingkai Dong and Ronghui Huang face a different problem: the utility of learning forums. They introduce the concept of semantic forum, where domain ontology and text mining technologies are combined to create semantic link networking on discussion transcripts. CSCL boundaries were enlarged when social online networks became popular, opening up a new universe computer-mediated interactions that might influence formal and, specially, informal learning in many ways. Two papers are concerned with the use of social web technologies with learning purposes. Mary Beth Rosson, Hansa Sinha, Dejin Zhao, John Carroll, Craig Ganoe and Jan Mahar, in “wConnect: Cultivating a Landscape of Online Places for a
“Developmental Learning Community”, describe the tools they are using to seed and build a developmental learning community, including extensions of Facebook and design approaches like participatory design. “Emerging Web Technologies in Higher Education: A case of incorporating blogs, podcasts and social bookmarks in a web programming course based on students’ learning styles and technology preferences” by Nauman Saeed, Yun Yang and Suku Sinnappan, describes a survey about students’ learning styles and technology preferences that sets the basis to understand how the use of different emerging technologies can impact students performance.

In the third category in this special issue, New generation of learning technologies, five papers propose innovative techniques to support different processes. Thus, the first paper, “Adaptive Role Playing Games: An Immersive Approach for Problem Based Learning” by Pilar Sancho, Pablo Moreno-Ger, Rubén Fuentes-Fernández, Baltasar Fernández-Manjón, combine techniques from collaborative learning and personalization creating a multiplayer role-playing game that is integrated in a collaborative problem-based learning approach. CoScribe, by Jürgen Steimle, Oliver Brdiczka and Max Mühlhäuser (“Collaborative Paper-based Annotation of Lecture Slides”) is a system that supports students in making collaborative handwritten annotations on printed lecture slides in their Tablet PCs. We move onto the development process with the paper from David Díez, Alessio Malizia, Ignacio Aedo, Paloma Díaz, Camino Fernández and Juan Manuel Dodero (“A methodological approach to encourage the Service-Oriented Learning Systems development”). In this paper, authors make use of Service-Oriented Learning Architecture and domain engineering to encourage the use of learning services. In “Competence-related Metadata for Educational Resources that Support Lifelong Competence Development Programmes”, Demetrios G. Sampson proposes the use of specific meta-data to support the acquisition of abilities through a IEEE LOM Competence-based Application Profile and shows how this approach has been applied in a real project (e-Access2Learn).

With this selection of papers the editors believe to have achieved their main goal: to provide the reader with the state of the art of research in learning technologies as well as a scent of ICALT 2008. We hope you enjoy this special issue and that you explore more contributions to this research area in next ICALT conferences.

Recognizing the contribution of reviewers:
Félix Buendía, Maiga Chang, Sabine Graf, Esther Guerra, Monica Landoni, Tzu-Chien Liu, Antonio Piccinio, Liliana Santa Cruz, Ali Fawaz Shareef, Jarkko Suohon, Michael Verhaart, Guangbing Yang and Telmo Zarraonandia