🩺 B-Cure: Smart Breast Cancer Diagnosis with AI

This project presents an intelligent system for diagnosing breast cancer using machine learning and deep learning. It analyzes clinical data to predict whether a tumor is benign or malignant.

📊 Dataset

The dataset used is a public breast cancer dataset containing features extracted from digitized images of fine needle aspirate (FNA) of breast masses.

🧠 Technologies Used

- Python
- Google Colab
- TensorFlow / Keras
- Pandas, NumPy, Matplotlib, Seaborn
- Scikit-learn

🚀 Project Workflow

1. Data preprocessing and cleaning
2. Feature scaling and label encoding
3. Neural network model design using Keras
4. Model training and validation
5. Performance evaluation using accuracy, precision, recall, F1-score, and confusion matrix

📈 Results

- High accuracy in classifying tumors
- Plots for training vs. validation accuracy & loss
- Clear confusion matrix visualization

🗀 Run the Notebook

Open the notebook using Google Colab and upload the dataset (https://archive.ics.uci.edu/dataset/17/breast+cancer+wisconsin+diagnostic) to start exploring and training the model.

📌 How to Use

1. Clone or download this repository
2. Open the notebook file in Google Colab
3. Mount your Google Drive
4. Make sure to place (`https://archive.ics.uci.edu/dataset/17/breast+cancer+wisconsin+diagnostic`) in the correct path
5. Run all cells step by step

💡 Future Improvements

- Add GUI interface for easier use
- Deploy model as a web app
- Test on larger datasets

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This project aims to contribute to early detection of breast cancer through smart and accessible AI solutions.