



**NARASARAOPETA ENGINEERING COLLEGE (AUTONOMOUS)**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**2025-2026**

<b>Batch Number</b>	BG5
<b>Team Members</b>	B. Chandana Priya (22471A0573) B. Srilakshmi (22471A0574) K. Sri Varsha (22471A05A2)
<b>Guide</b>	V. Karuna Kumar M.Tech
<b>Title</b>	Ultrasound-Based Breast Cancer Detection Using a Segmentation-Guided Deep Learning Framework
<b>Domain/Technology</b>	DEEP LEARNING
<b>Base Paper Link</b>	<a href="https://ieeexplore.ieee.org/document/10634159">https://ieeexplore.ieee.org/document/10634159</a>
<b>Dataset Link</b>	<a href="https://www.kaggle.com/datasets/aryashah2k/breast-ultrasound-images-dataset">https://www.kaggle.com/datasets/aryashah2k/breast-ultrasound-images-dataset</a>
<b>Software Requirements</b>	Browser: Any latest browser like Chrome Operating System: Windows 7 Server or later Python (COLAB)
<b>Hardware Requirements</b>	SystemType: Intel Core i5 or above RAM: 8 GB Number of cores:5 Number of Threads: 4
<b>Abstract</b>	Breast cancer remains a major global health concern for women, where early and accurate detection plays a critical role in improving treatment outcomes. This project introduces a deep learning-based classification framework that enhances diagnostic precision using ultrasound breast images. The system integrates a Convolutional Neural Network (CNN) with spatial and texture-aware feature extraction to effectively identify tumor characteristics. Grayscale ultrasound images are preprocessed, segmented, and augmented before being analyzed through the CNN-based classifier. The proposed model achieves a test accuracy of 99.07% on the BUSI dataset, efficiently distinguishing between benign and malignant tumors. This approach provides clinicians with reliable insights for computer-aided diagnosis, reducing human error and improving decision-making in medical imaging. Overall, the framework demonstrates strong potential for real-world implementation, offering a cost-effective, interpretable, and AI-driven solution to support early breast cancer detection in clinical environments.

Signature of the student(s)

Signature of the Guide

Signature of the project coordinator