以框架為基礎之虛擬大腸鏡系統

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摘 要

虛擬大腸鏡 （ virtual colonoscopy ） 提供非侵入性 （ noninvasive）的方式來檢視大腸的內部構造，自從1994 年 首度問世以來，便一直受到廣泛的重視與研究。在臨床的應用上 ，醫師雖然可以看見腸壁外觀的立體化呈現，但是單純由三維影 像來判斷病灶是不夠的，仍然必須在二維與三維影像中來回反覆 操作與觀察。整個過程不但耗時，也無法與外科病理之特徵相互 結合，達到協助判讀之最終目的。由於虛擬大腸鏡系統結合了電 腦圖學與醫療影像等兩個不同領域之技術 ，所需之開發門檻甚高 ，因此，如何快速、有效地建立虛擬大腸鏡系統，作為進一步研 究的平台，便是十分重要的課題 。 有鑑於此，本論文提出虛擬大腸鏡系統之開發步驟，並利用 框架（ framework ）整合之技術來實作， 包括透過MFC （Microsoft Foundation Class）來產生視窗應用程式並提供圖 形化使用者介面，由ITK（Insight Toolkit）提供醫療影像檔案 讀取與處理之功能，並透過VTK（Visualization Toolkit）實作 各種資料視覺化功能。利用框架來開發應用程式，可以減少常用 功能之重複開發， 讓系統開發者可以專注在解決特定領域 （ domainspecific）的問題上。

關鍵詞 : 影像分割，虛擬大腸鏡，應用程式框架，表面呈像

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