Science News

Artificial Simulator Of The Nervous System Created For Research Into Diseases

ScienceDaily (May 13, 2009) — Researchers of the University of Granada have developed a simulator, so-called EDLUT ('Event driven look up table based simulator'), which can reproduce any part of the body's nervous system, such as the retina, the cerebellum, the hearing centres or the nervous centres.

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This scientific advance allows researchers to analyze and understand the functions of the nervous centres, to do research into new pathologies and diseases or test new medicines; it will also be useful to improve the robots and machines inspired in the human body and the nervous system.

This simulator has been developed by the research group CASIP, of the department of Architecture and Computer Technology of the University of Granada, to which professor Eduardo Ros Vidal (coordinator of the projects in which the simulator has been developed) belongs to.

Unlike other simulators similar to the preceding versions, EDLUT permits to similar several hundreds of thousands neurons at the same time, instead of several tens. This is possible thanks to the fact that the simulator "compiles" the behaviour of a neuron or several types of neurons in a first stage and next, it simulates medium and great-scale neuronal systems based on these pre-compiled models.

"This fact means an essential technological advance and indisputably affects the quality of nervous simulation", says professor Eduardo Ros.

Free downloading

Another important advantage of the simulator developed at the University of Granada is that it is free software, this is, that it can be freely downloaded through the Internet at http://code.google.com/p/edlut/. In this sense, EDLUT means "an innovative version with regard to other simulators such as NEURON and GENESIS", in the words of Ros, and those companies of the biotechnological sector or research centres interested in this field can use it freely and adapt it to their own needs.

This simulator developed at the UGR has been financed by different research projects such as SpikeFORCE and SENSOPAC, initiatives of the European Commission through which research groups of different fields such as neuroscience, biocomputing and electronic engineers have been working since the year 2002 in order to get that robots have similar movement skills to those of the animals, and can also perceive a great number of signs of sensors and motors in order to draw cognitive notions.

The results of this research project have been partly published in the journals *Neural Computation* and *Biosystems*.

Adapted from materials provided by University of Granada.

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