# A Novel Approach for Detection of Breast Cancer at an early stage using Digital Image Processing techniques

**Abstract:**

Breast Cancer is highly predominant in women in today’s world. It can start in the breast and can spread to other areas of the body in the course of time. Breast cancer is the second largest disease leading to the death of women. The disease is curable if detected early enough .A lot of research is being done to detect the cancer at the earliest. Early detection at the microcalcification stage can be useful for providing proper treatment at the early stage and saving the patients. Research on breast cancer using digital image processing is not new but lack of proper methods for early detection at microcalcification stage is still a challenge to medical domain and still it is considered as the deadliest. Most of the research work done till now detects the breast cancer at tumor stage and are not accurate to 100% and leads to false positive or false negative results which are highly dangerous. And also they do not provide end to end solution. A novel methodology is proposed in this paper using a combination of different highly efficient techniques of digital image processing which are not yet being implemented in this research area. Using the methodology proposed in this paper it is possible to detect the breast cancer at a very early microcalcification stage itself and the result of this proposed methodology will be of very high accuracy leading to true positive and true negative results. The methodology proposed in this paper provides end to end solution. **Keywords**—Dilation, Otsu’s thresholding algorithm, K-Nearest Neighbor Classifier, Bayes Classifier,Gray-level Co-occurrence Matrix, Sobel Edge Detection Mask