

Data Collection and Preprocessing Phase

Date	15 March 2024
Team ID	SWTID1719937289
Project Title	WCE Curated Colon Disease Classification using Deep Learning
Maximum Marks	6 Marks

Preprocessing Template

The images will be preprocessed by resizing, normalizing, augmenting, converting color space, 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	<p>The dataset, sourced from Kaggle, comprises images categorized into four classes of diseases:</p> <ol style="list-style-type: none"> 1. normal 2. ulcerative 3. polyps 4. esophagitis.
Resizing	Images are resized to target size =(224,224)
Normalization	Images are normalized by dividing their pixel values by 255.0 to scale the data between 0 and 1.
Data Augmentation	<ul style="list-style-type: none"> • Rescaling: Pixel values are normalized by dividing by 255.0 to scale them between 0 and 1. • Shear Range: Shearing transformations are applied with a range of 0.2.

	<ul style="list-style-type: none"> • Width Shift Range: Horizontal shifts are applied with a range of 0.2. • Height Shift Range: Vertical shifts are applied with a range of 0.2. • Rotation Range: Images are rotated within a range of 40 degrees. • Brightness Range: Brightness of images is adjusted within a range of 0.8 to 1.2. • Zoom Range: Images are zoomed in and out with a range of 0.2. • Horizontal Flip: Images are randomly flipped horizontally. • Vertical Flip: Vertical flipping is disabled (set to False).
Color Space Conversion	The colors of the images remain unchanged.
Data Preprocessing Code Screenshots	
Loading Data	<pre>[] train_data = train_datagen.flow_from_directory('/content/drive/MyDrive/WCE_Data/train', target_size=(224, 224), batch_size=32, class_mode='categorical')</pre> <p>➡ Found 3200 images belonging to 4 classes.</p> <pre>[] test_data = test_datagen.flow_from_directory('/content/drive/MyDrive/WCE_Data/test', target_size=(224, 224), batch_size=32, class_mode='categorical')</pre> <p>➡ Found 800 images belonging to 4 classes.</p>
Resizing	<pre>train_data = train_datagen.flow_from_directory('/content/drive/MyDrive/WCE_Data/train', target_size=(224, 224),</pre> <p>▶ <pre>test_data = test_datagen.flow_from_directory('/content/drive/MyDrive/WCE_Data/test', target_size=(224, 224),</pre></p>

Data Augmentation	<pre>train_datagen = ImageDataGenerator(rescale=1./255, shear_range=0.2, width_shift_range=0.2, height_shift_range=0.2, rotation_range=40, brightness_range=[0.8, 1.2], zoom_range=0.2, horizontal_flip=True, vertical_flip=False # Setting this to False because vertical flipping is less common) test_datagen = ImageDataGenerator(rescale=1./255)</pre>
Normalization	<pre>train_datagen = ImageDataGenerator(rescale=1./255,</pre>