Design and evaluation of a robotic TV-assistant: balancing personality and control

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Abstract

This paper describes the design and evaluation of a synthetic personality for the robotic user interface "iCat". An application was developed that helps users to find a TV-programme that fits their interests. Questions that were addressed include: What personality do users prefer for the robotic TV-assistant? What level of control do they prefer? How do personality and the level of control relate to each other? Two experiments were conducted. The first demonstrated that it is possible to create synthetic personalities of the TV-assistant by applying various social cues. For the second experiment, four prototypes were developed by combining two personalities and two levels of user control. In the high control condition, a speech-based command-and-control interaction style was used, whereas the interaction style in the low control condition consisted of speech-based system-initiative natural language dialogue. The results demonstrated an interaction between the effects of personality and level of control on user preferences. Overall, the most preferred combination was an extravert and friendly personality with low user control. Additionally, it was found that perceived level of control was influenced by the robot's personality. This suggests that the robot's personality can be used as a means to increase the amount of control that users perceive.

Introduction

Robots are no longer bound to large factory buildings. In the near future, robots will provide services directly to people, at our workplaces and in our homes (Thrun, 2004). According to a recent survey of the United Nations Economic Commission for Europe, more than six million robots will find a place in our homes before the end of 2007 (UNECE, 2004). Therefore, appropriate design of the interaction between humans and robots will become an important research topic. In line with this development, Philips Research recently developed the "iCat", which serves as a platform for studying human-robot interaction (see figure 1).

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