

Developing embodied cognition: Dynamic Field Theory and its application to experiment and robotics

Gregor Schoener

Institut für Neuroinformatik, Ruhr-Universität-Bochum, Germany

Understanding embodied and situated cognition means understanding how cognitive processes are closely linked to sensory and motor processes and depend on the behavioral and environmental history and context in which they unfold. Dynamical field theory is a neurally inspired framework within which such understanding can be achieved. Models built within this framework account for how decision events emerge from continuous time processes, how cognitive functions emerge from neuronal interaction, and how experience structures behavior. The talk will illustrate these ideas by references to models of infant reaching, looking, and memory as well as by showing how such models enable robots to acquire simple perceptual representations.