

SFB/TR 8 Spatial Cognition / IQN Video Conference

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Towards a theory of spatial cognition

Psychological theories of human spatial cognition often assume that the underlying process begins with a representation formed from integrating successive views using a co-ordinate transformation approach. However, the use of such an approach is problematic; it leads to a map that is necessarily detailed and precise and it requires computations that appear onerous for humans. In this talk, I present an alternative approach which shows how a rough global map can be computed by combining views in a journey that portray different local environments visited. This approach has been tested successfully using a robot equipped with a laser sensor. It does not need any correction of errors (due to sensors), tracking of individual positions in the environment, or constant updating of views. Surprisingly, the map computed represents a trace of one's journey rather than a map of the environment visited. The implications of this new approach on human/animal spatial cognition are discussed. In particular, it suggests that the process begins with the parallel computation of both an egocentric and a non-egocentric map, and that a cognitive map is not necessary map-like.

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