PhD Proposal MAP-I

Presence in Simulated Social Environments

Supervisors

Luís Paulo Reis (Email: lpreis@fe.up.pt) and A.Augusto de Sousa (Email: aas@fe.up.pt)

Research Units

LIACC – Lab. Inteligência Artificial e Ciência de Computadores da Universidade do Porto

INESC-P – Instituto de Engenharia de Sistemas e Computadores - Porto

Abstract

In recent years we have been observing the ongoing efforts to correctly simulate human behavior in virtual environments. Important applications for this type of simulation include immersive psychotherapy tools, rehabilitation, speaking in public training programmes and computer games. For all these applications there is one very important concept: presence. Presence can be roughly defined as the subjective experience of being in one place or situation despite physically being in a different place. In this work, the main goal is to simulate a small crowd and explore several factors, observing how they affect distinct users' feeling of presence.

Objectives

The main objective of the proposed doctoral work is to identify and evaluate the most significant factors in inducing presence on the observer while simulating in real-time an interactive small crowd.

A framework will be developed consisting in a software capable of simulating, in real-time, a small set of people and to provide a realistic 3D visualization of the scenario. It should be implemented with a distributed architecture to make it a scalable system and to be possible to use distributed computing techniques such as the use of autonomous agents. It will also require some specific hardware (for example a head mounted device) to increase the user's immersion.

Each individual of the virtual crowd will be simulated through a software agent, and the focus will be on modeling the social interaction between completely autonomous agents and human controlled avatars. The crowd control may also be performed considering it as a whole, or dividing it into clusters and controlling sets of people instead of each person independently. Simulating groups of people can be done using knowledge from the fields of psychology and sociology in group dynamics.

It is expected that the outcome of this work will be meaningful knowledge base of how to optimize simulations of small sets of people in what concerns social interaction and visualization, for virtual reality applications.

Additional Information

More Information at: Http://www.fe.up.pt/~lpreis