隊伍名稱
藍色小圈圈 / RoM

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The Location Tracking Method with Picture-In-Picture Design and Implementation for Minimally Invasive Surgery

微創手術定位追蹤方法之設計並以子母畫面實現

作品摘要 Abstract

微創手術（Minimally Invasive Surgery，MIS）相較於傳統的手術具有創口小，對病患負擔較小，回復較快等優點，使得微創手術逐漸成為外科手術的主流。內視鏡是微創手術中重要的工具，但由於內視鏡的視野有限，無法確立的距離感與方向感這對實習醫師或僅受過開放式手術訓練的醫師而言需要進行適應，而且也不利於推廣，為了解決這問題我們提出微創手術定位追蹤方法之設計並以子母畫面實現去提供距離與方向的參考資訊，透過並排之雙鏡頭將擷取到的影像進行影像接合，再使用ROI（Region Of Interesting）與PIP（picture in picture）去同時對病灶與病灶周圍進行廣視角監視以提升手術的安定性。

目前我們已經在建立起初始架構，將影像透過商用準系統運算去選定或追蹤目標，及器械與病灶間的距離以簡單的比例尺，透過電視盒傳輸至VGA螢幕，未來我們希望可從準系統轉移到開發板，以期能增加其便利性與可攜性。

Minimally Invasive Surgery (MIS) is a current major technique for surgery. Compared to traditional methods of surgery, MIS can reduce the post-surgical recovery time, cost and pain to patients due to surgery. It is therefore in the interest of doctors and patients. There are several MIS techniques that have been widely accepted for diagnosis and treatment in most hospitals, such as hysteroscopy, laparoscopy, and colon endoscopy. The major problem of MIS is a narrow field of vision. We develop and validate a MIS Panoramic Endoscope (MISPE) to provide doctors with broad fields of view. MISPE features a combination of image overlapping and image stitching. The panoramic image apparatus has a two side-by-side endoscopic lenses that provide wide-angle inputs for image stitching. MISPE can provide doctors with panoramic images, so that doctors can easily discriminate the organ's positions between surgery operations. Experimental results show that MISPE can enhance the image size to 155%.

圖1 > 實際展示

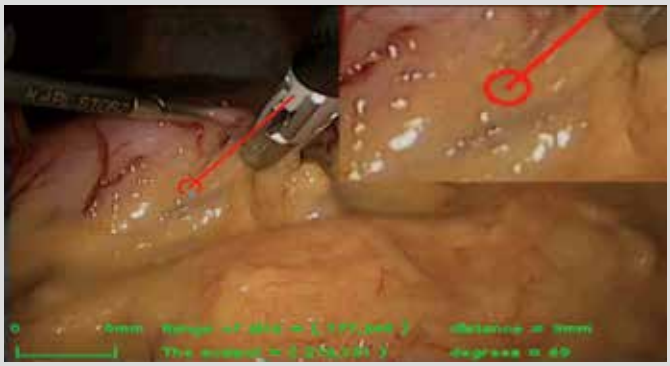

圖2 > 實際影片測試