

摘要

近年來 3D 虛擬環境與語音界面(Voice User Interface)在個人電腦上的應用逐漸受到重視。說話是人類最自然的溝通方式，若能在虛擬環境中加入語音界面，將使人物間的互動更為流暢。近年來雖有許多研究致力於 3D 虛擬環境與語音界面的整合，但在多人虛擬環境中對話管理(Dialog Management)等相關問題上，一直缺乏有效的解決方案。本研究的主要目的，即在解決語音界面整合及對話管理等問題，並實現多人虛擬環境的語音互動機制。我們針對虛擬環境中語音與動畫同步、對話管理機制與多人環境中之語音處理機制等問題，設計一個以 VoiceXML 為基礎的 XAML-V (eXtensible Animation Markup Language - Voice extension) 語言，並將其實現結果於一個多人虛擬環境系統中驗證其可行性及有效性。

Abstract

The applications of 3D virtual environments and voice user interface (VUI) on personal computers have received significant attentions in recent years. Since speech is the most natural way of communication, incorporating VUI into virtual environments can enhance user interaction and immersiveness. Although there have been many researches addressing the issue of integrating VUI and 3D virtual environment, most of the proposed solutions do not provide an effective mechanism for multi-user dialog management. The objective of this research is on providing a solution for VUI integration and dialog management and realizing such a mechanism in a multi-user virtual environment. We have designed a dialog scripting language called XAML-V (eXtensible Animation Markup Language – Voice Extension), based on the VoiceXML standard, to address the issues of synchronization between VUI and animation and dialog management for multi-user interaction. We have also implemented such a language and realized it on a multi-user virtual environment to evaluate the effectiveness of this design.