Technology and education have wandered many separate but rarely intersecting paths throughout the 20th Century. In the 21st Century, the convergence of cost effective computing and networking products, methodologies, and services is finally enabling more researchers and practitioners than ever before to explore innovative ways to use computer technologies to manage and enhance the teaching and learning experience.

Recognizing the importance of these trends, this Special Section solicited submissions belonging to one or all of the three mainstream learning domains, i.e., contents, methodologies, and technologies, addressing the above convergence in matters related, for example, to openness (e.g., source, access, and educational resources), online and hybrid or blended individualized and group instruction, collaborative methodologies, adaptive learning, Big Data and cloud computing applications in education, mobile learning, educational technology standards and social issues (e.g., privacy and security).

Additionally, authors of selected full papers accepted for presentation at the Symposium on Computer Education and Learning Technologies (CELT 2016) of the 40th IEEE Computer Society International Conference on Computers, Software & Applications (COMP SAC 2016) were invited to submit extended version of their works for review.

The Special Session received 12 submissions, and two papers were ultimately accepted for publication.

The first paper by “Highlighter: automatic highlighting of electronic learning documents” by E. BAralis and L. Cagliero deals with the problem of providing electronic textual document used as teaching material with highlights tailored to specific categories of learners. To this aim, the authors present a highlighting tool that, by leveraging text classification techniques, uses manually annotated contents to automatically predict ad hoc highlights. Experimental results confirm the high accuracy that can be obtained today by computer-based highlighting approaches on benchmark datasets.

The second paper by Y. D. Barve et al. titled “PADS: Design and implementation of a cloud-based, immersive learning environment for distributed systems algorithms” is an extended version of a work presented at CELT 2016. In this work, the authors present a cloud platform based on principles from Software Product Lines (SPLs) and model-driven engineering (MDE) designed to improve teaching and learning of distributed systems algorithms. The idea is to model a collection of algorithms as variants of a product line, and to automate the synthesis of these variants using MDE. A prototype implementation is presented, which is successfully applied to use cases based on known algorithms for peer-to-peer file sharing, coordination and consensus management.

We are aware of the fact that, indeed, papers selected for this Special Section represent just a small fraction of the huge amount of work that is being carried out in the field of computing, education & learning technologies. Notwithstanding, we hope that they will succeed in stimulating the readers to further dig into the richness of this incredible research field.

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