Project Development Phase

Model Performance Test

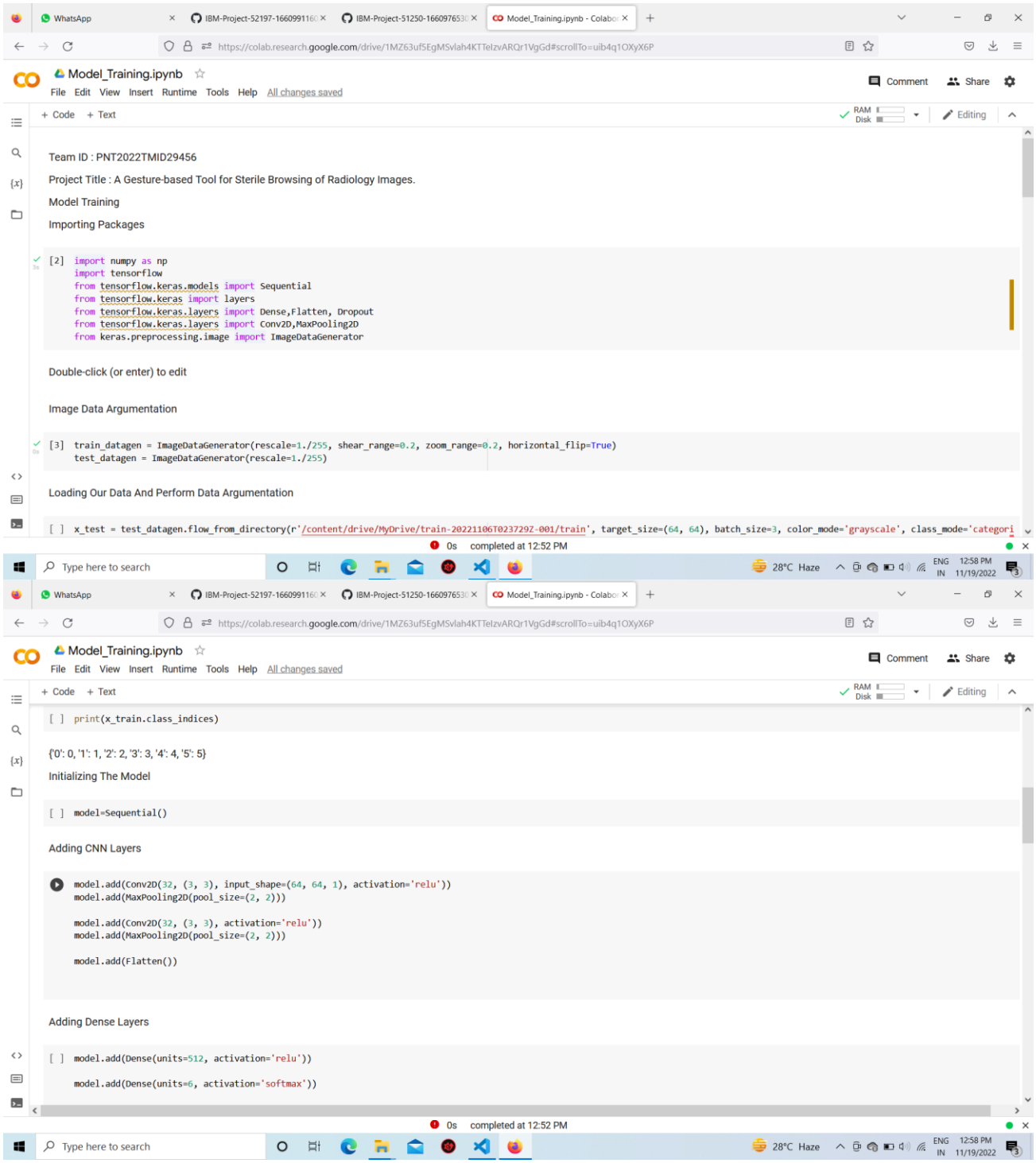
Date	19 November 2022
Team ID	PNT2022TMID29456
Project Name	A Gesture-based Tool for Sterile Browsing of Radiology Images
Maximum Marks	10 Marks

ModelPerformance Testing:

Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Values	Screenshot
1.	Model Summary	Total params: 3,224,422 Trainable params: 3,224,422 Non-trainable params: 0	Attached below
2.	Accuracy	Training Accuracy - 98% Validation Accuracy - 60%	Attached below

SCREENSHOTS :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Model_Training.ipynb - Colabo
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Team ID : PNT2022TMID29456
Project Title : A Gesture-based Tool for Sterile Browsing of Radiology Images.
