Adding Life-Like Synthetic Characters to the Web

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Abstract. With the advent of web browsers that are able to execute programs embedded in web pages, the use of animated characters for the presentation of information over the web has become possible. A strong argument in favour of using such characters in a web interface is the fact that they make human-computer interaction more enjoyable and allow for the emulation of communication styles common in human-human dialogue. In this paper we discuss three ongoing DFKI projects on life-like synthetic characters in the internet. While all agents rely on the same approach for automated script generation, we use different player technologies which will be discussed in the light of different applications.

Introduction

Rapid growth of competition in the electronic market place will boost the demand for new innovative communication styles to attract web users. With the advent of web browsers that are able to execute programs embedded in web pages, the use of animated characters for the presentation of information over the web has become possible. Instead of surfing the web on their own, users can join a tour, ask the lifelike character for assistance or even delegate a complex search task to it.

Despite of the raging debate on the sociological effects that life-like characters may have, yet can't have, and will perhaps never have, it is safe to say that they enrich the repertoire of available options which can be used to communicate with the user. First of all, they add expressive power to a system's presentation skills. For example, cross-references between different media (possibly occurring in different windows) can be effectively established through a two-handed pointing gesture. If one strives for emulating the multimodal interaction that occurs between humans, the presentation agents’ repertoire of behaviors may even comprise facial expressions and body gestures to express emotions. Furthermore, a presentation agent can also serve as a guide through a presentation to release the user from orientation and navigation problems known from multi-window/multi-screen settings. Last but not least, there is the entertaining and affective function of such an animated character. Lester and colleagues [11] showed that an animated pedagogical may have a strong positive effect on the students’ perception of the learning experience. Mulken and colleagues [16] conducted a study to compare presentations with and without a Persona. The subjects perceived the Persona as being helpful and entertaining.
Furthermore, they experienced learning tasks presented by the Persona as being less
difficult than those without a life-like character.

In this contribution, we provide an overview of three DFKI projects which are
committed to the development of web-based presentation agents for a broad range of
applications including personalized information delivery from the WWW. While all
agents rely on the same approach for script generation, we use different technologies
for their animation depending on the envisioned application.

Related Work

During the last decade, life-like characters have been discovered as a fascinating
and challenging area for research with a large potential for commercial applications.
In the following, we restrict ourselves to projects that focus on characters for the web.

Adele (Agent for Distributed Learning Environments) is an animated pedagogical
agent that has been developed for Web-based medical instruction [13]. The students
are presented with a virtual patient in a simulated clinical environment and may
perform a variety of actions on the patient. The role of the pedagogical agent is to
monitor the students’ actions and provide feedback. The animated agent has been
realized as a Java applet that runs within a Web browser environment. An empirical
evaluation of the Agent revealed that the system was easy to use and that the students
found Adele helpful. Unfortunately, the believability of the agent suffers from the
poor quality of speech synthesis.

The Agneta and Frida system incorporates narratives into a Web environment by
placing two characters on the user’s desktop [8]. These characters watch the user
during the browsing process and make comments on the visited Web pages. Unlike
the DFKI characters, the system relies on pre-authored scripts and no generative
mechanism is employed. Consequently, the system operates on predefined Web pages
only. The graphical realization of Agneta and Frida is based on the Microsoft™
package. An empirical evaluation of Agneta and Frida showed that animated
characters may encourage users to stay longer on a web page. However, users did not
learn more about a web page and some of them –especially web-experienced users -
even got disturbed by the characters. As a reason, the authors of the Agneta and Frida
system indicate that such users have already developed their own strategies for
navigating the web which might interfere with the narrative structure provided by the
characters.

Virtual meeting spaces and graphical chat corners are a further application field for
life-like characters. For example, Isbister and colleagues [10] developed an animated
agent that appears in the role of a party host in a web-based chat corner and tries to
find a common topic for guests whose conversation has lagged. An experimental
evaluation of the agent’s ability to assist in cross-cultural conversations has been
performed and revealed that the presence of a lifelike synthetic agent may have a
positive influence on the perception of each other and of each others cultural group.
Smith and colleagues [14] investigated the influence of 3D features on social
interaction in chat spaces. For instance, they showed that even experienced users
actively make use of proximity and orientation features to enhance their interactions.