**Project Title: Pneumonia Detection Using Convolutional Neural Networks**

Developed a deep learning model to detect pneumonia from chest X-ray images using **convolutional neural networks (CNNs)**. The goal of the project was to assist healthcare professionals in diagnosing pneumonia accurately and efficiently.

**Responsibilities:**

* Obtained chest X-ray images from the publicly available Chest X-ray dataset on Kaggle.
* Organized the dataset into training, validation, and test sets.
* Preprocessed the images by resizing, normalizing, and augmenting them to enhance model generalization.
* Built a **CNN** architecture using **Keras** with **TensorFlow** backend to classify X-ray images into two classes: "Pneumonia" and "Normal."
* Implemented data augmentation techniques such as rotation, shifting, and flipping to increase the diversity of the training dataset and improve model robustness.
* Experimented with various CNN architectures, hyperparameters, and optimization algorithms to optimize model performance.
* Trained the CNN model using the training dataset and validated its performance using the validation dataset.
* Evaluated the model's performance using standard evaluation metrics such as accuracy, precision, recall, and F1-score.
* Utilized techniques like learning curve analysis, **confusion matrix** visualization, and **ROC curve** analysis to assess model performance comprehensively.
* Saved the trained model for future use and deployed it to make real-time predictions on new chest X-ray images.
* Developed a user-friendly interface using **Streamlit** to facilitate easy input of X-ray images and display model predictions.
* Achieved an accuracy of 92% on the validation dataset, demonstrating the model's effectiveness in pneumonia detection.
* Successfully deployed the trained model to provide real-time predictions, enabling timely diagnosis and treatment of pneumonia cases.

(Git: *https://github.com/PawanYounghang/Pneumonia\_detection-CNN-)*

**Skills used:** Convolutional Neural Networks (CNNs), Transfer Learning, Image Classification, Python, TensorFlow, Keras, Pandas, NumPy, Streamlit API, Data Preprocessing and Augmentation, Model Training, Evaluation, and Deployment