Expand AI Computer Vision Assignment:

Background: At Expand AI, we are automating the data labeling process to make the training phase of a ML lifecycle more efficient.

Task: Chest X-Ray images play a vital role in the diagnosis of diseases. In this assignment, you will be in-charge of the task of **Chest X-Ray Classification into 3 categories Covid, Normal, and Pneumonia**.

Dataset: As part of this assignment, you are provided with the **Chest X-Ray** dataset with one zip file having 900 images (300 images per class).

Problems:

1. **Fine-tune a pretrained Image Classification model** of your choice by **using 80% data as the training set and 20% as the test set**. Please feel free to use any Fine-Tuning approach to solve this problem.

2. **In the real-world, labelling the entire raw dataset can be quite expensive. In such cases, semi supervised/few-shot image classification research papers and models can be your ally!** For this problem, **please do your own Literature Review and choose a suitable research paper to implement using just 20 images per class as the training set** and evaluate your model's performance on the **entire dataset of 900 images**.

Guidelines:

1. Please use either **TensorFlow/Keras or PyTorch** to solve the assignment as per your convenience.
2. For evaluation, please report the **Accuracy, F1 Score (Micro) and F1 Score (Macro) on the Test Set.**
3. Please create a **PDF outlining which models/algorithms you chose (and why) and also reference the research papers you read (especially for Problem 2).**
4. **For Problem 1: Plagiarised submissions will be heavily penalized** so kindly come up with your own implementations and make sure you understand what you have coded as we will ask you about the finer details of the code written by you in the technical interview round.
5. **For Problem 2: You can use the official GitHub repository of the research paper you choose and modify it to load the Chest X-Ray dataset.**

Submission: We value your time and efforts and thus, we strongly encourage that you to submit the assignment by **creating a public GitHub repository with a README.md (containing the file descriptions and their usage)** and sharing the link to the same with us. **This will ensure that even if you are not shortlisted for the next round, you will have prepared a valuable project for your personal portfolio which will boost your profile for future interviews.**

Evaluation: Your submission will be evaluated on the reported metric values and also on how well-structured and optimized (time and memory) your code is. The PDF mentioned in Guideline No. 3 is also very important. Please use visualizations as your friend to explain your findings!