

## Aspects and Studies of Fractal Geometry in Automatic Breast Cancer Detection

**Authors :** Mrinal Kanti Bhowmik, Kakali Das Jr., Barin Kumar De, Debotosh Bhattacharjee

**Abstract :** Breast cancer is the most common cancer and a leading cause of death for women in the 35 to 55 age group. Early detection of breast cancer can decrease the mortality rate of breast cancer. Mammography is considered as a 'Gold Standard' for breast cancer detection and a very popular modality, presently used for breast cancer screening and detection. The screening of digital mammograms often leads to over diagnosis and a consequence to unnecessary traumatic & painful biopsies. For that reason recent studies involving the use of thermal imaging as a screening technique have generated a growing interest especially in cases where the mammography is limited, as in young patients who have dense breast tissue. Tumor is a significant sign of breast cancer in both mammography and thermography. The tumors are complex in structure and they also exhibit a different statistical and textural features compared to the breast background tissue. Fractal geometry is a geometry which is used to describe this type of complex structure as per their main characteristic, where traditional Euclidean geometry fails. Over the last few years, fractal geometrics have been applied mostly in many medical image (1D, 2D, or 3D) analysis applications. In breast cancer detection using digital mammogram images, also it plays a significant role. Fractal is also used in thermography for early detection of the masses using the thermal texture. This paper presents an overview of the recent aspects and initiatives of fractals in breast cancer detection in both mammography and thermography. The scope of fractal geometry in automatic breast cancer detection using digital mammogram and thermogram images are analysed, which forms a foundation for further study on application of fractal geometry in medical imaging for improving the efficiency of automatic detection.

**Keywords :** fractal, tumor, thermography, mammography

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