Model Training
Importing Packages
[2] import numpy as np
import tensorflow
from tensorflow.keras.models import Sequential
from tensorflow.keras import layers
from tensorflow.keras.layers import Dense,Flatten, Dropout
from tensorflow.keras.layers import Conv2D,MaxPooling2D
from keras.preprocessing.image import ImageDataGenerator
Double-click (or enter) to edit
Image Data Argumentation
[3] train_datagen = ImageDataGenerator(rescale=1./255, shear_range=0.2, zoom_range=0.2, horizontal_flip=True)
test_datagen = ImageDataGenerator(rescale=1./255)
Loading Our Data And Perform Data Argumentation
[ ] x_test = test_datagen.flow_from_directory(r'/content/drive/MyDrive/train-20221106T023729Z-001/train', target_size=(64, 64), batch_size=3, color_mode='grayscale', class_mode='categori
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[ ] print(x_train.class_indices)
{'0': 0, '1': 1, '2': 2, '3': 3, '4': 4, '5': 5}
Initializing The Model
[ ] model=Sequential()
Adding CNN Layers
model.add(Conv2D(32, (3, 3), input_shape=(64, 64, 1), activation='relu'))
model.add(MaxPooling2D(pool_size=(2, 2)))
model.add(Conv2D(32, (3, 3), activation='relu'))
model.add(MaxPooling2D(pool_size=(2, 2)))
