1. **Created a dataset of 5 different images:**

**Dataset of Nature can be found here:**[**nature**](https://drive.google.com/drive/folders/18hpc6f34mvW76kjxum2DUQ9uHdXOfHtX?usp=drive_link)

**Dataset image Visualization:**

**Code:**

import matplotlib.pyplot as plt

import cv2

import os

from google.colab import drive

drive\_path = '/content/drive/MyDrive/CSE463/24341284\_Sowad\_Rahman\_LAB01/TASK03/nature'

images = os.listdir(drive\_path)

nature\_images = []

for image\_file in images:

if image\_file.endswith(('.jpg')):

img\_path = os.path.join(drive\_path, image\_file)

nature\_images.append(cv2.imread(img\_path))

plt.figure(figsize=(15, 6))

for i in range(5):

img\_rgb = cv2.cvtColor(nature\_images[i], cv2.COLOR\_BGR2RGB)

plt.subplot(2, 5, i+1)

plt.imshow(img\_rgb)

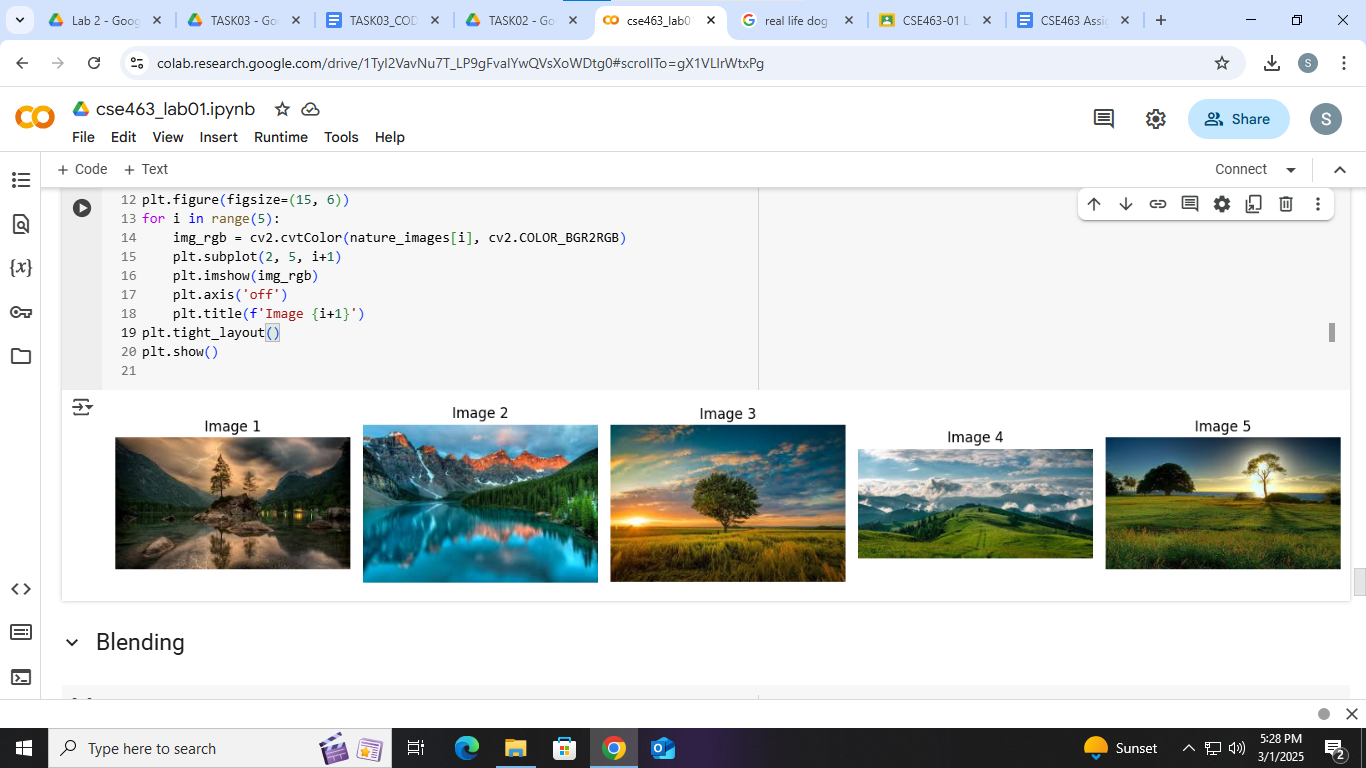
plt.axis('off')

plt.title(f'Image {i+1}')

plt.tight\_layout()

plt.show()

**OUTPUT**:

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1. **Blending the images:**

**Blended image can be found here:**[**blend**](https://drive.google.com/drive/folders/12tGECpp3KhpZ_Q6eIKIdq7aluPt2DCn5?usp=drive_link)

