WiDS '22 - '23 Final Documentation

<Project UID - Name>
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Introduction to Problem Statement

We were supposed to implement a PyNET-based model whose architecture was given. We can use tensorflow or Pytorch as the framework and we have to train the model. The dataset that had to be used was the EBB! Dataset and we have to train the model so that a 512*512 image as input gives a focussed/ bokeh rendered output.

Existing Resources

1. *COURSERA - Machine learning specialization and deep learning specialization by Andrew NG*
2. *Pytorch - youtube by patrick leiber*
3. *Tensorflow- Youtube by patrick leiber*
4. *SOC github repositories for references on working with DL models*
5. *https://github.com/aiff22/PyNET-Bokeh - main repository for the code of the bokeh model*

Proposed Solution

Zip file for input images was provided and we mounted the file from drive on colab. Images converted to np array and model was trained using them as inputs and the following parameters.
Validation split =0.2
Loss function= mean squared error
Optimiser= Adam algo with lr=1e-3
Compilation and testing of model using tensorflow

The accuracy of the model is in the ipynb itself.

Methodology & Progress (Mention the work done week-wise)

Week1 -Went through DL specialization course
Week2 - no work(Mood Indigo week)
Week3 - Read the research paper and got familiar with the model
Week4 - Practiced tensorflow in building and training relatively simpler NN models
Week5 - Implementing the model
Week6 - Implementing the model

Results

Please add the link to drive folder/ github page consisting of code files and reports
https://github.com/7Ayushh/bokeh_wids_Ayushh

Learning Value

1. Got introduced to DL and learnt a lot about implementing models using tensorflow
2. Learnt how to use images as inputs as before that i had dealt with input as csv files only
3. Worked with large datasets in GBs that takes both time and gpu to run and tackled issues regarding the same.
4. First-hand-experience of reading a DL research paper and implementing the code for the same which was something i wanted to do for so long.
5. Worked on minor projects like handwritten digit classification and wine quality detection using sklearn along this project.

Tech-stack Used

Programming language - Python
IDE - Jupyter and Colab
Libraries- Opencv, os, sklearn, numpy
Framework- tensorflow
Submission- Github

Suggestions for others

It was a very good learning experience, and I got to explore my interests under proper mentorship. I got to work on a very tough problem statement in the winter and I feel utilized my time in a productive way.

References and Citations

Official research paper by Andrey Ignatov on :
arXiv:2006.05698v1