

Context in distributed situated cognition

Hedda Rahel Schmidtke

Karlsruhe Institute of Technology (KIT)

Michael Beigl

Karlsruhe Institute of Technology (KIT)

Abstract: Ambient Intelligence (AmI) can be understood as a research effort towards physical environments that can use artificial intelligence techniques, in order to serve people in an intelligent, pro-active manner. AmI environments provide a unique, novel platform for studying and applying concepts of situated cognition and self-organization. In particular, we find that representations of context are crucial for AmI systems to perform these tasks. We follow the idea that the notion of context plays a central role with respect to economy, evolution, and architecture of cognitive systems. In particular, context can be understood to bridge the gap between the sensory stream and goal-directed reasoning. We present a logical language in which contexts, and not objects, properties, or propositions, are the primary entities. We show that, from this logical formalism, a corresponding symbolic-connectionist hybrid model of distributed, situated cognition can be derived.