

Paper analysis: Supporting Mental Model Accuracy in Trigger-Action Programming

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1. Problem that author studied.

What is the influence of the differences between different trigger types and action types.

2. Example of trigger-action rules

Trigger-action programs consist of a single rule that associate a trigger with an action. For instance, if the rice cooker is done cooking rice, set me a text message.

3.What are the mental model ambiguities (Specific example).

Mental model ambiguities refer to those ambiguities which result from the lack of distinction between different trigger and action types. For example, if the trigger is “when it is raining outside, then do something”, it is unclear for people to start the action immediately or any time while outside is raining.

	Study 1	Study 2
Purpose	Understand how users interpret different trigger and action types	Investigate whether program creation mitigates the ambiguities observed in the study 1
How many people	60	42
How long	N/A	20 minutes
Method	1) Ask users when an action would occur, given single or multiple triggers 2) Ask users when an action would end, given fully specified rule 3) Gather demographic information about the respondents	1) Designed interface which supported a set of 5 trigger and 5 action categories 2) Questionnaire: 5 program creation questions and 5 multiple choice questions
Results	1) Expectation about triggers depends on the specific triggers 2) Multiple event triggers are considered to be technically valid 3) Expectation varied widely for multiple state triggers 4) When sustained actions end depends on the triggers	1) Multiple event triggers have been used 2) It is difficult to reason about event & state triggers 3) Users had varied mental models for state triggers 4) Users held disagreed opinions on sustained actions and forgot to undo them 5) Existing products could have some influence on users' interpretation