

**十一、研究計畫中英文摘要：**請就本計畫要點作一概述，並依本計畫性質自訂關鍵詞。

(二) 計畫英文摘要。(五百字以內)

Because of the rapidly development of MDCT (Multi-Detector row Computed Tomography), more thinner detectors enable 64-row MDCT to acquire thin slice of body in better spatial resolution and improved image quality. Accompany with the increasing of image volume data, the load of physicians in distinguishing suspicious nodules were increased simultaneously. The purpose of this study is to develop a computer aided detection and diagnosis system in order to assist physicians in finding the suspicious pulmonary nodules and tumor classification.

In the clinical diagnosis, each object was compared to the corresponding position of previous image or that of next image to check the continuity. For a discontinuous object, it will be reconstructed and be observed in the 3D space to assess the likelihood of malignancy. This work flow will be implemented in this project. Our study consist of following two phases. First, the discontinuous object, piece of suspicious nodule, is isolated and identified from the volume data automatically. The evaluation of system performance is focus on the ratio of suspicious nodules identified by physicians to that successfully discovered by the proposed computer aided detection system (sensitivity). In the second phase, the pieces of suspicious nodule in continuous images are integrated to form a visualizing object. A tree structure is proposed to depict the detected regions in image sequence. Then, statistic features will be proposed to characterize suspicious nodules for each node of tree (2D features for piece of nodule) and entire tree (3D features for entire nodule). Finally, a computer aided diagnosis system is constructed by regressing the correlation between the classification result of physicians and the computerized features. The evaluation of system performance is focus on the inter-observer reliability between physicians and computer system.

Keyword : 64-row MDCT, pulmonary nodules, computer aided detection, computer aided diagnosis