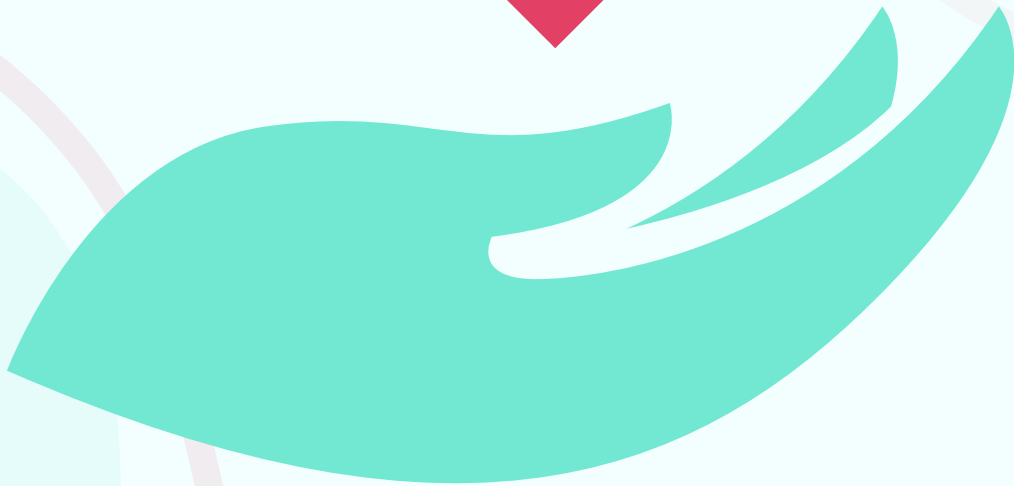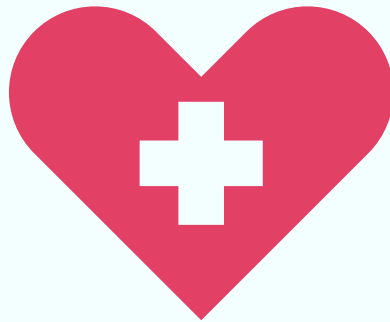# Breast cancer detection

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# ✚ Introduction

A form of cancer where cells grow uncontrollably in breast tissues.
Early detection greatly increases survival chances.
The Problem:
Diagnosing cancer traditionally requires time-consuming lab work and is prone to human error.
Solution Offered:
Use machine learning algorithms to predict if a tumor is benign
or malignant based on data patterns.

# ✚ Problem statement

For Detection:One of the primary concerns with breast cancer is early detection Detecting breast cancer in its early stages greatly increases the chances of successful treatment.
For Diagnosis:Diagnosing breast cancer requires a combination of imaging tests, such as mammograms and ultrasounds,and tissue biopsies.
For Treatment Options:Breast cancer treatment methods can vary depending on the type and stage of cancer.
For Side Effects: Breast cancer treatments can have various side effects,including fatigue, hair loss, nausea, weight changes, pain, and emotional distress.

# ✚ Goals:

**Main Goal:**
**Build a machine learning model that**
**predicts tumor type with high accuracy.**
**Secondary Goals:**
**Automate diagnosis and support medical decisions.**
**Improve diagnostic speed and accuracy.**

# ✚ Related Works:

**1- Machine Learning Models: Early studies used models like Support Vector Machines (SVM) to classify tumors, though these required manual feature selection.**
**2- Deep Learning Techniques: Convolutional Neural Networks (CNNs) have achieved high accuracy by learning features directly from image data.**
**3- Transfer Learning: Pre-trained models such as ResNet and Inception have been fine-tuned for medical tasks to handle small datasets.**
**4- AI-Radiologist Collaboration: Research shows that AI systems perform best when working alongside radiologists, reducing errors and improving diagnostic consistency.**