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Socially emotional intelligent agents based on BICA and deep learning

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Abstract

Deep learning (DL) makes it possible to automate the work of theorists, developers, and programmers in creating intelligent agents. At the same time, it has limitations related to the statistical nature of the method, which largely ignores available domain knowledge and requires large training datasets. These limitations become a barrier in the field of modeling and characterization of human social-emotional behavior. Biologically inspired cognitive architectures (BICA) are based on facts from cognitive and brain sciences and therefore can be successful here, although at the great cost of intellectual human labor. The challenge therefore is to integrate the two approaches, combining their strengths and compensating for their weaknesses. Here a particular form of such integration is presented, which involves a scaffolding of DL by BICA. Experimental paradigms include a virtual registrar, a virtual partner dance, a virtual clownery, and more. This work was supported by the Russian Science Foundation Grant #22-11-00213.