Multimodal Learning Analytics & Personalized Support Across Spaces

Learning often occurs in spaces and at moments that go beyond those shaped in formal educational settings. Students' opportunities for significant learning are commonly not limited to the moments when they interact with a specific educational tool. By contrast, learning can be considered as a complex life-long journey which is socially, epistemically, physically and digitally situated. Increasing access to emerging communication technologies and the proliferation of mobile and pervasive devices have made it possible for students to have access to a wide range of educational (and non-educational) resources. Moreover, students commonly work outside the boundaries of the institutional learning system(s). They may interact face-to-face, use other educational tools or even use resources that were not specifically designed to serve in learning contexts. Instructors may also want students to not only use the tools offered by the institution, but also other tools that are more suitable for the context and the subject matter.

This proliferation of emerging communication technologies is creating new possibilities for providing automated, continued feedback and a more holistic view for supporting learning. Pervasive and mobile technologies can be used to allow learners to get remote access to educational resources from different physical spaces (e.g. ubiquitous/mobile learning) or to enrich their learning experiences in the classroom in ways that were not previously possible (e.g. face-to-face/blended learning).

However, to date most learning analytics and personalized support systems have been generally designed from a perspective which is agnostic of the physical space where learning happens or the various digital spaces through which learners interact. As a result, key challenges are emerging in regards of how systems can be adapted or how they can be used to provide support and/or feedback across different physical and digital spaces. Moreover, there are also technical challenges that need to be addressed to integrate and exploit learners' data coming from heterogeneous, multimodal sources in order to provide such continued support or feedback.

In short, student's learning activity happens where the learner is rather than within a specific educational system. Thus, there is an increasing interest in providing multimodal, personalized support or feedback to students across varied physical and digital spaces. **For this special issue, we encourage submission of original papers that demonstrate ways to integrate and coordinate learning analytics and personalized feedback systems that provide continued support to learning across digital and/or physical spaces.** Contributions can be made on any of the following themes:

- **Providing Personalized Support to Learners Interacting Across Multiple Digital Spaces**: Studies of novel analytics approaches and systems providing personalized support or feedback across multiple digital learning tools. This includes data mining,

learner modelling and/or visualization (or Open Learner Modelling) approaches applied to datasets that integrate logs from multiple learning tools;

- **Providing Personalized Support Bridging the Physical and Digital Realms**: Design and study of learning situations that include collocated/face-to-face interaction and/or the use of online (remote access) tools (e.g. including 'everyday' settings, collocated collaboration situations, multi-device ecologies, ubiquitous learning technology or blended learning cases). This also includes classroom analytics, multimodal learning analytics (MMLA), and modelling collocated group interactions;
- **Generating Models of Learner's Interaction Data from Heterogeneous Sources**: Discussion of methodologies and theoretical approaches, and their technical solutions, to acquire learner models by integrating activity logs from multiple sources of student's data. This includes technical approaches (such as conceptual models, formal representation of heterogeneous learner models or generic user modelling systems) but also non-technical issues (such as privacy and security of information for personalization, cultural adaptation, or data management).

Paper Submission and Review Process

Prospective authors must submit an extended abstract to the special issue editors via **EasyChair**. It must be at most 4 single-spaced pages long, not counting references, formatted with 12pt font and 1 inch margins. The special issue editors will screen all submitted abstracts. Abstracts that do not pass this initial screening (i.e., abstracts deemed not to have a reasonable chance of acceptance) will not be considered further. Authors of abstracts that pass the initial screening will be invited to submit a full version of the manuscript using the formatting guidelines and submission instructions of the journal, which can be consulted at **http://www.umuai.org/paper_submission.html**

Suggested Timeline

(see updates in the special issue website at http://crosslak.utscic.edu.au/umuai)

- November 1, 2017: Submission of title and abstract
- December 1, 2017: Notification of suitability of abstract
- March 15, 2018: Submission of full papers
- June 15, 2018: First round of review notifications
- August 15, 2018: Revisions of papers due
- November 1, 2018: Final notifications due
- December 15, 2019: Camera ready papers due
- February 15, 2019: Publication of special issue

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