

Abstract

A salient feature of the ambient intelligent home of the future will be the natural interaction between the home and its inhabitants through speech. An embodied home character is necessary to ensure a natural dialogue by continuously providing intuitive feedback in the form of conversational and emotional body language. This study experimentally investigates the influence of the character's embodiment (screen character and robotic character) and its emotional expressiveness on the enjoyability of the interaction. The presence of emotional expressions significantly increased the enjoyability of the interaction with the robotic character. The embodiment had no significant influence on the enjoyability. However, in the robotic character condition a social facilitation effect and a high forgiveness for speech recognition errors was observed.

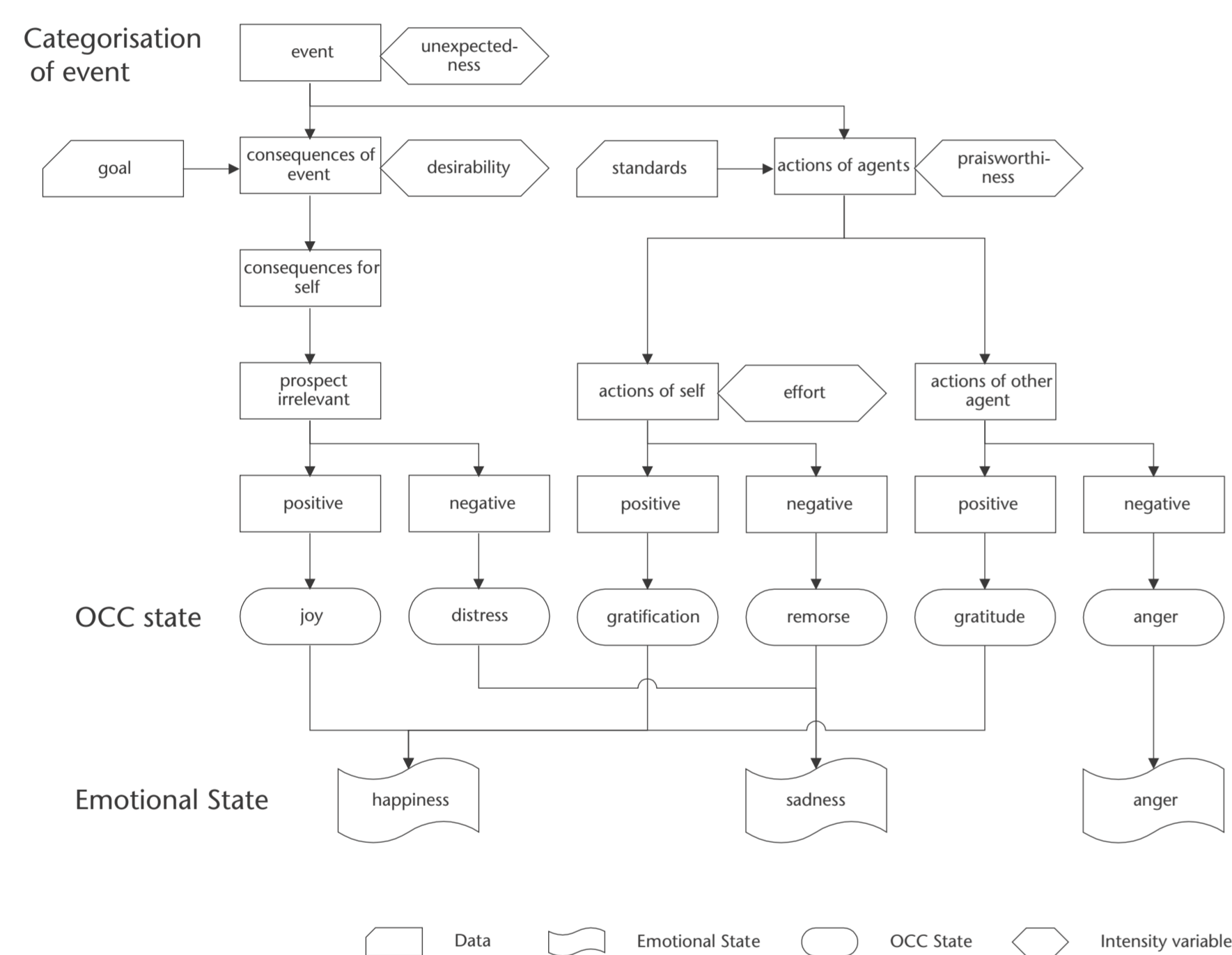


Hypothesis

1. The user will perceive the interaction with a character that uses emotional expression more enjoyable than with a character that does not use emotional expressions?
2. The user will perceive the interaction with a robotic character more enjoyable than with a screen character?

