PNEUMONIA DETECTION WITH MACHINE LEARNING

- **<u>Problem Statement:</u>**

This project aims to develop an automated system for detecting pneumonia from chest X-ray images using deep learning. The system classifies images into three categories: Bacterial Pneumonia, Viral Pneumonia, and Normal. The objective is to provide a reliable, real-time diagnostic tool that is accessible through a web application, improving the speed and accuracy of pneumonia detection.

- **<u>Algorithm Used</u>**:

The project utilizes a Convolutional Neural Network (CNN) based on the VGG16 architecture, pre-trained on ImageNet. The model is fine-tuned with image preprocessing techniques like rescaling, shear transformation, and zoom augmentation. A custom dense layer is added for classification, and the model is optimized with categorical cross-entropy loss and the Adam optimizer.

- **<u>Dataset:</u>**

Kaggle(Medeley data) https://www.kaggle.com/datasets/paultimothymooney/chest-xray-pneumonia

- **<u>Expected Output:</u>**

The system is expected to classify chest X-ray images accurately into Bacterial Pneumonia, Viral Pneumonia, or Normal categories. The results will be displayed via a Streamlit web application, where users can input an image URL and receive a real-time classification along with the corresponding image, offering a user-friendly and efficient diagnostic tool for pneumonia detection. **(BY--- 2320030126, 2320030038, 2320030130)**