Modeling Motivational Dynamics with Psi/MicroPsi

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The Psi theory (Dörner 1999, Dörner et al. 2002) contributes to a general understanding of the principles of cognition. Specifically, it explains how a finite set of physiological, social and cognitive demands can be functionally specified and lead to the observable heterogeneity and dynamism that characterizes human intentions, goals and decision making. It details the emergence of affective states and emotion, and their integration into perceptual, anticipatory, reflective, deliberative processes and so on. Thereby, the Psi theory defines constraints and principles for a cognitive architecture with respect to motivational control, affective modulation, perception, mental representation and general organizational principles. MicroPsi (Bach 2009) is an implementation of the Psi theory as an AI architecture. It offers of a simulator for spreading activation networks that represent semantic content and are grounded in sensory input and actuator output. MicroPsi agents are situated in dynamic simulation environments and implement a motivational system with a set of physiological, social and cognitive drives, and have been applied for experiments in affective computing, categorization and multi-agent interaction.

The tutorial will give an overview over the general principles and core assumptions of the Psi theory, and introduce our implementation approaches, which can either be directly used, or adapted for other computational models of autonomous behavior, affective modulation and grounded representation.

References

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