PROJECT DEVELOPMENT PHASE

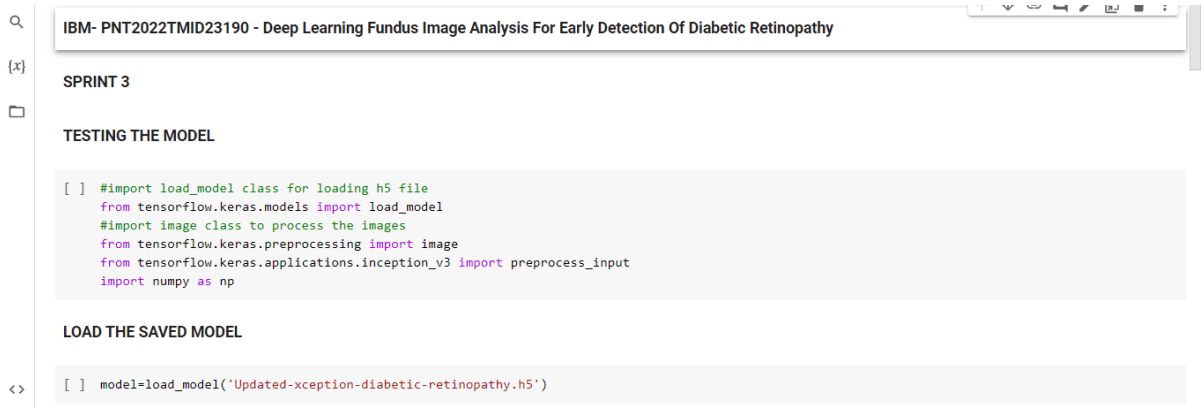
SPRINT 3

Date	12 November 2022
Team ID	PNT2022TMID36688
Project Name	**Deep learning Fundus image analysis for early detection of Diabetic Retinopathy.**

TESTING THE MODEL:

1. Load the h5 model saved.
2. The image is selected from local system. Image is loaded and resized with load_img() method.
3. To convert image to an array, img_to_array() method is used and dimensions are increased with expand_dims() method.
4. Input is processed for xception model and predict() method is used to predict the probability of classes.
5. To find the max probability np.argmax is used.
6. Code is built and test image is loaded from the local system.
7. Results specify the stage of Diabetic Retinopathy.
8. Classification available are
    - No Diabetic Retinopathy
    - Mild DR
    - Moderate DR
    - Severe DR
    - Proliferative DR

LOADING THE SAVED MODEL



IBM- PNT2022TMID23190 - Deep Learning Fundus Image Analysis For Early Detection Of Diabetic Retinopathy

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TESTING THE MODEL

```
[ ] #import load_model class for loading h5 file
    from tensorflow.keras.models import load_model
    #import image class to process the images
    from tensorflow.keras.preprocessing import image
    from tensorflow.keras.applications.inception_v3 import preprocess_input
    import numpy as np
```

LOAD THE SAVED MODEL

```
[ ] model=load_model('Updated-xception-diabetic-retinopathy.h5')
```

LOADING TEST IMAGE

LOAD RANDOM IMAGE FROM LOCAL SYSTEM FOR TESTING

```
[ ] img=image.load_img('/content/Testing2.png',target_size=(299,299))
```

CONVERT IMAGE TO ARRAY FORMAT

```
[ ] x=image.img_to_array(img)
```

```
[ ] import matplotlib.pyplot as plt
```

```
[ ] x.shape
```

```
(299, 299, 3)
```

```
import numpy as np
x=np.expand_dims(x,axis=0)
img_data=preprocess_input(x)
img_data.shape
```

```
(1, 299, 299, 3)
```

INPUT TESTING IMAGE

TEST CASE 1

RESULT

```
(array([False]),
 array([False]),
 array([ True]),
 array([False]),
 array([False]))
```

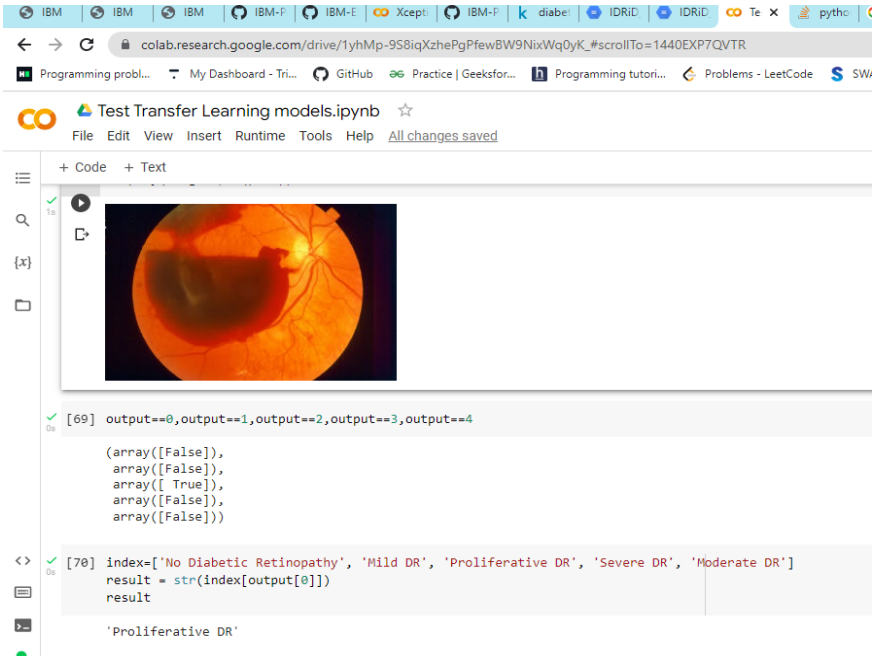
```
index=['No Diabetic Retinopathy', 'Mild DR', 'Moderate DR', 'Severe DR', 'Proliferative DR']
result = str(index[output[0]])
result
```

```
'Moderate DR'
```

