

KM Conference 2021

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Themes: Knowledge Management, Cybersecurity, Learning, and Information Technology

<https://iiakm.org/conference/>

1st Day Closing Keynote Lecture

Knowledge Transfer: Leveraging human predispositions for explaining and understanding

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Keynote Overview:

One of the characteristics that sets humans apart from other species is their ability and predisposition to transfer knowledge to their offspring. Research in developmental psychology shows how parents as tutors make use of a range of strategies to convey knowledge that would otherwise be opaque to their infants. However, it has also been shown that infants not only have a predisposition that makes them especially prone to understand such opaque knowledge but that they also play an active role in this process.

In my talk, I will give insights how to leverage these predispositions of teachers and learners for knowledge transfer between humans and machines. In the case of machines as learners, human teachers provide knowledge in a specific way that a robot can use to structure the input and filter out irrelevant information. On the other hand, through contingent behavior a robot can motivate the tutor to provide specifically well-suited input for the learner. In scenarios where machines transfer knowledge to humans, a typical task for assistive systems, they have to be specifically sensitive to human feedback in order to adapt to their understanding processes as observed through task process or facial expressions and to their attentional state as a cue of engagement and understanding. These capabilities are also basic prerequisites for a more interactive account of explainable AI as a specific and increasingly important topic of knowledge transfer.

About the Keynote Presenter:

Britta Wrede is head of the Medical Assistive Systems Group at the Medical School OWL at Bielefeld University and deputy speaker of the Center of Cognitive Interaction Technology (CITEC) which has emanated from the German excellence initiative in 2007. After studying computational linguistics, computer science and psychology she received her PhD in computer science in 2002 at Bielefeld University and went to the renowned International Computer Science Institute (ICSI) at Berkely, US, for investigating engagement during multiparty conversations. After rejoining Bielefeld University, she became head of the Applied Informatics Group in 2009 until 2019 when she founded her research group on Medical Assistive Systems at the Medical School OWL.

Her research focuses on the investigation, modelling and support of understanding and tutoring processes in different settings. This entails multimodal interaction strategies in human-agent interaction by applying and

developing theoretical accounts on pragmatics in establishing mutual understanding. A specific focus lies on the use of multimodal communication channels such as facial expressions or eye gaze which are also important for adult users in everyday learning situations such as work assistance systems.

Britta Wrede's current research on developing assistive systems for therapy and diagnostic support is based on the hypothesis that knowledge transfer needs to be embedded in social interaction which provides rich scaffolds for mutual understanding.