**CODE:** import numpy as np

import cv2

import os

import matplotlib.pyplot as plt

from google.colab import drive

drive.mount('/content/drive')

img\_fol = "/content/drive/MyDrive/CSE463/24341284\_Sowad\_Rahman\_LAB01/TASK03/nature"

out\_fol = "/content/drive/MyDrive/CSE463/24341284\_Sowad\_Rahman\_LAB01/TASK03/blend"

os.makedirs(out\_fol, exist\_ok=True)

img\_lst = os.listdir(img\_fol)

img\_fls = []

for fl in img\_lst:

if fl.endswith('.jpg'):

img\_fls.append(fl)

img\_fls.sort()

w, h = 225, 225

dim = (w, h)

bld\_img = None

idx = 0

for fl in img\_fls:

img\_pth = os.path.join(img\_fol, fl)

img = cv2.imread(img\_pth, cv2.IMREAD\_COLOR)

img = cv2.resize(img, dim, interpolation=cv2.INTER\_AREA)

img = img.astype(np.float32)

if bld\_img is None:

bld\_img = np.zeros\_like(img, dtype=np.float32)

idx += 1

alp = 1.0 / idx

bld\_img = bld\_img \* (1 - alp) + img \* alp

bld\_img = bld\_img.astype(np.uint8)

bld\_pth = os.path.join(out\_fol, "bld.jpg")

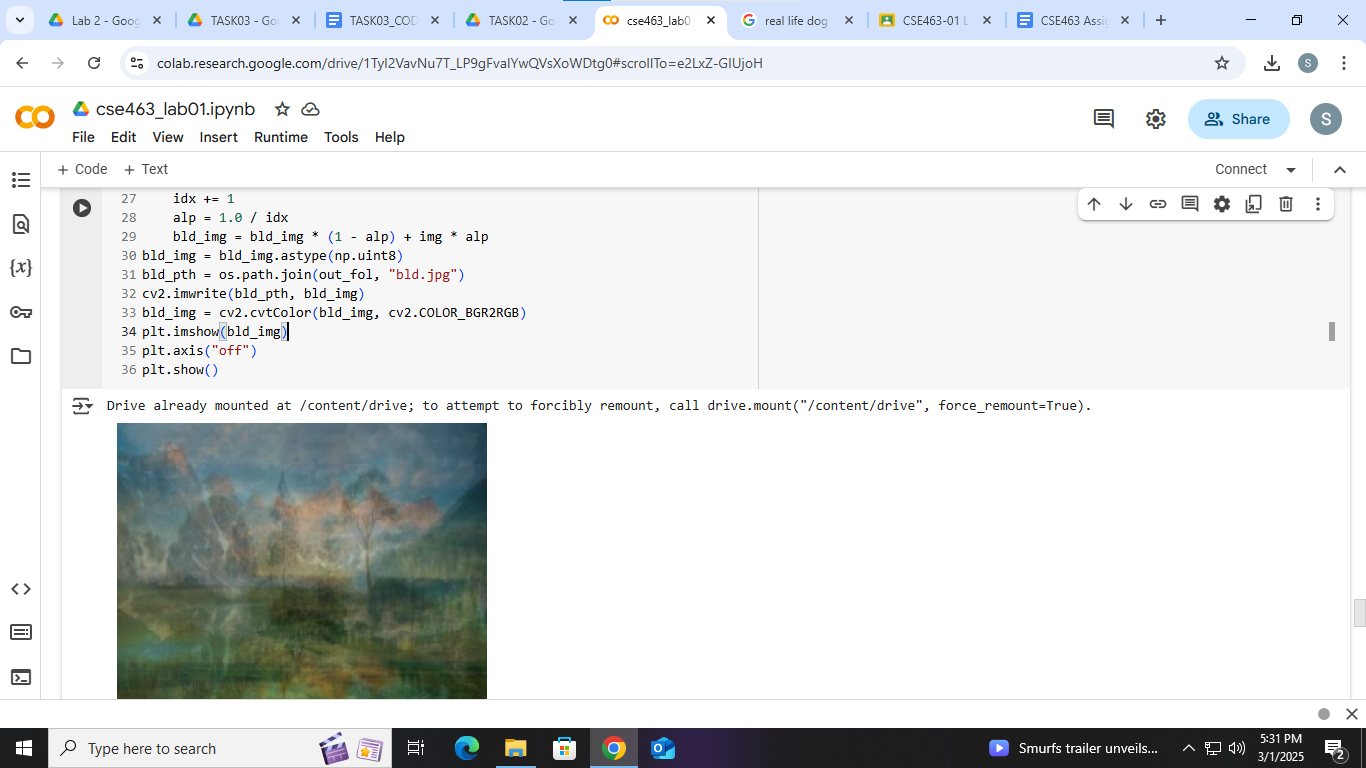
cv2.imwrite(bld\_pth, bld\_img)

bld\_img = cv2.cvtColor(bld\_img, cv2.COLOR\_BGR2RGB)

plt.imshow(bld\_img)

plt.axis("off")

plt.show()