PREDICTION : MODERATE DR DETECTED

TEST CASE 2

RESULTS



PREDICTION : PROLIFERATIVE DR DETECTED

TEST CASE 3

RESULTS

Test Transfer Learning models.ipynb

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```
output==0,output==1,output==2,output==3,output==4
```

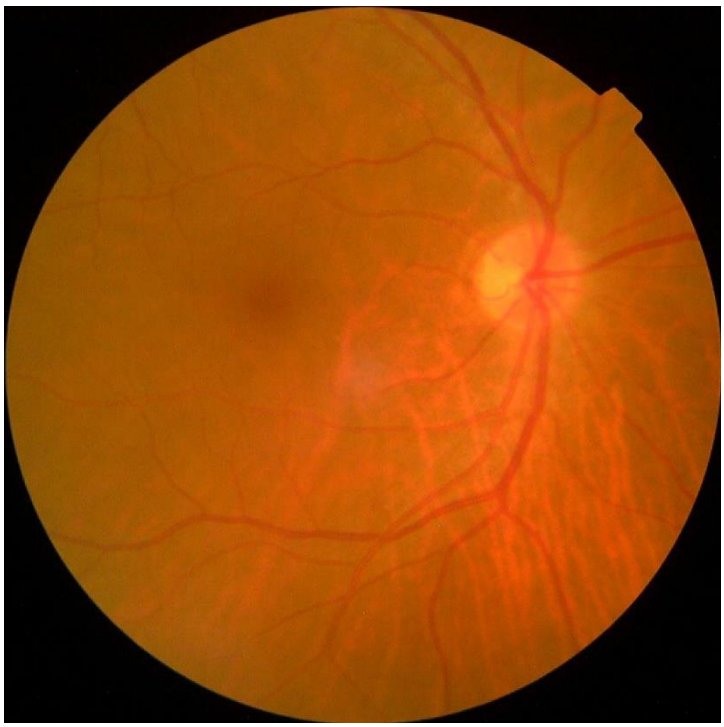
```
(array([False]),
 array([False]),
 array([False]),
 array([ True]),
 array([False]))
```

```
[97] index=['No Diabetic Retinopathy', 'Mild DR', 'Moderate DR', 'Severe DR', 'Proliferative DR']
     result = str(index[output[0]])
     result
```

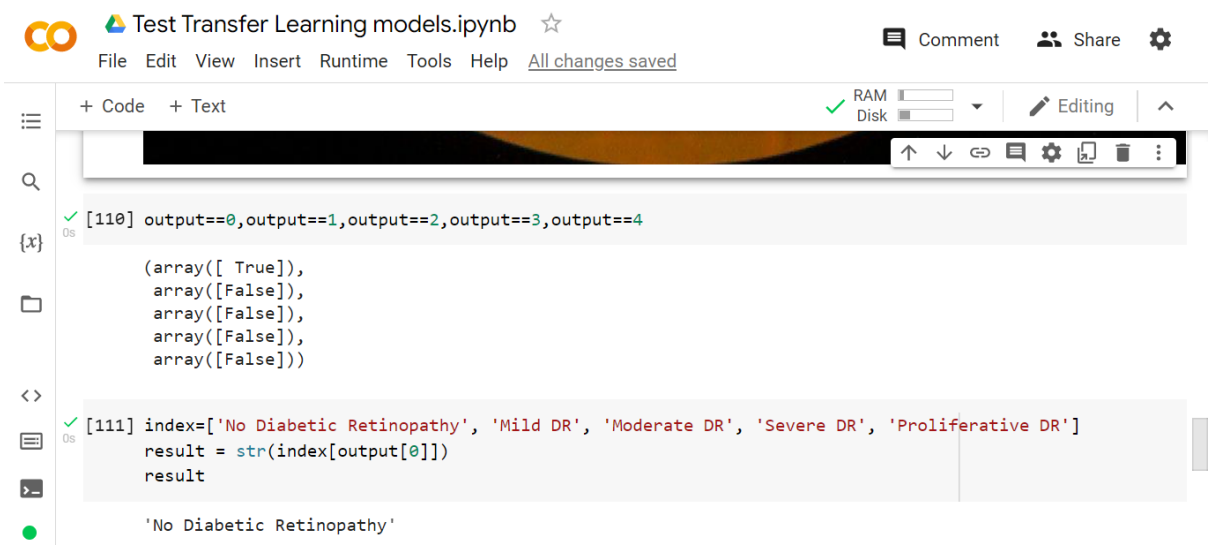
```
'Severe DR'
```

PREDICTION : SEVERE DR DETECTED

TEST CASE 4



RESULTS



PREDICTION: NO DIABETIC RETINOPATHY DETECTED