

# Impressive predictive model for Breast Cancer based on Machine Learning

Saravanakumar Selvaraj<sup>\*1</sup>, Saravanan Thangavel<sup>2</sup>, M Prabhakaran<sup>3</sup> and T Sathish<sup>4</sup>

<sup>1</sup>Dept. of CSE, Faculty of Engineering and Technology, Jain (Deemed to be University), Bengaluru, India

<sup>2</sup>Dept. of CSE, GITAM School of Technology, GITAM (Deemed to be University), Bengaluru, India

<sup>3</sup>Dept. of CSE, Alliance College of Engineering and Design, Alliance University, Bengaluru, India

<sup>4</sup>Dept. of CSE, Mallareddy Institute of Engineering and Technology, Secunderabad, India

## Abstract

**INTRODUCTION:** Breast cancer is a major health concern for women all over the world.

**OBJECTIVES:** In order to reduce mortality rates and provide the most effective treatment, Histopathology image prognosis is essential. When a pathologist examines a biopsy specimen under a microscope, they are engaging in histopathology. The pathologist looks for the picture, determines its type, labels it, and assigns a grade.

**METHODS:** Tissue architecture, cell distribution, and cellular form all play a role in determining whether a histopathological scan is benign or malignant. Manual picture classification is the slowest and most error-prone method. Automated diagnosis based on machine learning is necessary for early and precise diagnosis, but this challenge has prevented it from being addressed thus far. In this study, we apply curvelet transform to a picture that has been segmented using k-means clustering to isolate individual cell nuclei.

**RESULTS:** We analysed data from the Wisconsin Diagnosis Breast Cancer database for this article in the context of similar studies in the literature.

**CONCLUSION:** It is demonstrated that compared to another machine learning algorithm, the IICA-ANN IICA-KNN and IICA-SVM-KNN method using the logistic algorithm achieves 98.04% accuracy.

**Keywords:** Breast Cancer, MRI image, Classification, Human intelligence, Segmentation

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## 1. Introduction

The Breast cancer, which develops from breast cells, is a prevalent malignancy affecting females. Like lung cancer, breast cancer is a major killer of women. Breast cancer is divided into subtypes based on the microscopic characteristics of the cancer cells. There are two main types of breast cancer, and the former, ductal carcinoma in situ, has a slower progression and fewer long-term effects on patients' quality of life than the latter, invasive ductal carcinoma. Even though DCIS accounts for a relatively

small percentage of breast cancer diagnoses (between 30% and 55%), IDC is more aggressive and can spread throughout the breast. This group constitutes the vast majority (80%) of breast cancer patients [1].

Early detection is key to successfully treating breast cancer. The availability of reliable breast cancer screening methods is crucial to our national health. The most often used diagnostic methods for this syndrome include mammography, ultrasonography, and their mammogram. Due to its ability to detect breast cancer at an early stage, mammography is an important tool in the fight against the disease. Because mammography is ineffective for women with dense breast tissue, ultrasound or diagnostic

\*Corresponding author. Email: [saravanakumarme85@gmail.com](mailto:saravanakumarme85@gmail.com)