model.add(Flatten())
Adding Dense Layers
[ ] model.add(Dense(units=512, activation='relu'))
model.add(Dense(units=6, activation='softmax'))
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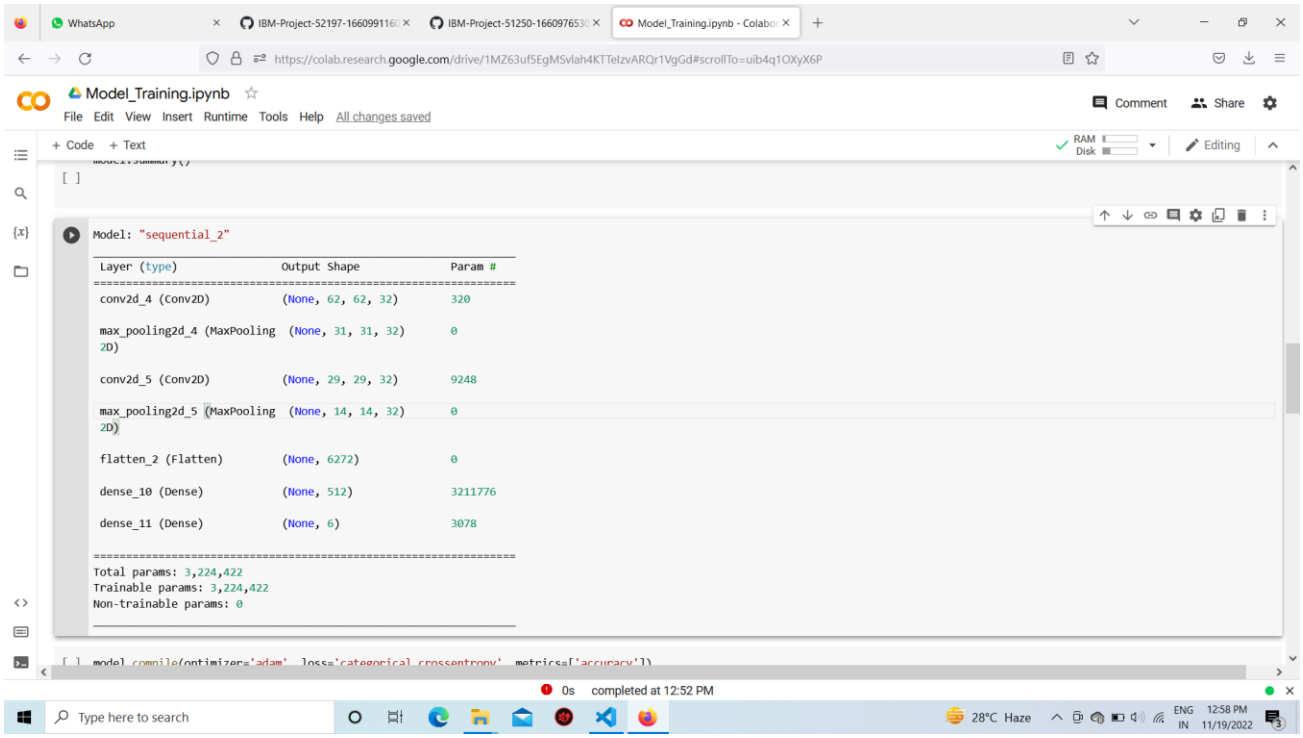
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[ ]
Model: "sequential_2"
Layer (type) Output Shape Param #
conv2d_4 (Conv2D) (None, 62, 62, 32) 320
max_pooling2d_4 (MaxPooling 2D) (None, 31, 31, 32) 0
conv2d_5 (Conv2D) (None, 29, 29, 32) 9248
max_pooling2d_5 (MaxPooling 2D) (None, 14, 14, 32) 0
flatten_2 (Flatten) (None, 6272) 0
dense_10 (Dense) (None, 512) 3211776
dense_11 (Dense) (None, 6) 3078
Total params: 3,224,422
Trainable params: 3,224,422
Non-trainable params: 0
model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])
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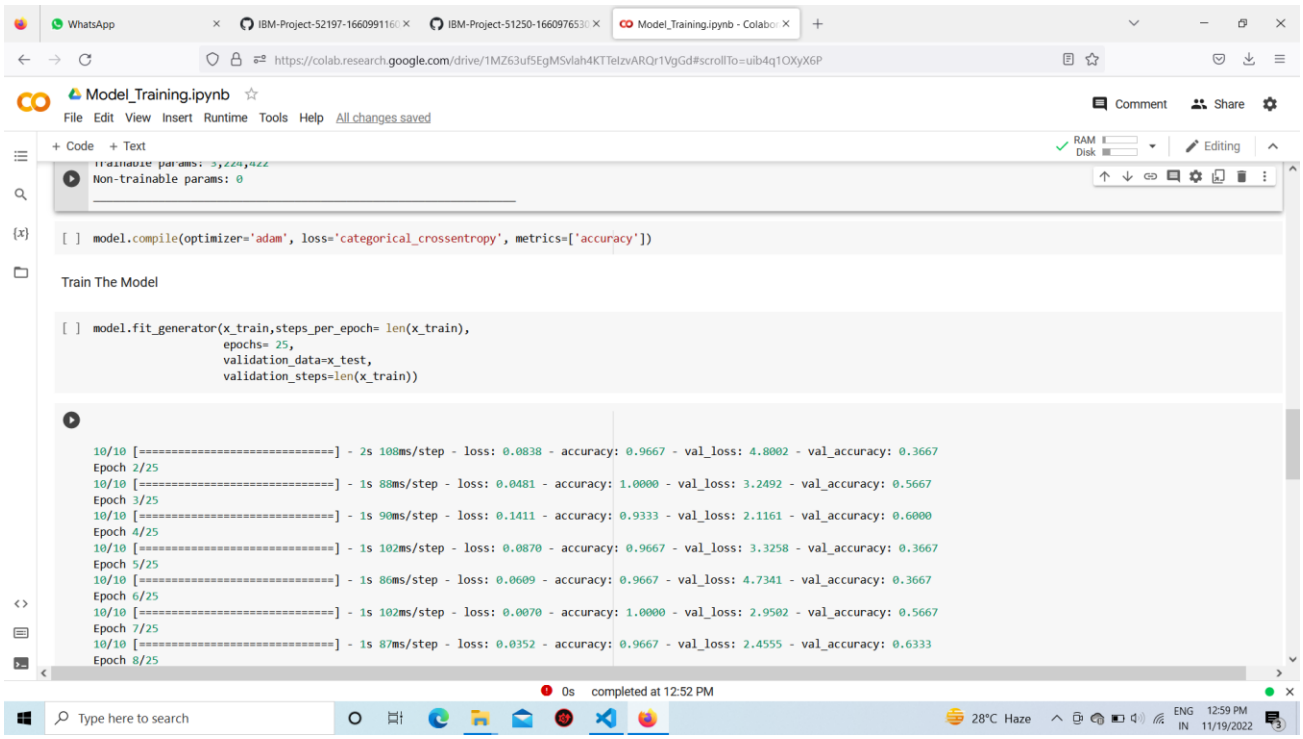
Model_Training.ipynb
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Non-trainable params: 0
[ ] model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])
Train The Model
[ ] model.fit_generator(x_train,steps_per_epoch= len(x_train),
epochs= 25,
validation_data=x_test,
validation_steps=len(x_train))
