IDEA GROUP PUBLISHING
701 E. Chocolate Avenue, Hershey PA 17033-1117, USA
Tel: 717/533-8845; Fax 717/533-8661; URL-http://www.idea-group.com
ITB8024

Chapter XVI

A Virtual Salesperson

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This chapter describes the use of a graphical humane interface—a Virtual Salesperson. The face of the Virtual Salesperson is a generic Facial Animation Engine developed at the University of Genova in Italy and uses a 3-D computer graphics model based on the MPEG-4 standard supplemented by Cyberware scans for facial detail. The appearance of the head may be modified by Facial Definition Parameters to more accurately model the required visage allowing one model to represent many different Talking Heads. The "brain" of the Virtual Salesperson, developed at Curtin University, integrates natural language parsing, text to speech synthesis, and artificial intelligence systems to produce a "bot" capable of helping a user through a question/answer sales enquiry. The Virtual Salesperson is a specific example of a generic Human Computer Interface—a Talking Head.

INTRODUCTION

The Internet and, more specifically, the Web is growing in popularity as a mechanism for conducting business-to-business, consumer-to-business, consumer-to-government, business-to-government, and government-to-government commerce (see, for example, Doukidis, Gricar, & Novak, 1998; Klein, Gricar, & Pucihar, 1999; Swatman, Gricar, & Novak, 1996; Vogel, Gricar, & Novak, 1997). Intra- and inter-organizational electronic commerce (which includes the Internet) is strengthening rapidly, especially in such areas as supply chain management and business process re-engineering through just-in-time manufacturing and quick response and efficient consumer response approaches (see, for instance, Cooper & Burgess, 1999).

This chapter appears in the book, *Internet Commerce and Software Agents: Cases, Technologies and Opportunities* by Syed Mahbubur Rahman and Robert J. Bignall.

Internet sales and revenue from consumer purchases have been low, however, when compared to more traditional channels (Burke, 1997; Peterson, Balasubramanian, & Bronnenberg, 1997). Reasons for this problem are varied, primarily because of the complexity of consumer markets, and include:

- the nature of products/services—some require "experiencing" or trialing, while others can be purchased based on information alone (Peterson et al. 1997)
- the Internet shopping experience generally not providing the same levels of personal service and social interaction as face-to-face shop assistants (Burke, 1997; see also Cohn, 1999; Quelch & Takeuchi, 1981);
- the difficulty of navigating the Web (or Web sites) and of finding the needed information (Jarvenpaa & Todd, 1997; Lohse & Spiller, 1998); and
- the heterogeneous nature of consumers (Peterson et al. 1997)—ranging from elderly to "baby-boomers" and to more techno-savvy teenagers (McConnell, 1998)—all of whom have different needs and problems which need addressing if they are to purchase via the Internet.

Further exacerbating these consumer-oriented problems are their increasing demands for rapid responses to their e-mail queries by organizations (Rabkin & Tingley, 1999). The growing number of individuals using the Internet is also producing large volumes of these e-mails which need to be attended to by customer support staff (Hibbard, 1998; Poleretzky, Cohn, & Gimnicher, 1999).

This chapter examines these inhibitors to consumer Internet purchasing in more detail and discusses some of the Artificial Intelligence (AI) techniques that are being used to address them. The chapter then describes the innovative work being carried out jointly at Curtin University in Australia and the University of Genoa in Italy on a prototype 3-D audiovisual Virtual Salesperson.[1] The Virtual Salesperson has the potential to automate many of the routine queries received by organizations—while at the same time facilitating more "humane" and user-friendly social interactions—by providing spoken answers to natural language enquiries from customers.

E-COMMERCE, THE WEB, AND AI

The need to respond rapidly to consumer e-mail queries and requests (Rabkin & Tingley, 1999) and the increasing volumes of such emails (Hibbard, 1998; Poleretzky et al. 1999) is providing the impetus for automated Web techniques to reduce consumer reliance on staff. These automated approaches to consumer support are also being driven by globalization, whereby consumers in other "time-zones" will send these enquiries via the Internet out of normal business hours. Requests during irregular hours are also likely to increase, according to Burke (1997), because the Internet might provide a convenient means for time-constrained dual-income and single-parent families to gain access to products/services. The main types of automated consumer support are outlined below.

Portals and Self-Service Centres

Common automated consumer support facilities on the Web are portals (Bacheldor, 1999; see also Clarke, 1999) and self-service (or self-help) centres (Poleretzky et al. 1999; Wagner, 1997). These mechanisms are central points of access to an organization through which consumers can obtain and search for information about products/services, the company, etc. Similar self-help approaches include the use of Frequently Asked Questions (FAQs), which permit consumers to search for the question or query they might have and to see the answer provided to their question.