Data Collection and Preprocessing Phase

Date	5th July 2024
Team ID	SWTID1720097611
Project Title	CovidVision: Advanced COVID-19 Detection from Lung X-rays with Deep Learning
Maximum Marks	6 Marks

Preprocessing Template

The images will be preprocessed by resizing, normalizing, augmenting, denoising, adjusting contrast, detecting edges, converting color space, cropping, batch normalizing, and whitening data. These steps will enhance data quality, promote model generalization, and improve convergence during neural network training, ensuring robust and efficient performance across various computer vision tasks.

Section	**Description**
Data Overview	Image dataset with 10,000 images of lung X-Rays of pepple with: Covid-19 - 3000 images Normal - 3000 images Lung Opacity – 3000 images Viral Pneumonia – 1000 images
Resizing	Resized all the images to (299,299).
Normalization	Normalized pixel values to a range of (0.0,1.0).
Data Augmentation	Zoomed all the images by a factor of 0.2
Denoising	--

Edge Detection	--
Color Space Conversion	--
Image Cropping	--
Batch Normalization	--

Data Preprocessing Code Screenshots

Loading Data	`from google.colab import drive`
	`drive.mount('/content/drive')`
	
	`train_path="/content/drive/MyDrive/dataset/train"`
	`test_path="/content/drive/MyDrive/dataset/test"`

Resizing	`train_data = train_datagen.flow_from_directory(train_path,`
	`target_size=(299,299),`
	`batch_size=32,`
	`class_mode='categorical')`
	
	`test_data = val_datagen.flow_from_directory(test_path,`
	`target_size=(299,299),`
	`batch_size=32,`
	`class_mode='categorical')`

Normalization	`from tensorflow.keras.preprocessing.image import ImageDataGenerator`
	
	`train_datagen = ImageDataGenerator(rescale=1./255,zoom_range=0.2)`
	`val_datagen = ImageDataGenerator(rescale=1./255,zoom_range=0.2)`

Data Augmentation	`from tensorflow.keras.preprocessing.image import ImageDataGenerator`
	
	`train_datagen = ImageDataGenerator(rescale=1./255,zoom_range=0.2)`
	`val_datagen = ImageDataGenerator(rescale=1./255,zoom_range=0.2)`

Denoising	--
Edge Detection	--

Color Space Conversion	--
Image Cropping	--
Batch Normalization	--