10/10 [==========] - 2s 108ms/step - loss: 0.0838 - accuracy: 0.9667 - val_loss: 4.8002 - val_accuracy: 0.3667
Epoch 2/25
10/10 [==========] - 1s 88ms/step - loss: 0.0481 - accuracy: 1.0000 - val_loss: 3.2492 - val_accuracy: 0.5667
Epoch 3/25
10/10 [==========] - 1s 90ms/step - loss: 0.1411 - accuracy: 0.9333 - val_loss: 2.1161 - val_accuracy: 0.6000
Epoch 4/25
10/10 [==========] - 1s 102ms/step - loss: 0.0870 - accuracy: 0.9667 - val_loss: 3.3258 - val_accuracy: 0.3667
Epoch 5/25
10/10 [==========] - 1s 86ms/step - loss: 0.0609 - accuracy: 0.9667 - val_loss: 4.7341 - val_accuracy: 0.3667
Epoch 6/25
10/10 [==========] - 1s 102ms/step - loss: 0.0070 - accuracy: 1.0000 - val_loss: 2.9502 - val_accuracy: 0.5667
Epoch 7/25
10/10 [==========] - 1s 87ms/step - loss: 0.0352 - accuracy: 0.9667 - val_loss: 2.4555 - val_accuracy: 0.6333
Epoch 8/25
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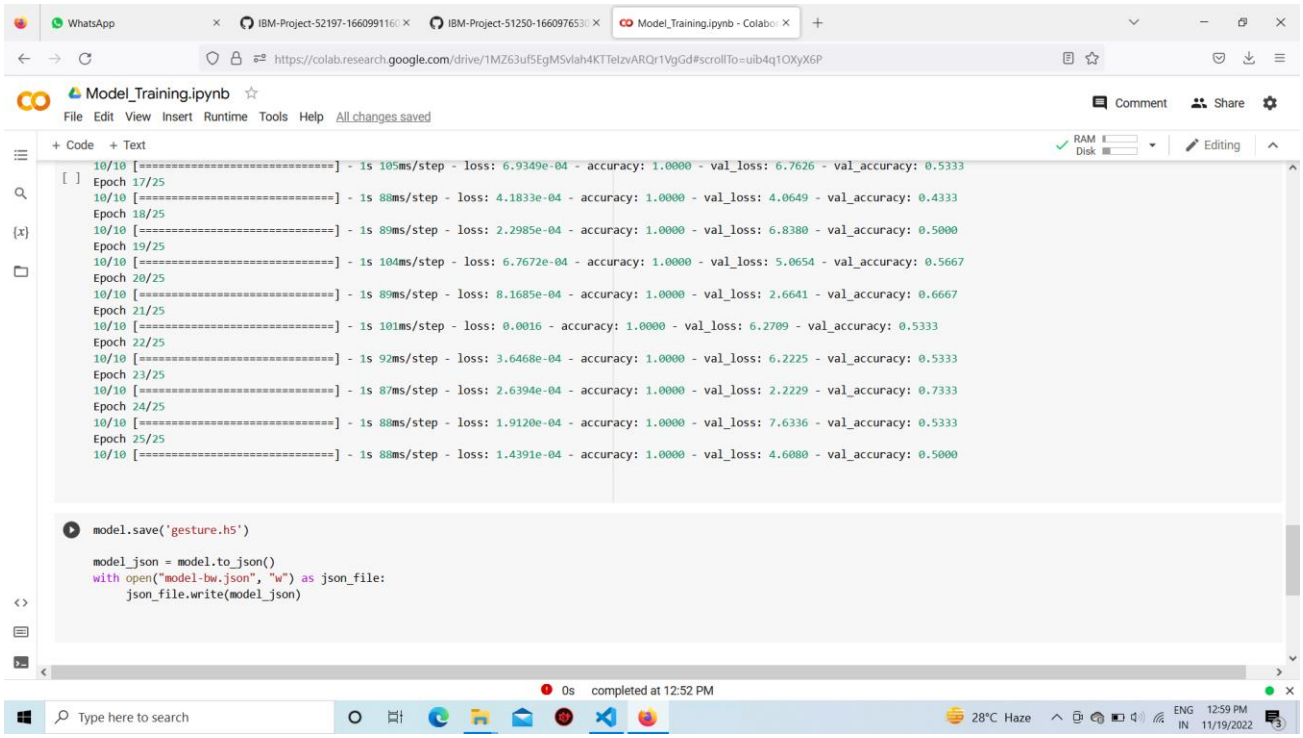
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10/10 [==========] - 1s 105ms/step - loss: 6.9349e-04 - accuracy: 1.0000 - val_loss: 6.7626 - val_accuracy: 0.5333
Epoch 17/25
10/10 [==========] - 1s 88ms/step - loss: 4.1833e-04 - accuracy: 1.0000 - val_loss: 4.0649 - val_accuracy: 0.4333
