Capstone Project Weekly Progress Report

Semester	Fall 2022
Course Code	AML 2404
Section	Section 2
Project Title	Skin Diseases Classification using Deep Learning
Group Name	G
Student names/Student IDs	Tomson George (C0857730) Praveen Mahaulpatha (C0860583) Thulana Abeywardana (C0861333) Jaskaran Singh Moti (C0860026)
Reporting Week	Week 12 (**27** November 2022 to **02** December 2022)
Faculty Supervisor	William Pourmajidi

1. Tasks Outlined in Previous Weekly Progress Report

Task 01: Improving Model performance of Model 02
Responsible: (Thulana)
The model was validated with other evaluation matrixes such as F1 score, Recall and precision. The performances were not good as it should be.

Task 02: Prepare the report for the entire work done in hosting the application in AWS.
Responsible: (Tomson)
A summarized report of the work done for CI/CD was created.

Task 03: Save the model with all epochs and load it after that perform visualization related to that.
Responsible: (Jaskaran)
To perform visualization for latest model by loading the saved trained model for more number of epochs.

2. Progress Made in Reporting Week

Task 01 : Thulana: Improving Model performance – Model 02

Step 1:

Transfer lerning was used with VGG16 pre-tarined model. Pre-trained VGG16 and added own classification layer(Dense) at the bottom, then freeze the network up to the second last convolutional block, and then retrain:

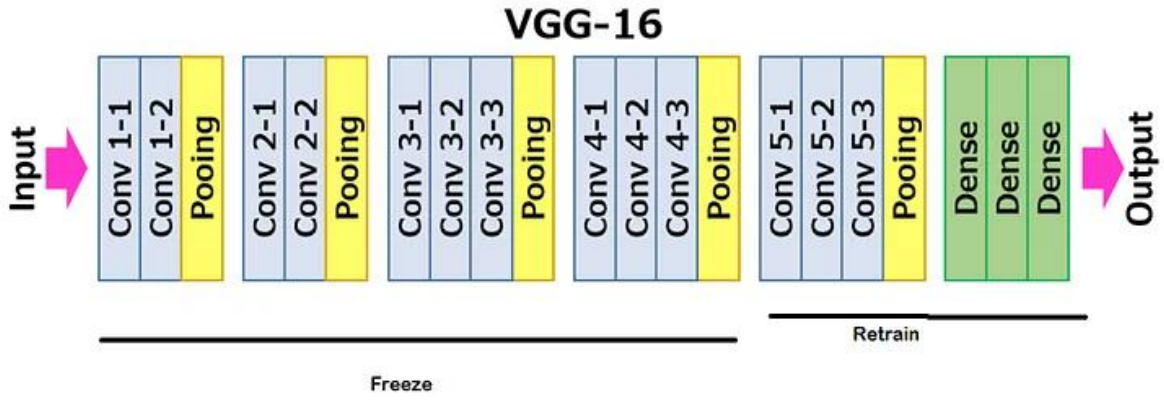

Figure: 2.1

The trained parametes as follows:

Layer	Activation Function	Shape / Other parameters
VGG16 Model		
Dense	Relu	1024
Dense	Relu	512
Dense (Output Layer)	SoftMax	3
Dense		32
Output Layer		4

Table: 2.1

Parameter	Value
Learning Rate	0.0001
Epochs	3
Loss Function	SparseCategoricalCrossentropy (logits = False)

Table: 2.2

Following results were observed:

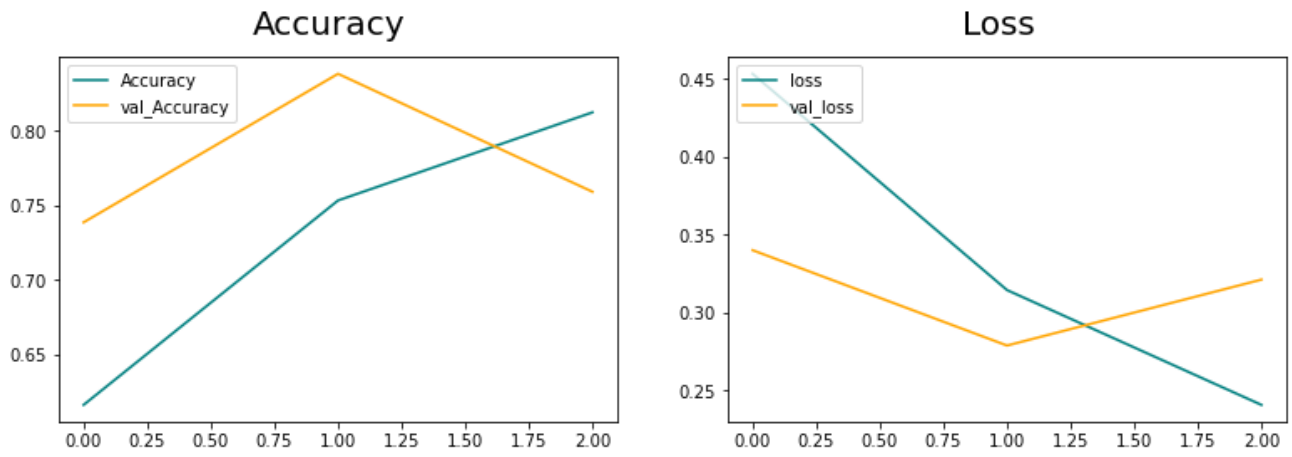

Figure: 2.2

	precision	recall	f1-score	support
0	0.68	1.00	0.81	15
1	0.94	0.94	0.94	16
2	0.89	0.50	0.64	16
accuracy			0.81	47
macro avg	0.84	0.81	0.80	47
weighted avg	0.84	0.81	0.80	47

```
]:  1 confusion_matrix(labels, pred)
]: array([[15,  0,  0],
          [ 0, 15,  1],
          [ 7,  1,  8]], dtype=int64)
```

Figure: 2.2- Classification Report and confusion matrix

Task 02: Prepare the report for the entire work done in hosting the application in AWS.
Responsible: (Tomson)
Since we are about to approach the deadline, a summarized report regarding all the work done for the CI/CD part and hosting the application in the cloud was created. The process started with referring to each weekly report and creating a step-by-step structure for all the work. In the end, the results are summarized to create a meaningful summary.

