Editorial

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Biographical notes: Santi Caballé received his PhD degree, Master's degree and Bachelor's degree in Computer Science from the Open University of Catalonia (Spain). He is an Associate Professor and a Researcher in the Department of Computer Science of the Open University of Catalonia, where he coordinates several online courses in the areas of software engineering and information systems. His research focuses on the fields of e-learning and computer-supported collaborative learning, software engineering, and distributed and grid technologies, where he has published over 150 peer-reviewed research contributions to books, journals and conferences and has organised several international conferences and workshops.

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Despite a great potential and some initial successes, e-learning systems do not yet have the impact that many believe is possible. Moreover, the gap seems to be increasing because of the greater expectations of the current generation (digital natives) who have grown up with modern technology.

There are also more general problems. In particular, an over-emphasis on cost effectiveness has meant that content is often not as strong as it needs to be and this deficiency has contributed to a lack of user engagement and some high attrition rates. Studies have consistently highlighted the important relationship between engagement and learning, with students who are highly motivated being more likely to engage in the learning process.

This special issue responds to the need for innovative adaptive e-learning combining personalisation, collaboration and simulation aspects within an affective/emotional-based approach able to contribute to the overcoming of the quoted limitations of current e-learning systems and content. Special emphasis is given to emotion-based environments that are interactive, challenging and context aware while enabling learners' demand of empowerment, social identity, and authentic learning experience.

This special issue follows the Second International Workshop on Adaptive Learning via Interactive, Collaborative and Emotional approaches (ALICE 2012), held in Palermo, Italy, The theme of the Workshop ALICE 2012 and this special issue is supported by the FP7 European project called ALICE. Web page of the ALICE project: http://www.aliceproject.eu.

The four papers of this special issue face the following issues and challenges.

In the first paper, Capuano et al. discuss on two interesting approaches for personalised e-learning. On the one hand, the individualised teaching approaches that try to find the best sequence of learning resources capable of satisfying individual goals, preferences and contexts. On the other hand, the intuitive guided learning approaches that envisage a non-linear learning experience where each learner can choose a personal path across the material according to his/her interests and preferences. In this contribution, the authors present a model, a methodology and a software prototype able to combine the advantages of both approaches by introducing the concept of 'compound learning resource': complex didactic artefacts where content is organised in pages and navigation among pages is user-driven. The pages are linked through semantic connections that have a two-fold function: they guide the learners' navigation, and allow the dynamic adaptation of the resource according to learners' needs and preferences (individualisation). Experimental results with real users in a university context are also presented as well as a comparison with similar systems.

Feidakis et al. in the second paper, study the enrichment of computer supported collaborative systems with emotion awareness features (detect emotion patterns and respond affectively), which opens a window towards an authentic social interaction and learning experience. In their paper, the authors first review prominent emotion theories and models with respect to learning, detection techniques and affective feedback strategies, and then present a system's design and implementation that provides collaborators with a usable, web tool for self-reporting of emotions. In response to the user's emotions, the system activates an animated, virtual assistant that employs expressive faces and synthesised speech to provide affective and task-based feedback. The specific tool was customised and adapted to the virtualised collaborative session system for the needs of an experiment that was run at the Open University of Catalonia. The respective results and findings are presented and discussed.

In the third work, Rodriguez et al. investigate the possibility of detecting the student emotions by analysing their self-written essays in order to make it possible to enhance the learning processes accordingly in e-learning environments. To this end, the authors analysed 38 essays written by a student during her first three semesters in college. The results obtained support the idea that inferring user motivation from the emotions detected in texts is feasible. E-learning systems can then use motivation information to propose activities aiming at increasing student engagement dynamically. In this direction, the authors present an example of use of incorporating emotions in an existing context-based adaptive e-learning system, which broadens students' possibilities, allows dynamic recommendation of activities, content adaptation according to their emotions

and detect potential problems within e-courses dynamically. Finally, the authors propose different applications of emotion detection for e-learning.

Mangione et al. in the last paper present a study on storytelling as an effective method for teaching subjects that are intricate in nature, such as teaching emergency preparedness. The authors first argue that getting citizens prepared to emergencies is a must, especially children, who represent a vulnerable group, who should be considered in a special way during that preparation process. Considerable evidences show that misconceptions about natural disaster and incorrect beliefs are often the basis for misguided actions that can lead to inefficient behaviours in case, for example, of earthquake events. The authors discuss on schools playing a major role in the development of disaster-aware citizens in that they can design appropriate resources and select suitable methods able to guarantee the retention and progression of the learning process. In this context, educational technology considers research on the construction of digital storytelling as an educational challenge and digital narratives even gain in a considerable importance when users' emotions are taken into account as well as when they are exploited to be improved. To this end, the authors present the storytelling complex learning object approach, an adaptive, dynamic and narrative-based digital artefact in which emotions are used to rebalance the learners' status, by assigning different roles to them, in an automatic way, with the aim to maximise the knowledge acquisition and increase their earthquake awareness. The approach is prototyped and experimented in a real context of learning, and the results are interpreted and discussed.

To sum up, all the contributions of this special issue are able to effectively involve learners in educational, cultural and informative activities. Empirical results from real users in real learning and training settings are very valuable in order to evaluate and discuss the impact of the proposed innovative features.

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