Epoch 18/25
10/10 [==========] - 1s 89ms/step - loss: 2.2985e-04 - accuracy: 1.0000 - val_loss: 6.8380 - val_accuracy: 0.5000
Epoch 19/25
10/10 [==========] - 1s 104ms/step - loss: 6.7672e-04 - accuracy: 1.0000 - val_loss: 5.0654 - val_accuracy: 0.5667
Epoch 20/25
10/10 [==========] - 1s 89ms/step - loss: 8.1685e-04 - accuracy: 1.0000 - val_loss: 2.6641 - val_accuracy: 0.6667
Epoch 21/25
10/10 [==========] - 1s 101ms/step - loss: 0.0016 - accuracy: 1.0000 - val_loss: 6.2709 - val_accuracy: 0.5333
Epoch 22/25
10/10 [==========] - 1s 92ms/step - loss: 3.6468e-04 - accuracy: 1.0000 - val_loss: 6.2225 - val_accuracy: 0.5333
Epoch 23/25
10/10 [==========] - 1s 87ms/step - loss: 2.6394e-04 - accuracy: 1.0000 - val_loss: 2.2229 - val_accuracy: 0.7333
Epoch 24/25
10/10 [==========] - 1s 88ms/step - loss: 1.9120e-04 - accuracy: 1.0000 - val_loss: 7.6336 - val_accuracy: 0.5333
Epoch 25/25
10/10 [==========] - 1s 88ms/step - loss: 1.4391e-04 - accuracy: 1.0000 - val_loss: 4.6080 - val_accuracy: 0.5000
model.save('gesture.h5')
model_json = model.to_json()
with open("model-bw.json", "w") as json_file:
json_file.write(model_json)
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