An experiment was conducted in a usability lab at the Eindhoven University of Technology to test these hypothesis.

The Emotion Model



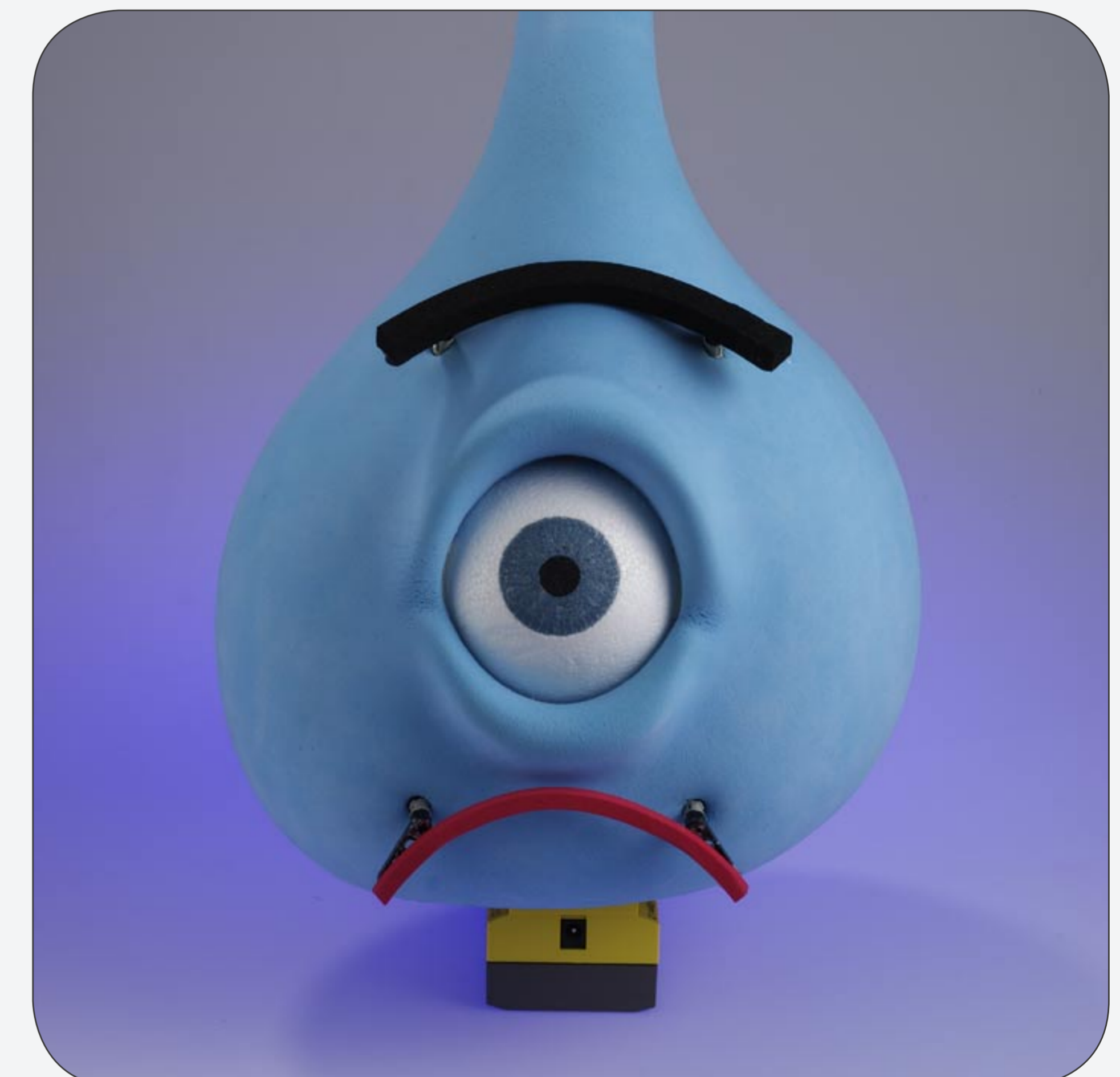
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Measurements

