Avatar Teachers - CLONE3D and NTU/SADM

Mark Chavez*
Nanyang Technological University, School of Art, Design & Media, Singapore

Figure 1: The Temptress from the Planet Delight

Abstract

The creation of 3d automated agents interfaced with artificial intelligence for information based applications requires that the characters developed have both intelligence and approachability. This project presents characterizations of real-time 3d characters posing as instructional agents. In our approach unique personality and design models permit the artificial agents to gain the trust of the person(s) they interact with. Inherent to many people faced with new technologies and in particular artificial agents there is trepidation. This system provide a method of conversing with the artificial agents about a wide array of topics. In doing so the user gains trust in the agent seeing it as a harmless though fascinating toy. By filtering responses the agent can converse about a particular focused range of topics. The input from the user can stray off the chosen topic and the agent will appropriately respond. The interaction can result in a conversation that leads the user to a particular understanding regarding appropriateness of discourse. A prototype character is hosted on the website CLONE3D.

CR Categories: H.5.1 [Multimedia Information Systems]: Artificial, augmented, and virtual realities— [H.5.2]: User Interfaces— Training, help, and documentation

Keywords: automated animation, 3d characterizations, artificial intelligence, avatar teachers

1 Introduction

Originally conceived as an web based entertainment site entitled CLONE3D: Artificial Comedy and Real Time 3d Characters, located at http://clone3d.com , the work originating out of the CLONE3D sought to tackle many of the core problems that originators of artificial agents faced when creating content for web and interactive spaces. Originally the content consisted of a 3d character playback system that utilized simple audio files embedded with lip-sync'ed cues and limited prerecorded content. Over the past year the interactive agent on CLONE3D has been enhanced with artificial intelligence, pattern matching and standard text to speech technologies. These modifications have given the character a life-like appearance and response. With the inherent appeal that a finely tuned 3d character has, the challenge has been to devote research time to the project. The support of Singapore's Nanyang Technological University, School of Art, Design and Media has opened new possibilities for this 3d avatar technology.

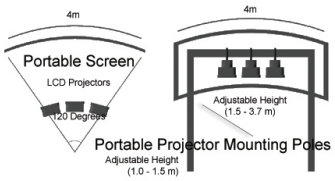
2 The Content

Using software components as created by Haptek Inc., and Richard Wallace's Open Source chatterbot project entitled A.L.I.C.E. (Artificial Linguistic Internet Computer Entity) interfaced and designed by Mark Chavez this presentation encompasses the display of three characters in a wide screen theater setting. The agent will interact with the audience as well as with each other. Placed before each agent is a computer keyboard for direct person to digital agent chat interface. Motion sensing devices cue the character as to the location of audience members, thereby triggering scripts that make the agent direct their attention toward that location. The agents will behave relative to the number of people within the staging area. When one avatar is queried by a visitor and it does not have the information requested it will ask one of the other avatars whether or not they know the answer. The resulting conversation between the avatars will be the direct result of the queries posed to them. The effect will be that of a group of seemingly detached automatons gaining insights regarding the audience and conversing with both the audience and one another. After a duration of inactivity their memory will reset. Their behaviors will be comprised mostly of simple actions utilizing standard animation-synthesis techniques; blending motion channels for subtle psychological effects. In rare cases the live performance will be derived from motion libraries that call on longer animated actions.

In terms of design the agents geometrical forms are modeled in a non photorealistic manner. By doing so the normal tendancy to

*e-mail: mchavez@ntu.edu.sg

associate the characters/agents with bizarre monsterous creations is avoided, e.g. The Uncanny Valley Effect [Mori 1982]. The lighting models are naturalistic and use standard lighting techniques. The behavioral models are designed to emulate human gestures however are stylized to reflect animation conventions. The primary goal in favoring this design style is to bring the audience into friendly discourse with the characters.



The theater is structured as a 4 meter wide by 3.5 meter deep space. Within it are three keyboards on stands provided for direct text input. The projectors are mounted on a c structure hanging from the center of the frame. To eliminate competing light sources portions of the front wall are curtained. Extending from the c structure on either side are two curtained walls. Behind the screen the back wall is also curtained.

3 Conclusion

The project is to be an inviting space where visitors can interact with computerized intelligence via anthropomorphic characterizations. Conceived as a prototype it creates a world to explore with the avatars. Bringing the viewers into an easy and friendly interaction with the avatars is essential when creating intelligent agents for corporate, instruction, and casual interaction.

References

MORI, M. 1982. *The Buddha in the Robot*. Charles E. Tuttle Co.