This review focuses on biological issues of reinforcement learning. Since the influential discovery of W. Schultz of an analogy between the reward prediction error signal of the temporal difference algorithm and the firing pattern of some dopaminergic neurons in the midbrain during classical conditioning, biological models have emerged that use computational reinforcement learning concepts to explain adaptative behavior. In particular, the basal ganglia has been proposed to implement among other things reinforcement learning for action selection, motor control or working memory. We discuss to which extent the analogy between the temporal difference algorithm and the firing of dopamine cells can be considered as valid. Our review then focuses on the basal ganglia, their anatomy and key computational properties as demonstrated by three recent, influential models.
Seite 61: Context-sensitive Diagnosis of Quality Defects in Object-Oriented Software Systems

A part of software quality assurance is concerned with the diagnosis of defects, which decrease quality aspects of software systems, such as maintainability, reusability, portability, or performance. Concurrent approaches for defect diagnosis focus on post-development manual inspections of the software's source code. The context-sensitive diagnosis of quality defects is a new approach that is based on a quality model and integrates information on the context of a diagnosed element during software development (in-situ). This thesis proposes an ontology for quality defect representation, a method for quality-oriented, in-situ, and context-sensitive quality defect handling, and a reference architecture for the development of extensible in-situ quality defect diagnosis tools.

Seite 45: KI 2009 – 32nd Annual German Conference on Artificial Intelligence

The 32nd German Conference on Artificial Intelligence will be held in Paderborn on September 15-18, 2009. The conference aims to provide a forum for both researchers and practitioners, offering a technical program of carefully reviewed original research and application papers. All talks and papers will be presented in English.

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