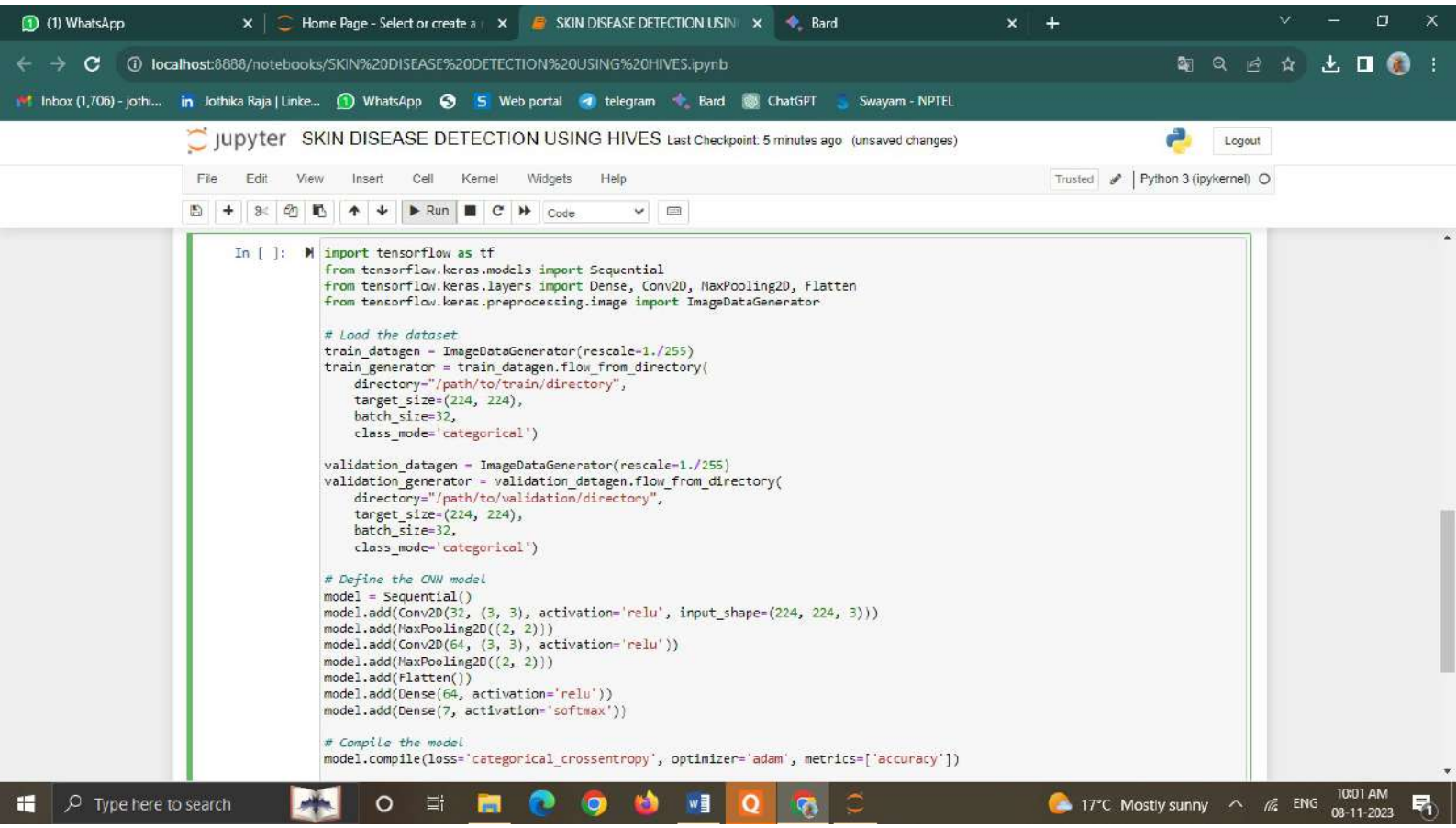
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Code
In [ ]:
import tensorflow as tf
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense, Conv2D, MaxPooling2D, Flatten
from tensorflow.keras.preprocessing.image import ImageDataGenerator
# Load the dataset
train_datagen = ImageDataGenerator(rescale=1./255)
train_generator = train_datagen.flow_from_directory(
directory="/path/to/train/directory",
target_size=(224, 224),
batch_size=32,
class_mode='categorical')
validation_datagen = ImageDataGenerator(rescale=1./255)
validation_generator = validation_datagen.flow_from_directory(
directory="/path/to/validation/directory",
target_size=(224, 224),
batch_size=32,
class_mode='categorical')
# Define the CNN model
model = Sequential()
model.add(Conv2D(32, (3, 3), activation='relu', input_shape=(224, 224, 3)))
model.add(MaxPooling2D((2, 2)))
model.add(Conv2D(64, (3, 3), activation='relu'))
model.add(MaxPooling2D((2, 2)))
model.add(Flatten())
model.add(Dense(64, activation='relu'))
model.add(Dense(7, activation='softmax'))
# Compile the model
model.compile(loss='categorical_crossentropy', optimizer='adam', metrics=['accuracy'])
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Run Code

In [ ]:

```
import tensorflow as tf
from tensorflow import keras

model = keras.Sequential([
    keras.layers.Conv2D(32, (3, 3), activation='relu', input_shape=(224, 224, 3)),
    keras.layers.MaxPooling2D((2, 2)),
    keras.layers.Conv2D(64, (3, 3), activation='relu'),
    keras.layers.MaxPooling2D((2, 2)),
    keras.layers.Flatten(),
    keras.layers.Dense(128, activation='relu'),
    keras.layers.Dense(1, activation='sigmoid')  # Binary classification
])

model.compile(optimizer='adam',
              loss='binary_crossentropy',
              metrics=['accuracy'])
model.fit(train_data, train_labels, epochs=10, validation_data=(val_data, val_labels))
test_loss, test_accuracy = model.evaluate(test_data, test_labels)
print(f'Test accuracy: {test_accuracy}')
predictions = model.predict(new_images)
img = load_img(image_path, target_size=(224, 224))
img = img_to_array(img)
img = np.expand_dims(img, axis=0)
img = preprocess_input(img)

# Make predictions
predictions = model.predict(img)

# Decode the predictions
decoded_predictions = decode_predictions(predictions, top=3)[0]

# Display the top 3 predicted classes
for _, label, score in decoded_predictions:
    print(f"{label}: {score:.2%}")
```

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