HW1 Instruction – CNN Transfer Learning and Deployment

Task:

Use a pretrained CNN model of your choice and finetune it to the dataset provided and deploy the model to provide a "model as a service". The deployment will be made on the backend using a flask-based API and the frontend, for user interaction, will be developed as a "streamlit" based application.

Guidelines:

1. The dataset provided is a CovidCT_Scan dataset and has train and test folders. It also has sub-folders for covid and normal.
2. As a hint, the dataset has a mix of color and grayscale images.
3. Feel free to carry out data augmentation which is appropriate for these images.
4. Develop and test the model & save it. You are free to use any model and feel free to decide whether you do finetuning or feature extraction. Check the performance of the model and tweak it if required. Usually 1 or 2 epochs is enough
5. Build the flask-based backend to deploy the model. It shall be waiting to receive an input and when it receives one, it sends back a prediction to the frontend.
6. Develop a user friendly "streamlit" frontend where a user can upload new images and get predictions.
7. Three new images are provided for use on the deployed app.
8. Refer to all the documentation available on the pre-trained model used to tweak it as you desire.

Questions:

1. What specific preprocessing did you do on the data?
2. Which model did you use and what, if any, were the modifications you made to the pretrained model and why?
3. What were the performance metrics of the model and how many predictions did you get correct?

Grading Criteria:

1. Application works as specified and with no errors – 80%
2. Questions are answered with elaboration and meaningfully – 15%
3. Code is well structured and commented -5%

The assignment is due **on Sep 12th by midnight**.