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RESEARCH ARTICLE

A cognitive architecture for the implementation of emotions in computing systems

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Abstract
In this paper we present a new neurobiologically-inspired affective cognitive architecture: NEUCOGAR (NEUromodulating COGnitive ARchitecture). The objective of NEUCOGAR is the identification of a mapping from the influence of serotonin, dopamine and noradrenaline to the computing processes based on Von Neumann's architecture, in order to implement affective phenomena which can operate on the Turing's machine model. As basis of the modeling we use and extend the Lövheims Cube of Emotion with parameters of the Von Neumann architecture. Validation is conducted via simulation on a computing system of dopamine neuromodulation and its effects on the cortex. In the experimental phase of the project, the increase of computing power and storage redistribution due to emotion stimulus modulated by the dopamine system, confirmed the soundness of the model.

Introduction

In recent years, the complexity and power of the human brain/mind system have been further revealed by several studies, still an uncountable number of questions regarding mechanisms and functions has not been answered. An

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