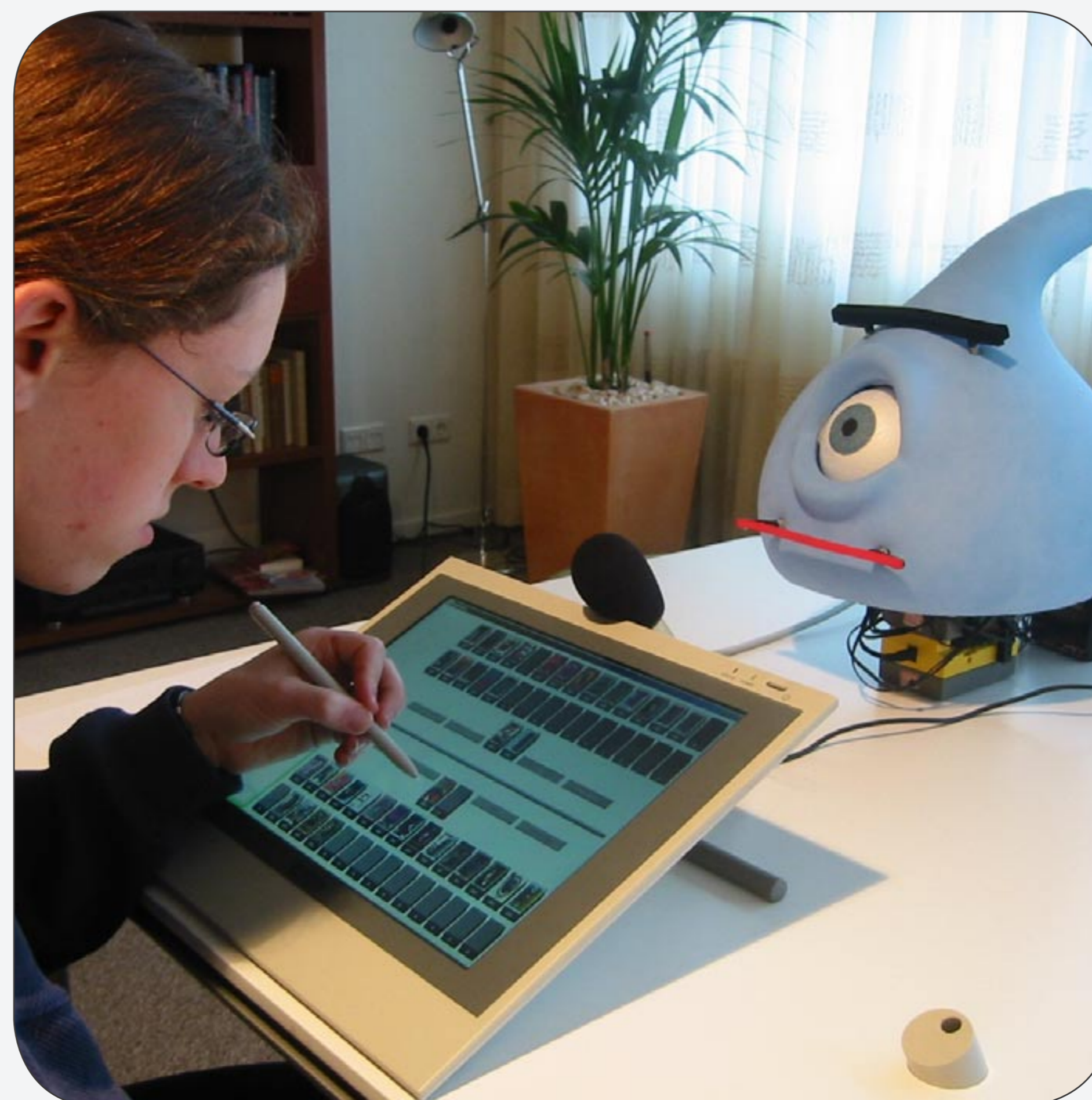
The measurements of the experiment were Enjoyability, Negotiation performance of the user and character and the Speech recognition accuracy of the system.

Manipulation

A mixed 2x2 between/within participants experiment was performed. The between participant factor was the embodiment, which was either a screen character or a robotic character. The within participant factor was the emotional expressions which were either present or not.

Participants

53 participants, 34 male and 19 female at the age from 18 to 53 took part in the study. All of them were native Dutch.



Results

The hypothesis that users perceive the interaction with a character that uses emotional expression more enjoyable than with a character that does not use emotional expressions should not be rejected. The results of the experiment suggest that the participants enjoyed the interaction with an emotional expressive character more than with non-expressive character, in particular if it is a robotic character.

Considering all the measurements this study comes to the conclusion to reject the hypothesis that user will perceive the interaction with a robotic character more enjoyable than with a screen character. The robotic character embodiment, however, has other interesting effects, such as the social facilitation effect and a high forgiveness of the participants for the speech recognition errors. These effects alone might make it worthwhile to use a robotic character for the ambient intelligent home.