

Data Collection and Preprocessing Phase

Date	15 March 2024
Team ID	SWTID1720110142
Project Title	SportSpecs: Unraveling Athletic Prowess with Advanced Transfer Learning for Sports
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	The dataset consists of various images representing different sports categories. The images are collected for the purpose of classifying the type of sport
Resizing	Resize images to a specified target size, e.g., 224x224 pixels.
Normalization	Normalize pixel values to a specific range, typically [0, 1] or [-1, 1].
Data Augmentation	Apply augmentation techniques such as flipping, rotation, shifting, zooming, or shearing to increase dataset variability and prevent overfitting.

Denoising	Apply denoising filters to reduce noise in the images, enhancing their quality.
Edge Detection	Apply edge detection algorithms to highlight prominent edges in the images, which can be useful for certain types of feature extraction.
Color Space Conversion	Convert images from one color space to another, such as RGB to grayscale.
Image Cropping	Crop images to focus on the regions containing objects of interest, which can help in reducing irrelevant background information.
Batch Normalization	Apply batch normalization to the input of each layer in the neural network to stabilize and accelerate training.
Data Preprocessing Code Screenshots	
Loading Data	<pre>!mkdir -p ~/.kaggle !cp kaggle.json ~/.kaggle !kaggle datasets download -d gpiosenka/sports-classification</pre>
Resizing	<pre>train = train_datagen.flow_from_directory(trainPath,target_size=(224,224),batch_size=16) test = test_datagen.flow_from_directory(testPath,target_size=(224,224),batch_size=16)</pre>
Data Augmentation	<pre>train_datagen = ImageDataGenerator(rescale=1./255, zoom_range=0.2, shear_range=0.2) test_datagen = ImageDataGenerator(rescale=1./255)</pre> <p>[10]</p>