**OUTPUT:  
**

**3 Gaussian Noise added where mean=0 and std=25**

**Code:**

mean = 0

std = 25

bld\_img= cv2.imread("/content/drive/MyDrive/CSE463/24341284\_Sowad\_Rahman\_LAB01/TASK03/blend/bld.jpg")

noise = np.random.normal(mean, std, bld\_img.shape).astype(np.float32)

noisy\_img = bld\_img.astype(np.float32) + noise

noisy\_img = np.clip(noisy\_img, 0, 255).astype(np.uint8)

plt.figure(figsize=(10, 5))

plt.subplot(1, 2, 1)

plt.imshow(bld\_img)

plt.axis("off")

plt.title("Original Blended Image")

plt.subplot(1, 2, 2)

plt.imshow(noisy\_img)

plt.axis("off")

plt.title("Noisy Image")

plt.show()

**OUTPUT:  
**

**4. Histogram of the Noisy blended image:**

**CODE:**plt.figure(figsize=(10, 5))

plt.hist(noisy\_img.ravel(), bins=256, range=[0, 256], color='g')

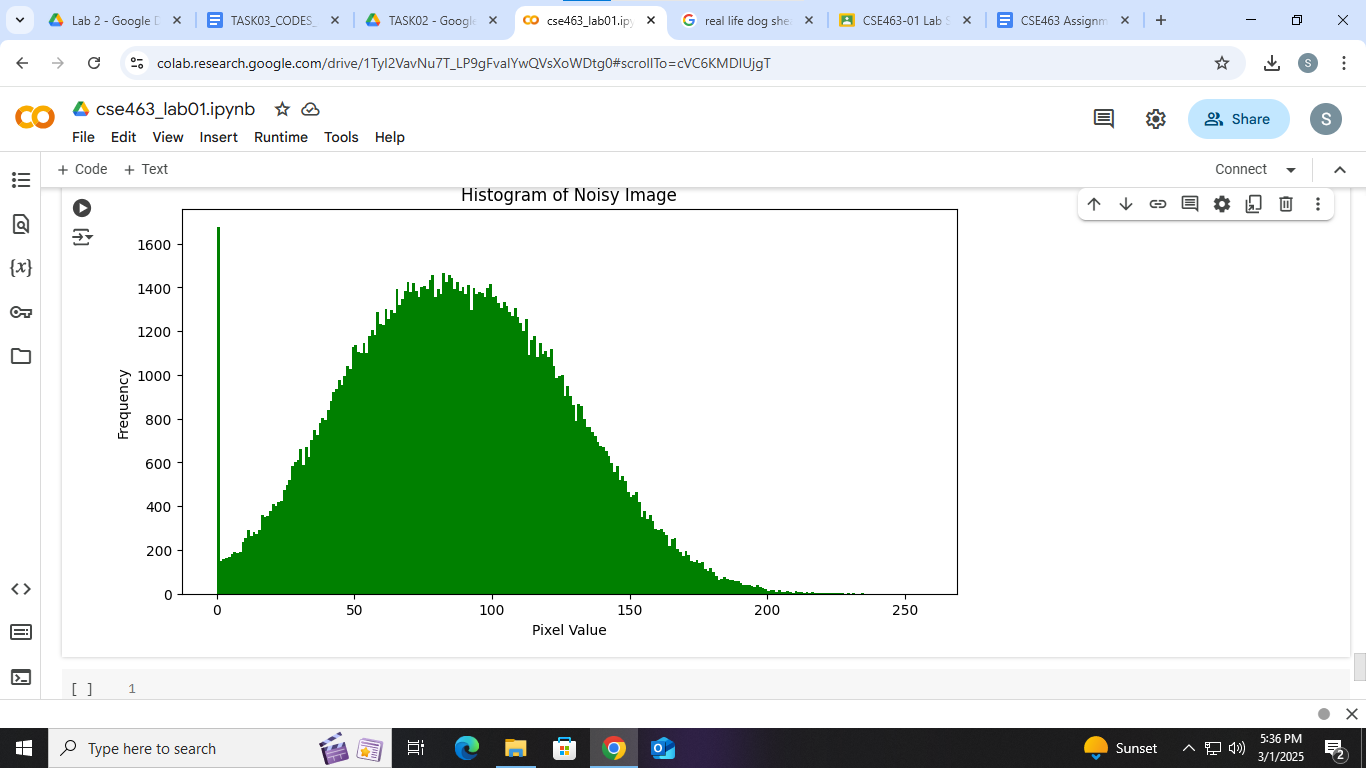
plt.xlabel("Pixel Value")

plt.ylabel("Frequency")

plt.title("Histogram of Noisy Image")

plt.show()

**OUTPUT:**

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