

Editorial: A Message from the Editorial Team and an Introduction to the October-December 2015 Issue

Peter Brusilovsky and Mike Sharples

◆

WELCOME to the last 2015 issue of the *IEEE Transactions on Learning Technologies*. This issue completes the eighth year of journal publication with six papers focused on three groups of popular Learning Technology topics: recommender systems, mobile learning, and technology-enabled labs.

Just like the previous issue, we start with another timely review, this time focusing on educational recommender systems. Following the general rise of recommender systems, there has been a gradual increase of interest in their use for e-learning. Over the last 10 years many educational recommender systems have been developed and presented, yet this area is still young, with no definite standards and guidelines for evaluation. Mojisola Erdt, Alejandro Fernández, and Christoph Rensing fill this gap with their paper “Evaluating Recommender Systems for Technology Enhanced Learning: A Quantitative Survey”. The review examines an extensive body of literature on educational recommenders from 2000 onwards and uses it to present, classify, and discuss a range of evaluation approaches.

This issue also adds to the literature on educational recommenders with the paper “A Hybrid Trust-Based Recommender System for Online Communities of Practice”. Trust-based recommendation approaches are relatively new, but they are gradually increasing in popularity along with the increasing volume of social connections that fuel trust-based recommendations. The authors Xiao-Lin Zheng, Chao-Chao Chen, Jui-Long Hung, Wu He, Fu-Xing Hong, and Zhen Lin make an interesting contribution by applying the ideas of trust-based recommendation in a novel context of communities of practice. They propose a hybrid trust-based recommendation algorithm that engages both global and local trust networks attempting to recommend users who are both trustable (based on their professional historical records) and share common learning interests with the target users. The evaluation of this approach was performed using real data from the StackOverflow community of practice.

Two papers in this issue are concerned with learning outdoors through smartphones that detect QR codes on objects of interest, but they present different methodological frameworks, types of participant, and analyses. Jalal Nouri and Teresa Ceratto-Pargman in their paper “Characterizing Learning Mediated by Mobile Technologies: A Cultural-Historical Activity Theoretical Analysis” describe a study with five small groups of students, aged 12, who went through three phases of investigation: an introduction session in the classroom, a field phase where they scanned QR codes attached to trees to learn about tree species and took photos of the identifying features, and a session indoors where they analysed, summarized and shared their findings. The researchers analysed the learning activities through the methodological framework of cultural-historical activity theory. A main finding was that students tended to engage in mechanistic and technology-focused activities outdoors, so there is a strong need for a teacher to orchestrate the outdoor session, encouraging more reflective actions.

The study by Kai-Yi Chin, Ko-Fong Lee, and Yen-Lin Chen entitled “Impact on Student Motivation by Using a QR-Based U-Learning Material Production System to Create Authentic Learning Experiences” involved developing a system for teachers to author learning materials linked with QR codes on objects. These can be detected by smartphones to present multimedia teaching in context. An investigation with 12 teachers and 48 first-year undergraduate students compared traditional teaching methods with a learner-directed exploration outdoors using the smartphones. It found that the teachers were able to use the system to author materials and that the students in the experimental group were slightly more motivated to learn, scored higher on a midterm exam, and showed higher satisfaction than the control group.

The last two contributions to this issue continue the stream of *TLT* papers on technology-enabled labs while discussing very different kinds of lab. In the paper “Teaching Cybersecurity Using the Cloud,” Khaled Salah, Mohammad Hammoud, and Sherali Zeadally focus on *cloud-based labs*. The authors argue that the cloud with its vast array of easily configurable virtual machines offers a great infrastructure for a range of computer labs. Their paper specifically examines the needs of a cybersecurity course and demonstrates how the cloud infrastructure and services can be leveraged to provide several popular cybersecurity laboratories.

Jesús Chacón, Hector Vargas, Gonzalo Farias, José Sánchez, and Sebastián Dormido in their paper “EJS, JiL Server, and LabVIEW: An Architecture for Rapid Development of Remote Labs” describe a method to develop *remote lab* configurations. This exploits a feature of Easy Java Simulations (EJS) that enables developers to integrate libraries of elements they create into EJS. The process to develop a new remote lab system involves designing the activities, implementing a LabVIEW application that interacts with the equipment, then creating a user interface for students with EJS. A middle tier is provided by the JiL Server to control the LabVIEW virtual instrument.

Enjoy your reading!

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