
IMAGES IN CLINICAL MEDICINE

Fig. 1: Nodules detection in Chest X-rays. Some instances are displayed in this figure where Cancer related nodules are obstructed by (a) ribs, (b) clavicles, and (c) rib crossings.

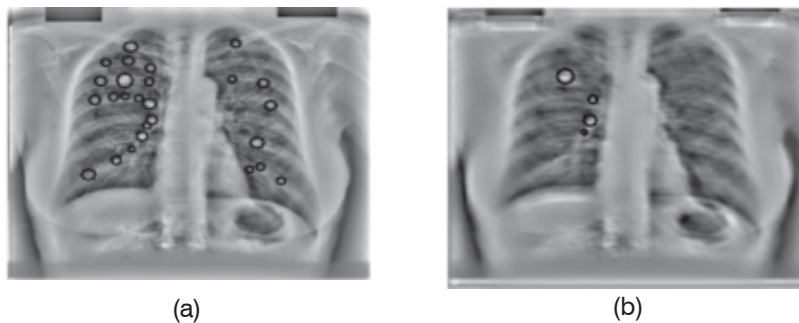
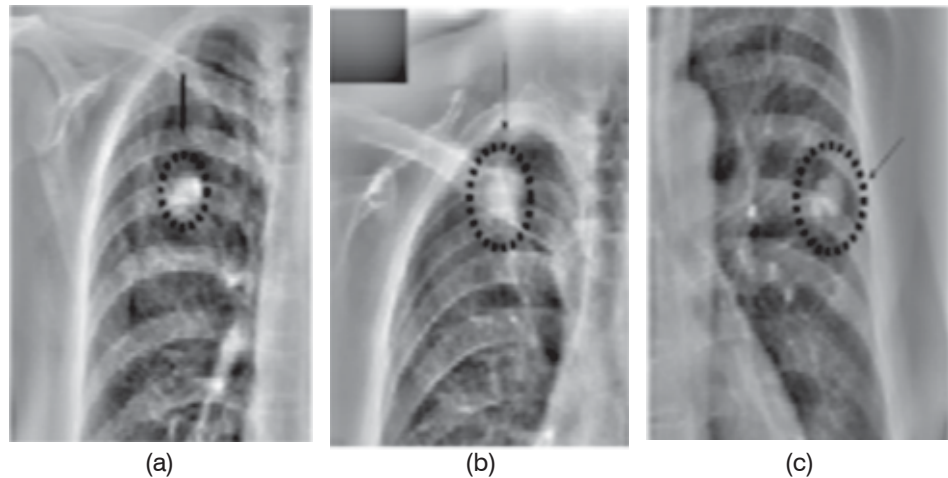


Fig. 2: The improvement in nodule detection using Image Processing Techniques. The Fig. (a) has lot of false nodules whereas the Fig. (b) treated with Computer software on a laptop shows considerable less activity of false nodules.

MEDICAL IMAGE PROCESSING

The American Cancer Society published their latest report about Cancer related deaths in 2008, where cancer has been named to be the second most common cause of death in the US. However the good news is that 15 percent rise in survival rate in Cancer cases has also been reported over the last couple of years. This has been attributed to the early stage detection due to incorporation of Computer added detection of lung nodules in Chest X-rays. In a conventional detection the pulmonary nodules is usually hindered by the irrelevant bony structure. The need has been felt to do some image processing with the help of a computer to filter out or in some sense suppress the irrelevant structure. This indeed make the process of nodules detection by a radiologist relatively stress-free. Here the instances of such occurrences where nodules overlap with chest bones are shown in Fig. 1. Whereas Fig. 2 depicts that using a well-known image processing technique with the name Principal Component Analysis(PCA) run on a small Laptop can improve the accuracy of detection mechanism by removing a number of false nodules and makes the job of a radiologist a bit easier. The test case X-rays are taken from a database developed by Japanese Radiologist Society with the name JSRT, available on the INTERNET for research purposes only. The database contains a large enough variation to cater for most of the real-life scenarios, recognized and used by the leading radiologists in their clinical research around the world.

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