BREAST CANCER CLASSIFICATION

USING ARTIFICIAL INTELLIGENCE

Team

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Project Description:
This project aims to develop an AI system to classify breast images into three categories:

1. **Malignant**
2. **Benign**
3. **Normal**

The system is implemented using **PyTorch** and leverages a **ResNet18 Convolutional Neural Network (CNN)** for image processing and classification. The project helps:

- Assist doctors in faster and more accurate breast cancer diagnosis.
- Reduce human errors in medical image interpretation.
- Serve as an educational tool to demonstrate AI applications in medical imaging.

Dataset:

- Breast Cancer Images Dataset containing thousands of labeled images for each category.

Methodology:

1. **Data Collection and Validation** to ensure high-quality images.
2. **Image Preprocessing** (resizing to 224x224, normalization, and data augmentation).
3. **ResNet18 Model Implementation** using PyTorch for image classification.
4. **Model Training** on the training dataset with GPU acceleration.
5. **Model Testing and Evaluation** on unseen images to measure accuracy and performance metrics.

6. **Results Analysis** to validate the effectiveness of the model in real-world scenarios.

Project Significance:

By using PyTorch and ResNet18, this project demonstrates how modern deep learning techniques can improve early detection of breast cancer, enhance diagnostic accuracy, and support better patient care.