IoT based on Membrane Computing Models

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Abstract

In the given paper it is approached a method of the application of the Membrane Computing models in the design of IoT systems with Collective Intelligence properties. The topology of the IoT system is presented as a Mesh network that ensures a total interconnection of its devices. The Collective Intelligence definition model presents a Hopfield Neural Network based on the set of knowledge consisting of data and their processing models. The following were elaborated: cell structure, cell interaction diagram and the manner of formation of hierarchical structures and of Collective Intelligence. The synthesis process of an IoT system on the basis of Membrane Computing models with Collective Intelligence properties is presented by the sequence of operations that begins with the definition of the mathematical model and ends with the development of the structure of the IoT system on the basis of the programmable devices ESP8266.

Keywords: IoT, mesh networks, networks, computational modeling, biological systems, collective intelligence, mathematical models, computing, neuronal networks

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