Computational Model : A Theory Prover

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Abstract

Computational models, which symbolically represent the abstraction of reality on computers, have won popularity as research tools in organizational studies. However, very few, if any, computational models have been used to test theories in the same ways that human experiments generally do, that is, simulation experiments are performed to test a specific theory. In this paper, we introduce a distributed AI(DAI) computational model of team called "Team-Soar" and a simulation experiment, which was performed using the computational model. The simulation experiment was especially designed to test a theory of team decision making called "multilevel theory" in the same way as a human team experiment reported in the literature. The results matched those of the human team experiment, and supported the major propositions of the multilevel theory. Furthermore, the simulation experiment discovered that some definitions of the core variables of the theory were incorrect. The theory was then improved by introducing a new set of core variables. Conclusively, this simulation experiment demonstrates the computational model's effectiveness as a theory prover.