PROJECT “COGNITIVE LEVEL MODEL OF HIERARCHICAL SYSTEM OF THE BRAIN INFORMATION PROCESSING: THE COMPUTING INTELLIGENCE APPROACH”

Project supported by Ministry of Education and Science, Youth and Sports of Ukraine,
National Academy of Sciences of Ukraine

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Main project idea

(Project supported by Ministry of Education and Science, Youth and Sports of Ukraine, National Academy of Sciences of Ukraine)

- Conceptual information processing model based on analysis and generalization of interaction processes at quantum, atomic, molecular, cellular, system (cellular ensemble) and cognitive levels.
- Principal basic unit of information processing (PBUIP): ferment at molecular level, neuron at cellular level, cognitive element at cognitive level.
- Homeostasis model (internal processes control) at cellular, system (cellular ensemble) and cognitive levels as a set of cooperating units (PBUIP).

Mathematical and computer models of information processing (PBUIP)

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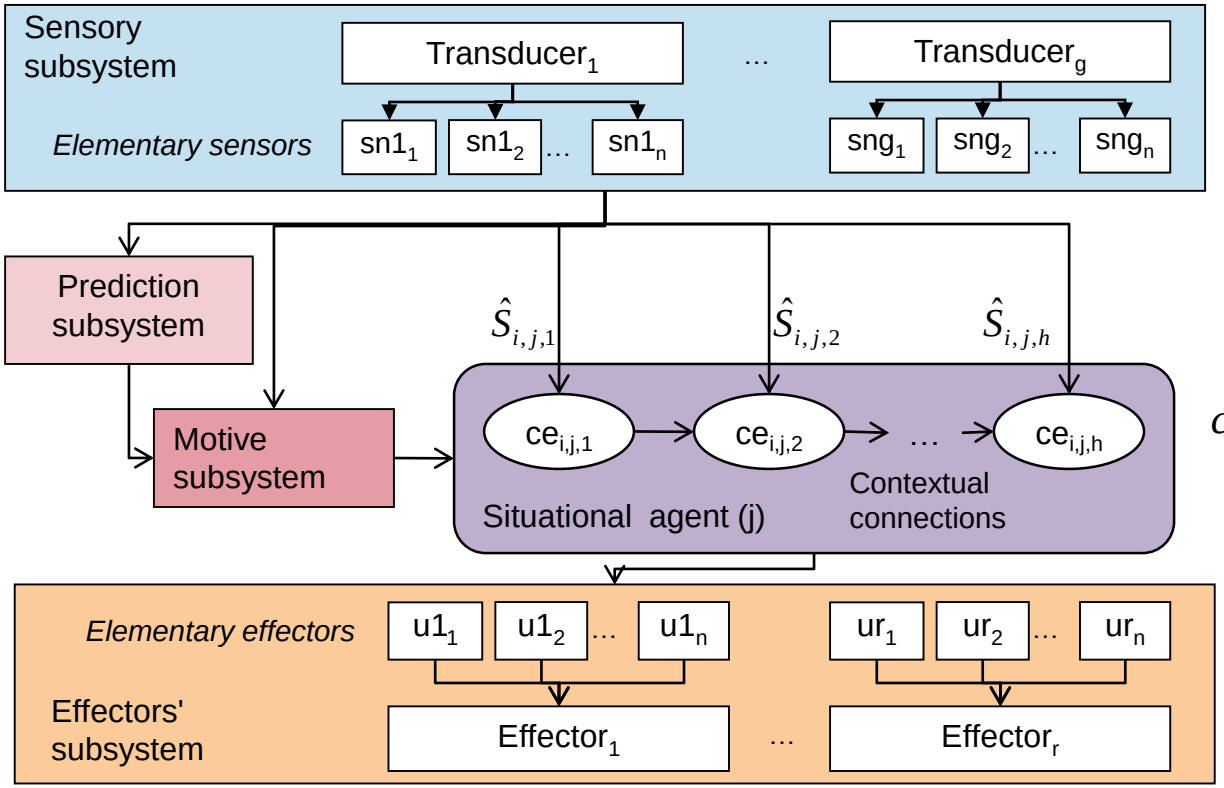

$$\underset{\sim}{\mu}_{kT}(sn_i) = \{x \mid \mu(x) = e^{-\frac{(x-\alpha(sn_i))^2}{2\beta(sn_i)^2}}\}$$

$$ce_{i,j,h} = \langle M_i, \hat{S}_{i,j,h}, K_{i,j,h}, \hat{R}_{i,j,h} \rangle$$

$$\underset{\sim}{A}_{kT}(ce_{i,j,h}) = f_1\left(\underset{\sim}{A}_{kT}(M_i), \rho(S_{kT}, \hat{S}_{i,j,h}), \underset{\sim}{A}_{kT}(co_{i,j,h})\right)$$

$$\underset{\sim}{A}_{kT}(u_x) = \bigoplus_{ce_{i,j,h}} \left(\underset{\sim}{A}_{kT}(ce_{i,j,h}) \otimes \underset{\sim}{R}_{ce}(ce_{i,j,h}, u_x)\right)$$

CONTROL SYSTEM DESIGN INFORMATION TECHNOLOGY

(PROJECT SUPPORTED BY MINISTRY OF EDUCATION AND SCIENCE, YOUTH AND SPORTS OF UKRAINE, NATIONAL ACADEMY OF SCIENCES OF UKRAINE)