
Approach to developing control systems of micro spacecraft in neuronetwork basis

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The article reviews the main directions in hardware implementation of neural networks and examines their opportunities for using onboard micro spacecraft. The main requirements to onboard control systems and approaches to their neuronetwork realization are considered. The findings of this research illustrate restrictions and requirements to the resources necessary for onboard systems of micro spacecraft. We show that it is possible to find the effective solution in simple networks. We modeled separate blocks of a neuronetwork control system in the conditions of limited resources and presented the neuronetwork model of approximating the tabular model of the atmosphere. We provide the sample task solution in float and discrete formats of synapse. The article delves into approximation errors in networks of different architecture and shows, that even for options with the discrete form of inputs and a short format of representing the synapses, the task solution quality is sufficient.

Keywords: neuronetworks, micro spacecraft, control system

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