On the Role of Semantic Map in a Socially-Emotional Cognitive Architecture for Creative Assistants

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Abstract

Future intelligent virtual co-robots, or cobots, will work as extensions of the human mind and body in creative cognitive tasks, such as design, invention, or creation of art. Because these tasks depend on emotional attitudes, the cobot needs to maintain a social-emotional contact with the user. This can be achieved based on a cognitive architecture, in which the current emotional state of the user is represented in a two-dimensional weak semantic map. Cobot action selection is determined by this state, the action appraisal, and the currently active M-schema. Main results include a significantly higher quality of the outcome, compared to the control condition, without a semantic map. It is remarkable that one and the same cognitive model proves useful in various domains, including creative assistants of a choreographer, a composer, a designer, and an insight problem solver. The work yields preliminary results that suggest many potential practical applications. This research is supported by the Russian Science Foundation Grant # 18-11-00336.