

Using a Mammographic Case Base to Support the Image Diagnosis of Breast Lesion

以乳房攝影個案庫支援乳房影像之診斷

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Abstract

Mammography is an important screening tool in early detection of breast cancer. There had been standard lexicons for the mammographic image findings, which were organized by ACR (American College of Radiology) and known as BI-RADS[®] (Breast Imaging Report and Data System). However, the image interpretation by the radiologists is still with some difficulty and grey zone, thus a good decision support tool could be helpful. Case Based Reasoning (CBR), a technology in the field of AI (Artificial Intelligence), is thought to be a solution in this problem. With collection of the cases from previous mammography with known-diagnostic results, a mammographic case base had been built up. The Case Based Reasoning was applied to work as an inference tool, which could retrieve similar cases for the radiologists while interpreting a new mammographic case. With the known diagnostic result of the similar cases, the radiologists are supposed to have more information and confidence in doing the image interpretation. Thirty-four licensed radiologists were invited as experts to evaluate our system. The measurement tools we used are the three major items: perceived usefulness, perceived easy of use, and user information satisfaction. Seven-points Likert scale was applied from strongly agreement to strongly disagreement. T-test was then used for the statistical examination, and the result is significantly greater than the neutral mid-value of 4 for the all three major items. With the result, we concluded that CBR is valuable when acts as a decision support tool in mammographic image interpretation, in all the three evaluation measurements of perceived usefulness, perceived easy of use, and user information satisfaction by the radiologists.

Keyword

Breast Image, Mammography, Case Based Reasoning, Decision Support