Assignment#2(Image Classification with CNN)
15 Points
Due Date: 11 Oct 2023, 11.59 PM

Instructions:

Image Classification is the task of assigning an input image, one label from a fixed set of categories. Build an image classification model in Tensorflow/ Keras framework for the dataset given.

The Ask:

1. Perform an extensive exploratory data analysis (EDA) and provide a preliminary investigation of the dataset.
2. Perform necessary pre-processing and data augmentation.
3. Build a suitable CNN architecture following the 5 steps in the NN model life-cycle as shown in figure1 below.

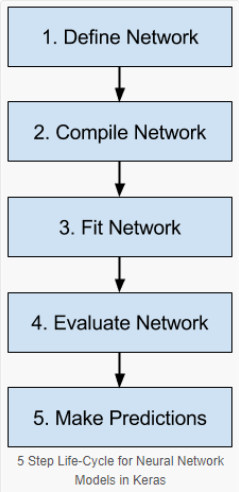

Figure 1

4. Evaluate the performance of the model.
5. Perform model saving and prediction on new datapoints.

The code should be completely run without any errors and should be readable.

You will also be having marks for commenting the necessary lines of code, writing appropriate section names and writing a suitable conclusion. You should also include what each chunk of code does.

Rubrics:

1. Has the student used ImageDataGenerator correctly (2 points)
2. Readability of the code (1 points)
3. Proper comments to the code, section heading, explanation of the chunks of code – (1 points)
4. Has the student used the appropriate best practices discussed in class (data augmentation, callback, learning curve, model saved, made predictions on unseen datapoints i.e does the model generalises well, etc..) (4 points)
5. Conclusion, Recommendation, Insights- (2 points)
6. Fully working code for image classification on the given dataset with no error and gives the desired output. – (5 points)

Note: A code submitted with error will be graded to zero.

Submission Format: In the DC Connect, post **the ran jupyter notebook file**. Any submission other than the format of a notebook file will be graded to zero.

Academic Integrity and Late submission:

Assignments are due by the due date announced in class and posted on DC Connect. At his or her own discretion, and depending on the nature of the assignment, each professor will provide a facility for the submission of late assignments up to a maximum of 72 hours after the assignment due date. All allowed late submissions will be assessed a penalty of 25% of the total possible grade for the assignment. Assignments should be submitted on time, on a regular basis, to enable you to stay on track within the class.

Any violation of academic integrity will not be accepted and will be given a grade of zero (0). Please watch this video on academic integrity. https://www.youtube.com/watch?v=BnEw72e_YYo&feature=youtu.be