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Detection of Breast Cancer from Biopsy Images and Classifying Benign and Malignant State Using Machine learning

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ABSTRACT

In today's world, cancer is a major public health concern. Breast cancer is a type of cancer that begins in the breast and spreads to the rest of the body. Breast cancer is one of the leading causes of death in women. Cancer occurs when cells become uncontrollably large. There are several types of breast cancer. The model proposed addressed both benign and malignant breast cancer. Breast cancer identification and classification using histopathology and ultrasound images are critical steps in computer-aided diagnosis systems. Researchers have demonstrated the ability to automate the initial level identification and classification of tumors over the last few decades. Breast cancer can be detected early, allowing patients to receive the appropriate treatment and improve their chances of survival. Deep learning (DL) and machine learning (ML) techniques are used to solve many medical problems. Several previous scientific studies on the categorization and identification of cancer tumors using various types of models have been published in the literature, but they have some limitations. The lack of a dataset, on the other hand, makes research difficult. Using the deep learning technique, the proposed methodology was created to aid in the automatic detection and diagnosis of breast cancer.

Keyword *Mammography, deep learning, convolutional neural network, augmentation.*

I. INTRODUCTION

Bosom malignant growth is one of the inescapable types of disease on the planet in ladies with more than one and a half million anticipated findings in 2010 and the reason for death for the greater part more than half a million each year [1]. In Qatar, breast cancer is by far the most widespread cancer type, accounting for 31% of all cancer cases in women [2]. It is shown that the danger of developing breast cancer in women is 56 in every 100,000 [2]. Early identification of bosom malignancy is the most proficient methodology in saving lives as it raises the opportunity of endurance through a powerful treatment prompting a decrease in death rates. Mammography is considered the most common imaging technique used for breast cancer screening and the detection of abnormality in breast tissue.

Currently, radiologists need to examine the entire mammogram of a case, and doctors require a test for biopsy to determine whether a tumor is benign or malignant. Radiologists can determine if the depicted mammogram has cancer or not, but the error rate is between 8% to 16% [3]. Although the current clinical methods to detect breast cancer have dramatically improved in the last few decades [4] [5], there are still many limitations, such as variability among the opinion among radiologists and, additionally, the procedures are time-consuming and invasive. To overcome such limitations of cancer diagnosis and