Fractal based Techniques for Classification of Mammograms and Identification of Microcalcifications

PhD Thesis
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Breast cancer has been a leading cause of death among women. The mortality rate of breast cancer can be reduced substantially if detected in the initial stages of the disease. Usually, radiologists rely on computer-aided diagnostic systems for mammographic image interpretations. As mammographic parenchymal and ductal patterns possess fractal properties, fractal analysis can be applied for mammogram analysis effectively.

In this thesis, a new fractal feature was developed for the efficient classification of mammograms into different classes: normal, abnormal-masses (benign and malignant) and microcalcifications (benign and malignant). The presence of microcalcification in mammograms was identified for the early detection of breast cancer. This was done by modeling mammograms using fractals. Also, the newly developed fractal modeling technique is simple, faster and comprehensive.

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