Chapter VII

The Importance of Interface Agent Characteristics from the End-User Perspective

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Abstract

This chapter reports on an empirical investigation of user perceptions of the importance of several characteristics of interface agents. Interface agents are software entities that are incorporated into various computer applications including electronic mail systems. As evidenced by the growing body of empirical studies and the increasing number of interface agent-based applications on the software market, there is a strong need for the development of this technology. According to a meta-review of agent-related literature by Dehn and van Mulken (2000), there are several characteristics of interface agents that require special attention from agent developers. However, prior to this study, the importance of these characteristics from the end-user perspective remained unclear. In order to identify the significance of these characteristics, a group of the actual users of an e-mail interface agent was surveyed. The results indicate that information accuracy and the degree of the usefulness of an agent are the most salient factors, followed by user comfortability.
with an agent, the extent of user enjoyment, and visual attractiveness of an agent. The implications of the findings for both theory and practice are discussed.

Introduction

To create an artificial being has been a dream of men since the birth of science.

Professor Hobby (William Hurt), Artificial Intelligence by Spielberg 2002 (Spielberg, 2002)

For thousands of years, people have thought of someone doing basic tasks for them. That could be a robot, a cyborg, or a well-trained pet. Not until the beginning of the twenty-first century had it become possible. Now, with the recent development of telecommunications networks and computer technologies, a new type of software application plays the role of virtual assistants that may potentially alleviate some of the problems associated with the employment of software systems. This class of applications is often referred to as intelligent agents, software agents, avatars, or interface agents. As demonstrated by the growing body of academic literature and by the increasing number of agent-based software applications on the market, there is increased interest in the creation of such software entities. In this chapter, these software systems are labeled as interface agents.

Interface agents emerged from the recent developments in the field of intelligent agents. The idea of software agents was first introduced by John McCarthy (1956; 1958) and later coined by the MIT Lincoln Laboratory computer scientist Oliver Selfridge. In the eighties, this concept was explored by agent visionaries such as Marvin Minsky and Alan Kay and further utilized in the recent classic works of Pattie Maes, Nicolas Negroponte, Jeffrey Bradshaw, Hyacinth Nwana, and Divine Ndumu. The past decade has witnessed the rapid development of prototypes and working models of intelligent agents, many of which are already incorporated in end-user commercial applications. A number of recent studies demonstrate the fruitfulness and viability of using agent-based technologies in various areas, for example, in automatic negotiation (Castro-Schez, Jennings, Luo, & Shadbolt, 2004; Fatima, Wooldridge, & Jennings, 2005), natural-language customer support services (J. Lester, Branting, & Mott, 2004), education (Takacs, 2005), and user notification systems (Horvitz, Kadie, Paek, & Hovel, 2003). Some academics have shifted their research from human-agent interaction to human-agent cooperation (Rickel & Johnson, 2000; Rickel et al., 2002) and man-machine symbiosis (Lesh, Rich, & Sidner, 1999; Klein, Woods, Bradshaw, Hoffman, & Feltovich, 2004; Lesh, Marks,
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