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Assessment of User Interface Design Using a Collaborative Action Model

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35

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Abstract:
This paper describes a model that extends affordance theory to encompass human/computer interaction to computer interfaces. First, an activity-centric model is developed that identifies how a user interacts with his or her environment, perceives and conceives available action opportunities, chooses from among these options, then is notified of the results of their actions. The model is extended to encompass multiple users who share a common goal, and identifies how one user can influence another to change their perceptions and actions. The multiple user scenario is then used to describe interactions between a system designer and a system user, both who share a goal that the user interface can be quickly and easily used to accomplish certain tasks. The model is validated by providing empirical analyses of subjects who were asked to perform tasks using several different user interfaces to determine if their perceptions and actions can be mapped to the elements within the model. Problems encountered during the usability study are then examined to determine how the model presented here improves the designer's ability to improve the user interface.