Deep Learning-Based BREAST CANCER DETECTION Using (CNNs)

Project-III - (IT208PPC31) report submitted to

Guru Ghasidas Vishwavidylaya

in partial fulfilment for the award of the degree of

Bachelor of Technology

in

Information Technology

by

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April 03 ,2025

April, 2025

DEPARTMENT OF INFORMATION TECHNOLOGY

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CERTIFICATE

This is to certify that the project report entitled "**Deep Learning-Based BREAST CANCER DETECTION Using (CNNs)**" submitted by **Asadhi Vamshiraj, Shivaraj G, S.Varma Kumar** (Roll No. 21036117, 21036149, 21036164) to Guru Ghasidas Vishwavidylaya towards partial fulfilment of requirements for the award of degree of Bachelor of Technology in Information Technology is a record of bonafide work carried out by him under my supervision and guidance during April 03 ,2025.

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Abstract

Name of the student: **Asadhi Vamshiraj, Shivaraj G, S.Varma Kumar** Roll No: **21036117, 21036149, 21036164**

Degree for which submitted: **Bachelor of Technology**

Department: **Department of Information Technology**

Thesis title: **Deep Learning-Based BREAST CANCER DETECTION Using (CNNs)**

Thesis supervisor: **Dr.Amit Dewangan**

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The most common cause for death due to cancer is breast cancer among women. The detection at early stages, it becomes extremely important and the manual examination process could result in delayed diagnosis, which leads to late treatment and can risk lives. This master's thesis presents a portable, low-cost, embedded device that classifies between benign and malignant tissue by using a convolutional neural network (CNN) in combination with federated learning (FL). Two commonly used embedded devices such as the NVIDIA Jetson TX2 and NVIDIA Jetson Nano were used and compared in terms of accuracy and computation time by retraining pre-trained networks (VGG-16, ResNet-50, and Inception V3). The adaption of pre-trained classification networks is significantly more effective than learning from scratch. Also, FederatedAvaraging algorithm was used to secure the sensitive patient data that was only stored on the Jetson modules. The NVIDIA Jetson modules were trained on BreaKHis dataset. The performance of the system is measured

on the basis of accuracy and computation time. The proposed system demonstrates that pre-trained classification networks are significantly more effective and efficient, making them suitable for anomaly detection in the healthcare sector. The experimental results collected revealed that the proposed pre-trained networks present a good candidate for applications where deep learning is desired