


Chapter 6

Artificial Intelligence in Early Breast Cancer Screening: A New Frontier

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ABSTRACT

Breast cancer is a kind of malignant tumor that mostly found in women which grows around the tissue of breast. During the process of diagnosis the cancer cells and non cancer cells are been identified and their count is made. If the count of cancer cells is greater than non cancer cells then the patient undergoes the treatments. The early detection of breast cancer can save the life of patient. Now a day's AI is playing a vital role in classifying cancer and non cancer cells in a accurate way. Many of the earlier researchers had performed the work of classifying them but, most of them lack in the accuracy. To have good accuracy a new method EBCS (Early Breast Cancer Screening) is proposed which consists of four steps or phases- preprocessing, classifying, performance evaluation and providing clear understanding to human.. To implement the four steps python programming is been used and cancer data set was extracted from Breast Cancer Wisconsin (Diagnostic) data set. The proposed method EBCS gave an accuracy of 99 percentage and complexity is also reduced.

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1. INTRODUCTION

One among the genetic diseases is cancer which occurs due to unusual cell growth and splitting. World Health Organization (World Health Organization, 2024) has predicted that by 2050 the growth rate of global cancer will be about 77 percentage and new cases will be of about 35 millions. There are various kinds of cancers such as

- Carcinomas cancer it develops in epithelial cells and tissues.
- Sarcomas cancer seen in bones and tissues.
- Leukemia cancer found in blood, lymphoma cancer found in lymphocytes.
- Brain and spinal cord cancer.
- Melanoma cancer seen in melanocytes (skin) and
- Some common cancers (kidney, skin, breast, lungs, colorectal, prostate, thyroid, myeloma, uterine).

Many factors may effects for cause of cancer like

- Inherit of genetics
- Disclosure to substances that source cancer
- Lifestyle choices and environment (Infections, diet, smoking, obesity).

The cancer can be confirm by performing many medical clinical tests and once it is been confirmed the patient undergoes the following treatments like

- Surgery,
- Chemotherapy,
- Radiation therapy and
- Other treatments.

To avoid painful treatments early detection and prevention can be done by following

- Regular checkups
- Good diet
- Healthy lifestyle and
- Awareness

Among the entire cancers breast cancer is most commonly seen and it is mostly found in women's. The Fig.1 shows four years from 2021 to 2024 statistics related to breast cancer and their death levels (Observer Research Foundation,) in India among females. The new breast cancer cases are increasing steadily from year 2021

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