

應用於人文歷史資料之視覺化互動模型的開發與建置

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摘要

人文歷史資料之數位化保存與使用至少應涵蓋徵集、典藏、加值、展示等四個面向，透過完整的數位化流程，方能營造新研究的有利環境、累積產生新知識的能量，進而引導創意的發揮而產生創新的應用。現今多數的數位典藏計畫在徵集與典藏的工作上皆有廣泛且重要的成果，部分數位典藏相關的研究在加值技術與工具的開發上，也有相當的進展。而在展示的面向上，絕大多數的數位典藏推動工作仍以網站為服務的窗口，再透過使用者個人的連網機器操作與螢幕，提供文件圖片資料的檢索閱覽。本研究嘗試突破傳統的數位資料展示方式，結合硬體環境設施的建置與軟體工具的導入，開發創新的數位資料展演方法，展現數位資料更多面向的價值，並活化其多元應用的可能。

本文以政府官職資料庫、中華民國發展史、雷震先生史料等人文歷史資料為例，以兩個部分介紹視覺化互動模型的設計與展示。第一部分為人機互動環境的建置，本研究使用開放之網路標準（HTML, JavaScript, CSS）設計開發互動模型，由此產生之模型將可由本研究所建置之大型觸控螢幕來操作，也可透過個人電腦所內建的瀏覽器使用。第二部分為泛型視覺化互動模型的設計，本研究分析人文歷史資料的組成特性，並針對常出現的資料型態，包括時間型、文件型、數據統計型資料等，設計適合展演的模型，而所設計的模型可重複快速套用在相同資料型態的資料上，充分發揮視覺化互動模型的加值效益。

總體而言，本研究提出創新的人文歷史數位資料展示與使用方式，針對龐雜且零散的各種資料，透過視覺化互動模型，提供系統化的組織整合

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與呈現機制，並透過大型觸控螢幕，進行互動展演，提供截然不同的資料觀察角度與運用模式，讓人文歷史資料以前所未有的方式更親近使用者的感官認知，激發更多的使用經驗與想像，進而開創出更多元的研究主題與應用成果。

關鍵字：人機互動、資訊視覺化、泛型互動模型

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Interactive Visualization Models and Facilities for the Display of Humanities and Historical Data

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Abstract

Successful digital curation of humanities and historical data calls for the combined efforts in the collection, archiving, value-adding and exhibition of valuable assets. Digital preservation and computerized processing can help establish a research environment that facilitates the accumulation of knowledge, exchange of ideas and creation of innovative applications. Most projects funded by the National Digital Archives Program (NDAP) in Taiwan have done excellent work in terms of collection and archiving. Some have focused on the value-adding or tool-developing aspect. However, almost all NDAP projects utilize a web-based interface as an entry point for interested users to search or explore their collections. In this paper, we attempt to enrich the user experience by building an exhibition facility with latest information technology to support interactive data visualization and manipulation.

We discuss the design of interactive human-computer interface and the construction of information visualization models, respectively. Firstly, we outline open standards suitable for the implementation of interactive components that can operate in both traditional browser and touch-based solution. We also review key technologies in building large-size multi-touch

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screens and illustrate with real examples. Secondly, we investigate possible modeling techniques for humanities and historical data. Several common data types, including temporal events, text documents and numerical data, have identified and summarized. Their corresponding visualization models have also been developed. These models are generic in the sense that customized versions can be generated by substituting a new set of standard-complying data.

In summary, this paper proposed and developed a novel scheme for the versatile display and interaction of humanities and historical data. The systematic workflow, along with the generic visualization models originated in this research will greatly facilitate data curators to produce impressive and vibrant exhibitions, which can further inspire new perspectives and bring in fresh elements to old data.

Keywords: Human-Computer Interaction, Information Visualization, Generic Interactive Visualization Models

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