Task 03 : Jaskaran : Visualization – Model 02

The model was validated with new evaluation matrices and updated as well.
For previous week we plotted for 50 epochs for the model. This week model was updated and checked for its validation through different matrices by the team members. The updated version of our model shows the graph for 10 epochs showing accuracy and loss using plotly. The model provided an output, which then shown like this.

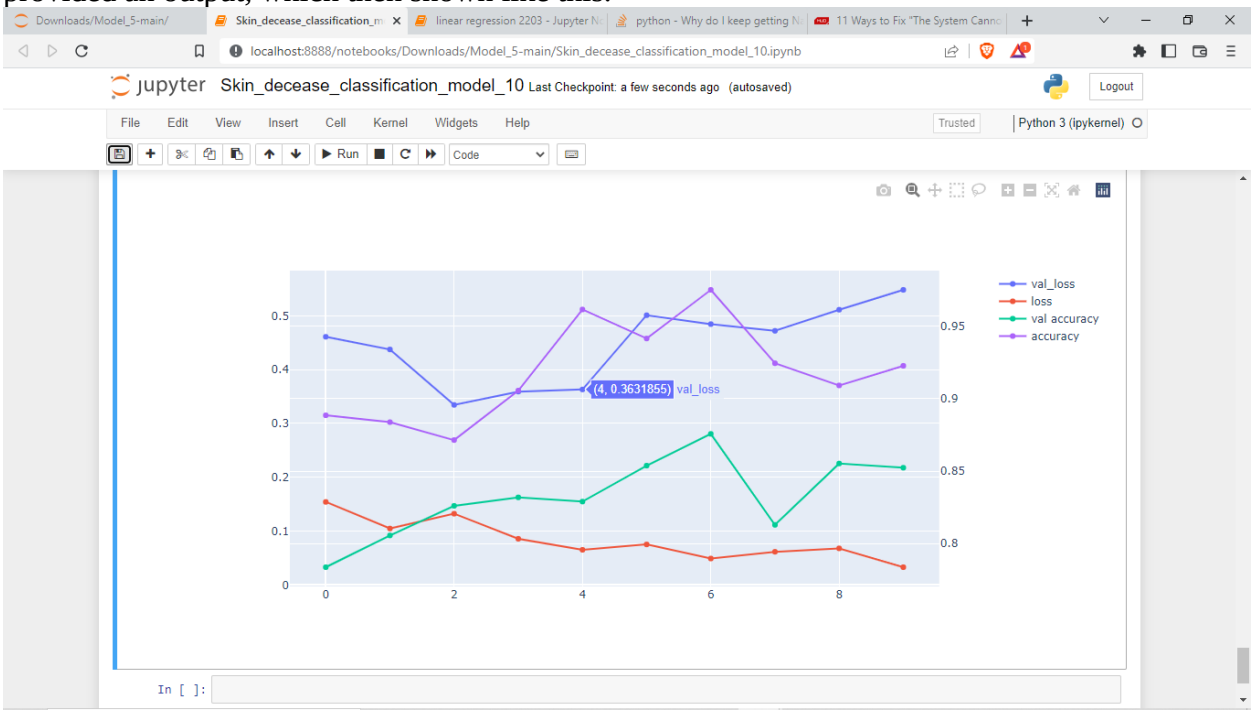

Figure 2.3

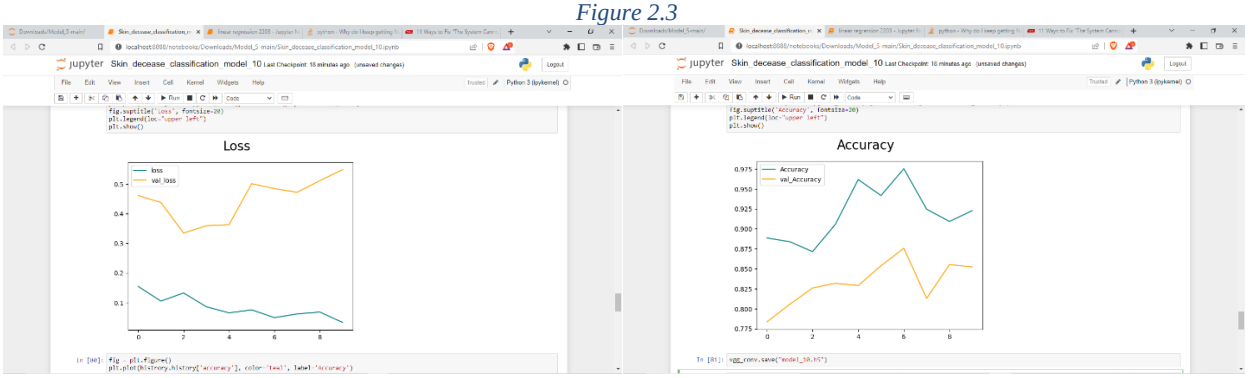

Figure 2.4

3. Difficulties Encountered in Reporting Week

a) Training and validation take a long period of time.

4. Tasks to Be Completed in Next Week : N/A