

# Workshop Preface: International Workshop on Context and Culture in Intelligent Tutoring Systems

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With the internationalization of education, the need for adaptation and flexibility in ITS and other learning systems has never been more pressing, extending to many levels and fields including: the international mobility of learners, teachers and researchers; the integration of international, intercontextual and intercultural dimensions in instructional programs (from primary to higher education and continuing professional development), as well as in the designs, methods, techniques and tools that support them; the international mobility of education viewed through the lens of today's new reality of mass open online courses accessible by a diverse range of learners around the world facilitated by ubiquitous, mobile and cloud learning systems. In this sense, there is a need for more research about context and culture in intelligent tutoring systems. Teachers and researchers need to develop new adaptation skills and embrace diverse contexts and cultures as well as leverage this diversity to foster the transfers that can enhance learning. Clearly therefore, it is important to make room for this diversity in curricula and learning systems and integrate transfer and adaptation concerns into pedagogical practice. But how can we do this concretely? How can we best manage this complexity and leverage this diversity? How can this materialize in the ITS field, and what are the benefits?

One of the main focuses of current research is to define the boundaries of context and culture (C&C) as a theoretical concept and what constitutes the best methods, techniques and tools in order to collect, analyze and model it from an adaptive learning perspective. Until recently, C&C modelling was considered an intrinsic part of the various classical ITS architecture models. Aspects of C&C were therefore partially covered under the domain, learner, pedagogical and communication models. Now, however, the advent of big data in education and significant innovations in artificial intelligence are opening new doors for us to analyze and model C&C differently, if we are able to take advantage of the information available through the learning analytics process. Big data offers an exciting opportunity for us to look at C&C modelling for ITS through a new lens. Do we need a fifth model? Should we view it as another layer in the ITS architecture? Let's start thinking about it. In today's era of adaptive learning delivering anything learners need, anywhere and at any time, the potential for context and culture-aware ITS could be huge. What would knowledge representation and reasoning mechanisms look like in ITS? What kinds of limits might C&C represent for ITS? How can we identify or measure these limits? Can ocular and biometric measurement play an instrumental role? What are the logical next steps in terms of conducting studies about context and culture-aware ITS and gathering and analyzing data about context and culture?

This C&C@ITS2018 workshop aims to build the foundations of this research stream by forming an international research community and providing new avenues and questions for research. New avenues and questions for research may include the following: Will integrating context and culture mean changing traditional ITS architecture by proposing new models? Is there any interest in using AI innovations (big data, deep learning) with the modelling of context and culture knowledge? Why, knowing that there are many schools of thought? Where do we begin to combine our efforts? Do other modelling methods such as ontological engineering represent a better way to achieve this goal? Is it relevant to use AI techniques for education such as educational data mining or learning analytics to maintain up-to-date knowledge about contextual and cultural diversity? How can an ITS accommodate and leverage this new

complexity to gain awareness of contextual and cultural diversity? How can learning analytics support contextual and cultural adaptation, and how can we combine the two? What is the role of the learner in contextual and cultural adaptation? How can contextual and cultural diversity make learning deeper and richer?

In light of the above, submissions are welcomed for this workshop on topics including, but not limited to, the following: Contextual theory; Ontological and cognitive modelling of contextual or cultural knowledge/context or culture-aware ITS; Context-aware collaborative learning; Contextual or cultural knowledge in ubiquitous, mobile and cloud learning systems and various application areas.

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