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The memristive artificial neuron high level architecture for biologically inspired robotic systems

Talanov M., Zykov E., Erokhin V., Magid E., Distefano S.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2017 IEEE. In this paper we propose a new hardware architecture for the implementation of an artificial neuron based on organic memristive elements and operational amplifiers. This architecture is proposed as a possible solution for the integration and deployment of the cluster based bio- realistic simulation of a mammalian brain into a robotic system. Originally, this simulation has been developed through a neuro-biologically inspired cognitive architecture (NeuCogAr) re-implementing basic emotional states or affects in a computational system. This way, the dopamine, serotonin and noradrenaline pathways developed in NeuCogAr are synthesized through hardware memristors suitable for the implementation of basic emotional states or affects on a biologically inspired robotic system.

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Keywords

affects, artificial neuron, biologically inspired robotic system, circuits, Cognitive architecture, memristive elements

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