



# Diagnosis of breast cancer with artificial intelligence

Behnaz Shirgir

Biomedical Engineering Department Engineering Faculty  
Islamic Azad University of Tabriz  
Tabriz, IRAN  
bhnzshirgir@gmail.com

**Abstract—** In this library study, the diagnosis of breast cancer with the help of artificial intelligence has been studied using the studies of others in a collection style. Therefore, the method of this study has been based on studies of others and artificial intelligence models such as CNN and SVM have been studied. The results of studies show that the use of these models makes the diagnosis of breast cancer to be done with high accuracy. Also, the use of these models helps the medical community to diagnose breast cancer with high accuracy and better performance. This allows treatment to occur in a timely manner and in the shortest possible time, resulting in a reduction in mortality among people with breast cancer.

**Keyword:** Breast Cancer, Artificial Intelligence, SVM modal, CNN modal.

## I. INTRODUCTION (HEADING 1)

Cancer is a disease that begins with the natural deformation of a cell by a gene mutation in DNA. Among different types of cancer, breast cancer is the most popular cancer among women and can be said it is the second type of cancer among women that causes mortality [1]. Excessive cell proliferation causes a mass called a tumor, which is divided into two types, called malignant tumors and benign tumors. Annually, 2.3 million cases are diagnosed worldwide with breast cancer [2]. Statistics in Iran show that there is a possibility that out of 10

to 15 women one is likely to get breast cancer. In general, 1 in 8 women develops breast cancer and 1 in 30 women dies from breast cancer [3]. It should be noted that the age of breast cancer in women in Iran is a decade less than women in developed countries, it means the average age of breast cancer is 45 years. [4]

Breast cancer is divided into three categories in terms of clinical features, which are 1. Lobular carcinoma in situ (LOBULACARCINOMA IN SITU) (LCIS), which is also increasing in postmenopausal women. Duodenal carcinoma in situ is DUCTAL CARCINOMA IN SITU (DCIS) for short, which is about 15 to 30% of cancers found in this category, and the highest increase in the incidence of DCIS is reported in women between 49 and 69 years [4]. 3. Invasive breast carcinoma is one of the most common types of histology of breast cancer, which covers 70 to 80% of cases [4]. Breast cancer is a heterogeneous disease in which hereditary and environmental factors cause genetic and epigenetic changes in breast cancer cells. Risk factors for breast cancer in women include old age, genetic mutations, family history, alcohol and tobacco use, time The first menstruation is before the age of 12 and the onset of menopause after the age of 66, pregnancy after the age of 30 or no pregnancy, overweight and obesity after menopause and sedentary life [4]. The strongest cause of breast cancer is a family history, which