

設計及實作一個轉換 3D 教材描述語言到 VRML 的轉譯器

學生：涂仲箎

指導教授：陳登吉博士

國立交通大學理學院碩士在職專班網路學習組

摘 要

隨著電腦科技的進步，運用電腦來進行學習及教學活動越來越普及，教育工作者以電腦來編輯教材的需求隨之大為增加。

3D 多媒體教材在展現有關空間與立體觀念上的效果較 2D 平面式的多媒體教材為佳，但目前流通的多媒體教材編輯工具皆只著重在 2D 平面式的教材編輯，而專業的 3D 編輯軟體對一般人來說卻不易使用，因此亟須簡單方便的 3D 多媒體教材編輯軟體來幫助一般的使用者編輯 3D 教材。

在實際電腦多媒體教材的編輯過程中，我們發現有許多重複性的工作，若能將這些重複性的工作變成可重複使用的樣版，並提供套用的機制，將可使 3D 教材編輯工作更方便，更有效率。

國立交通大學軟體工程應用實驗室所開發的 3D 教材樣板編輯雛形系統為一套整合二維與三維編輯環境的 3D 教材編輯系統，在製作 3D 教材上非常方便，並提供 3D 教材樣板機制，能讓教材編輯者再利用(ReUse)所編好的教材，可使教材編輯工作更有效率，相當方便，惟所編輯的教材目前只能在自己的播放器(Player)呈現，尚未能在網頁上播放。

本研究探討 3D 教材樣板機制的便利性，提出設計並實作一個轉譯器來解決目前 3D 教材樣板編輯雛形系統尚未能製作出網頁教材的問題，讓使用者不須懂 VRML 語言即可很容易的開發出可在網路上瀏覽的 3D 動畫教材，使得所編輯完成的 3D 教材能在網路上流通，並讓更多的 3D 教材需要者來瀏覽使用。

The Design and Implementation of a Script-to-VRML Translator for 3D Teaching Materials

Student : Chung_Thih Tu

Advisor : Dr. Deng-Jyi Chen

Degree Program of E-Learning College of Science
National Chiao Tung University

Abstract

To follow the progress of information technology, it is available and more convenient to proceeding learning and teaching by using computers. Thus, the demand of using computer to edit and compile teaching material by educators is also increased.

Within the scope of expressing effect of related space and dimensional concept, 3D multi-media teaching material is better than 2D does. However, currently circulating multi-media teaching material compilation is focused to 2D's, and professional 3D compiler software is not easier to be used for general educators. Thus, simple and convenient 3D multi-media teaching material compiler software is urgently needed to help general users to compile 3D teaching material.

During the process of actual computer multi-media compilation, it is found that when dealing with duplications, using 3D teaching material compiler will become more convenient and effective if those duplications can be transferred to repeated pattern and provide a set of functions.

3D teaching material pattern compiler miniature form system, developed by the Software Engineering Application Laboratory of National Chiao-Tung University, is a set of integrated 2D and 3D compiled environment 3D teaching material compiler system. It is very convenient to produce 3D teaching material and provides 3D teaching material pattern functions. It allows teaching material compilers reuse compiled teaching material and makes compilation more efficient and convenient. Those compiled teaching material currently can be manifested on its own player but not on network.

This research studied the convenience of 3D teaching material pattern and submitted designing and producing an adapter to solve problems of current 3D teaching material pattern

compiler miniature form system not being presented on network. Meanwhile, it allows users easily developing 3D motion teaching material can be browsed through network even without knowing VRML language as well as compiled 3D teaching material can be circulated on network to let more 3D teaching material demanders to browse and access.

