

# 基於三維虛擬圖像的超聲圖像自動標註技術

## An automated 3D annotation technology for breast ultrasound imaging

為乳腺超聲檢測提供準確省時的三維自動標註

A novel technology to provide a quick and accurate solution for locating breast tumors

專利申請編號及國家：201210279869.5(中國)

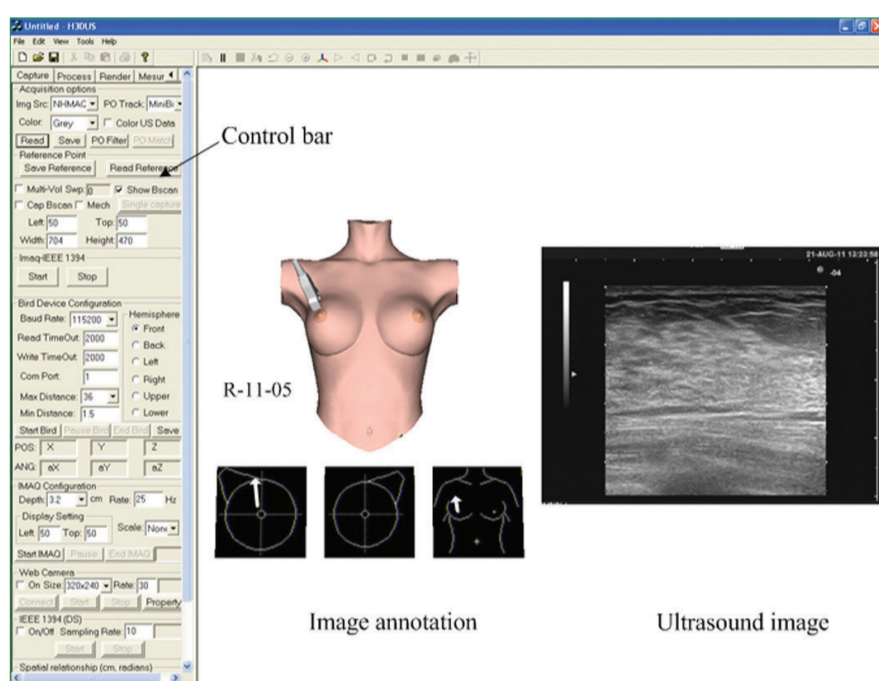
### 特色與優點

- 對超聲圖像的位置實行自動標註，能夠縮短掃描時間
- 傳感器能提供準確性極高的圖像位置數據
- 提供的三維標註位置影像資訊，有助醫護人員後期診斷工作

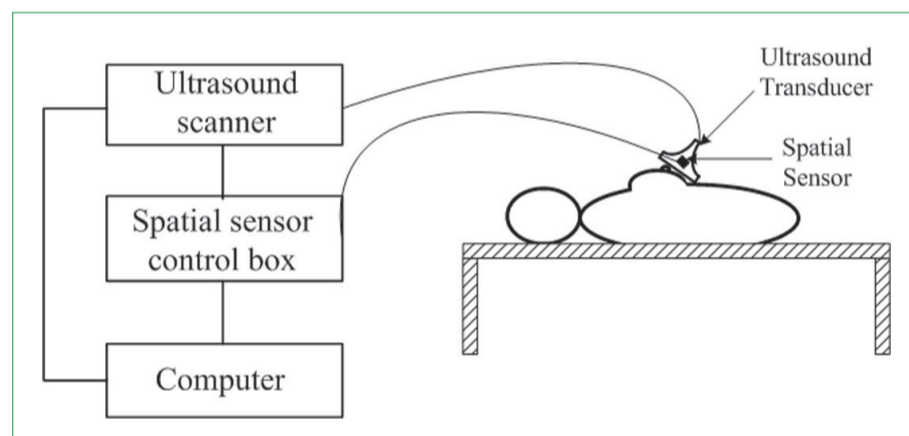
### 應用

- 本技術能為乳腺超聲成像診斷提供自動標註。
- 本方法通過提供連續的、自動的三維圖像標註，協助乳腺活組織檢查和超聲乳腺手術。

超聲波影像是檢測乳癌的最主要方法之一。對於超聲成像檢測，有一個重要的問題就是如何正確地標註癌腫瘤的超聲圖像的空間位置。現時只能夠利用手動及依賴專科醫生的經驗來估計癌腫瘤的超聲圖像的位置，既費時且準確度低。理大已成功開發一套創新系統，利用傳感器提供的圖像三維位置資料，提供三維自動標註，能夠解決傳統手動標註的問題。



系統軟件界面圖  
The system software interface



系統框圖  
The system diagram

Breast ultrasound is an important imaging method for breast cancer because of its advantages of being non-invasive, low-cost and high performance in differentiating malignant masses from benign masses. Spatial annotation is an essential step for the follow-up diagnosis and treatment to be performed. However, the current annotation is a manual method which takes time to get the result. In addition, the accuracy is highly dependent on the experience of the medical specialists that is relatively prone to errors. In order to improve the entire process, PolyU has developed a novel automated three-dimensional (3D) annotation method for breast ultrasound imaging. This new annotation method is able to uplift the accuracy, intuitivism and speed of breast ultrasound diagnosis.

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### Special Features and Advantages

- This method can record the image positions continuously and automatically, which can help to save scanning time.
- This method accurately registers the positional information according to the real image position instead of the operator approximate evaluation so this system is operator independent and accurate.

### Applications

- This new method can help to automatically register ultrasound image positional information for breast screening and diagnostic evaluation.
- By using this innovative technology, ultrasound image positions can be recorded during breast biopsies and other invasive ultrasound guided breast surgery.

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