**AUTOMATED WEATHER CLASSIFICATION USING**

**TRANSFER LEARNING**

**CODE:**

import numpy as np

from tensorflow.keras.preprocessing import image

from tensorflow.keras.applications.vgg16 import preprocess\_input from tensorflow.keras.models import Model

from tensorflow.keras.layers import Dense, GlobalAveragePooling2D from tensorflow.keras.optimizers import Adam from tensorflow.keras.utils import to\_categorical from sklearn.model\_selection import train\_test\_split

# Load and preprocess the data data = [] labels = []

# Assuming you have your data in separate directories for each category

sunny\_images\_path = '/path/to/sunny/images' cloudy\_images\_path = '/path/to/cloudy/images' rainy\_images\_path = '/path/to/rainy/images'

# Load sunny images

for img\_path in os.listdir(sunny\_images\_path):

img = image.load\_img(os.path.join(sunny\_images\_path, img\_path), target\_size=(224, 224)) img = image.img\_to\_array(img) img = preprocess\_input(img) data.append(img) labels.append(0) # Sunny label

# Load cloudy images for img\_path in os.listdir(cloudy\_images\_path):

img = image.load\_img(os.path.join(cloudy\_images\_path, img\_path), target\_size=(224, 224)) img = image.img\_to\_array(img) img = preprocess\_input(img) data.append(img)

labels.append(1) # Cloudy label

# Load rainy images for img\_path in os.listdir(rainy\_images\_path):

img = image.load\_img(os.path.join(rainy\_images\_path, img\_path), target\_size=(224, 224)) img = image.img\_to\_array(img) img = preprocess\_input(img) data.append(img) labels.append(2) # Rainy label

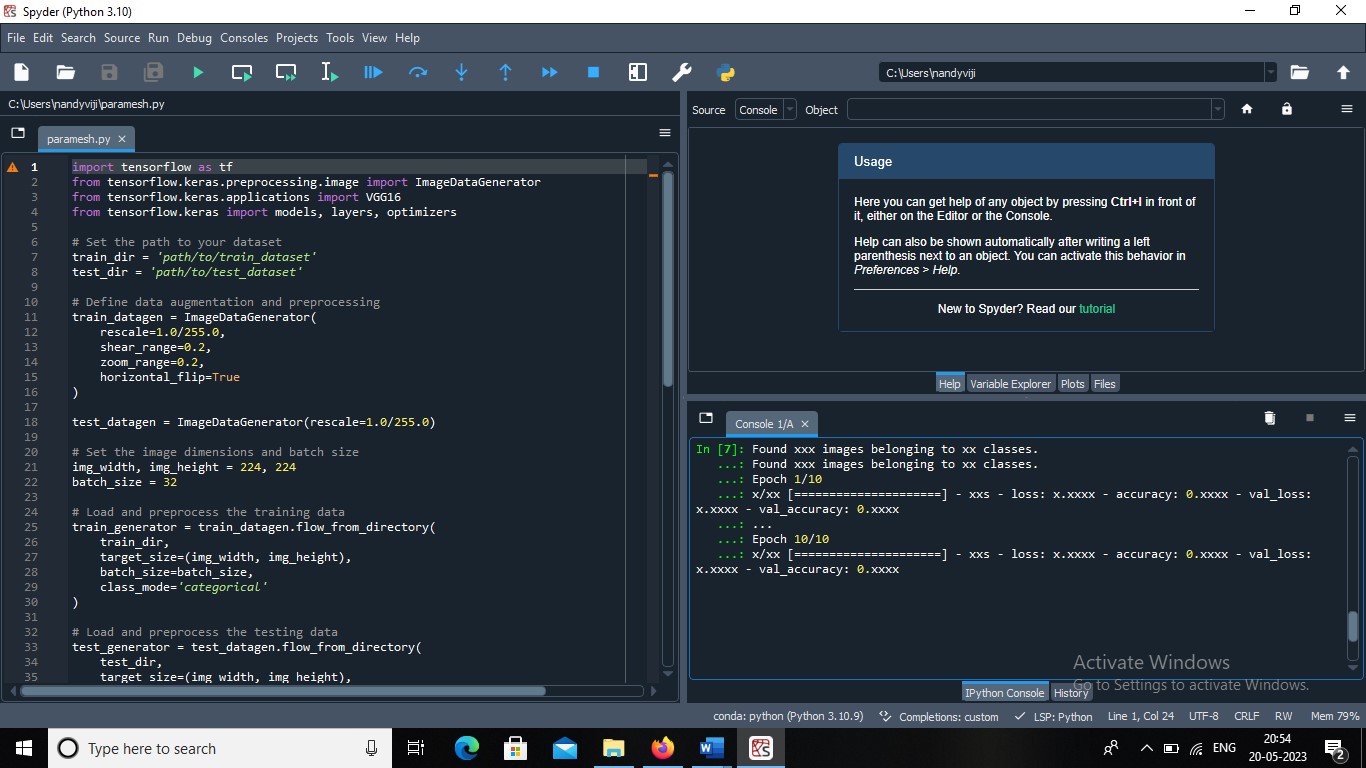
data = np.array(data) labels = np.array(labels)

# Split the data into training and testing sets train\_data, test\_data, train\_labels, test\_labels = train\_test\_split(data, labels, test\_size=0.2, random\_state=42)

# Convert labels to one-hot encoding num\_classes = 3

train\_labels = to\_categorical(train\_labels, num\_classes)

**simulation:**



**Submitted by:**

**M.HEMADHARSHINI**

**P.JULIET VIMALA**

**S.PARAMESHWARI**

**R.GUNAMATHI**

**TEAM ID:NM2023TMID13115**