

The Seminars on “Information Technology Outlook” – PhD Program in Computer Science and Mathematics



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Intelligent tutors, learning analytics and multimodal technologies for feedback augmentation

Artificial Intelligence (AI) systems can provide automatic, personalised, and real-time feedback to learners in distance learning settings where human experts are unavailable. AI feedback can always be available, allowing learners to practice deliberately and repeatedly at their own pace. Learners can receive feedback on physical learning tasks alongside traditional cognitive tasks by integrating AI feedback into immersive and multimodal technologies, such as Augmented and Virtual Reality (AR/VR) or sensor-based systems. In this talk, I summarise the main insights of my research in AI in education and Multimodal Learning Analytics (MMLA). I introduce the concept of “Multimodal Tutors,” which is the central idea of my PhD research. I present how MMLA can support distance teaching and learning with personalised feedback and adaptation. Through relevant application use cases, I illustrate how AI and immersive technologies can be used for feedback augmentation. Finally, I present my research agenda for augmenting feedback with AI and describe how it can provide learners and teachers with personalised and adaptive support.

Dr Daniele Di Mitri is a research group leader at the DIPF - Leibniz Institute for Research and Information in Education and a lecturer at the Goethe University of Frankfurt, Germany. Daniele received his PhD entitled "The Multimodal Tutor" at the Open University of The Netherlands (2020) in Learning Analytics and wearable sensor support. His research focuses on collecting and analysing multimodal data during physical interactions for automatic feedback and human behaviour analysis. Daniele's current research focuses on designing responsible Artificial Intelligence applications for education and human support. He is a "Johanna Quandt Young Academy" fellow and was elected "AI Newcomer 2021" at the KI Camp by the German Informatics Society