WELCOME to the second 2014 issue of the IEEE Transactions on Learning Technologies. This issue presents a collection of nine papers focused, as in the majority of our issues, on a broad set of learning technologies.

The issue starts with two papers that address the design of augmented reality systems for learning. In “Computer-Assisted Culture Learning in an Online Augmented Reality Environment Based on Free-Hand Gesture Interaction,” Mau-Tsuen Yang and Wan-Che Liao apply immersive augmented reality to cultural language learning. They have devised a system named VECAR, where a learner wearing a head-mounted display can interact with a map, or an image of a heritage site or cultural object, through hand and finger gestures. They evaluated the system against a control group using a Google map, for learning effectiveness, communication between teacher and students, and usability and learnability. The VECAR condition produced higher learning gains and enhanced communication with the teacher. Despite some technical difficulties, learners reported an engaging experience.

Mar Pérez-Sanagustín, Davinia Hernández-Leo, Patricia Santos, Carlos Delgado Kloos, and Josep Blat in their paper “Augmenting Reality and Formality of Informal and Non-Formal Settings to Enhance Blended Learning,” investigate the design of three learning activities for nonformal settings that augment the location with contextualized digital information. The activities involved preuniversity students exploring the university campus, and high-school students on a media-enhanced tour of Barcelona. The team carried out a cross-analysis of the three activities to probe the learning benefits of the mobile technology and combining these with a learning management system. They found that the technology supported students to learn and reflect on concepts in context.

The paper by Muriel Ney, Celso Gonçalves, and Nicolas Balacheff “Design Heuristics for Authentic Simulation-Based Learning Games,” proposes a model for authenticity in simulation games, with the dimensions of learning relevance, internal or gameplay relevance, and external or real-world relevance. They evaluate a health game that is based on a mixture of phone and mail messages, SMS, and video. The evaluation shows relationships between attributes of the game and perceived authenticity, leading to recommendations for design of games that are perceived to be authentic by their users.

In the paper “Content Based Lecture Video Retrieval Using Speech and Video Text Information,” Haojin Yang and Christoph Meinel expand research on the increasingly popular topic of online video lectures that has been explored by a number of earlier papers in our journal. Recognizing that the volume of video lecture archives is rapidly increasing, the authors focus on the problem of retrieving lecture videos. The paper presents an interesting combination of different technologies (from speech recognition, to optical character recognition, to metadata extraction) that enables automatic indexing of lecture videos and demonstrates how this enhanced lecture-processing pipeline enables several powerful search and browsing approaches for accessing lecture content.

A team from the University of Valencia consisting of David Arnau, Miguel Arevalillo-Herráez, and José Antonio González-Calero focuses on “Emulating Human Supervision in an Intelligent Tutoring System for Arithmetical Problem Solving”. The domain that they explore, arithmetical word problem solving, is among the most popular in the research on intelligent tutoring systems (ITS). However, the majority of work in this area focuses on domain knowledge and cognitive student modeling. In contrast, as the title indicates, the authors attempt to support student problem solving by analyzing and emulating the behavior of expert human tutors. The evaluation demonstrates that this goal is achieved in two aspects: producing expert-level tutoring behavior and enhancing student problem-solving ability.

In “Dynamic Learning Style Prediction Method Based on a Pattern Recognition Technique,” Juan Yang, Zhi Xing Huang, Yue Xiang Gao, and Hong Tao Liu describe a new method of pattern recognition to detect learning styles from learner behavior in a tutoring system. The method is independent of topic and could be deployed as middleware in intelligent tutoring systems to manage a learning style profile for each learner. The method was tested on a university-level programming course with 50 computer science students. They report that the system can predict the “active/reflective” learning style of new students.

Next, the paper written by a team of the University of Belgrade researchers consisting of Zarko Stanisavljevic, Jelena Stanisavljevic, Pavle Vuletic, and Zoran Jovanovic presents “COALA—System for Visual Representation of Cryptography Algorithms”. The COALA system belongs to a well-explored group of algorithm animation systems that focuses on expanded visual presentation of complicated computer algorithms. The novelty of this work lies in expanding and evaluating the ideas of algorithm animation beyond the usual collection of classic algorithms. COALA supports animations of
several important cryptography algorithms bringing this classic technology to a range of new courses on Information Assurance and Security.

Finally, two short papers in this issue explore the topic of classroom collaboration while focusing on different collaboration support technologies. The paper “The Development of an Interaction Support System for International Distance Education,” by a team of researchers from Taiwan and Japan consisting of Hsiu-Ping Yueh, Weijane Lin, Tetsuo Shoji, and Michihiko Minoh explores the use of modern visual learner identification technologies to support synchronous real-time collaborative learning in two remotely connected classrooms. The paper “Silent Collaboration with Large Groups in the Classroom,” by a team of researchers from Chile and Spain consisting of Tal Rosen, Miguel Nussbaum, Carlos Alario-Hoyos, Francisca Readi, and Josefina Hernández focuses on synchronous collaboration with a shared display and explores “silent collaboration” as an alternative to traditional collaboration through verbal interactions.

In this introduction, we would also like to acknowledge our best reviewers of 2013. All of our reviewers devote their time and expertise, resulting in an exceptionally high standard of reviews. The ones recognized here have reviewed at least four papers, returned their reviews on average within a month, and have received high average scores from associate editors for the quality of their submissions. They are Wolfgang Hürst, Wu-Yuin Hwang, Qun Jin, Nikos Manouselis, Olga Santos, and Natalia Stash. A total of 319 reviewers assisted the journal during 2013, with a mean submission time of 26.5 days.

Peter Brusilovsky
*Editor-in-Chief*
Mike Sharples
*Associate Editor-in-Chief*