SFB/TR 8 Spatial Cognition / IQN
Video Conference

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Interactive, Sensorimotor Spaces: Autonomous Learning and Behavioral Control

Neuroscientific and cognitive psychological research shows that we perceive and represent the space around us not in a single frame of reference, but rather with a multitude of interactive frames of reference. Moreover, many indicators suggest that these interactive spatial representations are motor-grounded, that is, distances are encoded based on processed motor codes. We introduce several architectures that learn such modular, interactive, body-dependent spatial representations autonomously. Moreover, we evaluate these representations for their suitability of flexibly controlling an arm or moving through maze environments. The results show that the algorithms robustly learn such modular representations and realize flexible and adaptive, self-motivated behavioral decision making and control. In the future, these representations may also be combined with dynamic behavioral primitives for the realization of interactive object manipulationsand social interactions.

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