A2
2/27/2024

(Missing) 100 Points Possible

Attempt 1 ⌄	○ In Progress **NEXT UP: Submit Assignment**	🖻 Add Comment

Unlimited Attempts Allowed
2/15/2024 to 2/27/2024

⌄ **Details**

Welcome to the second assignment, where you will use TensorFlow for classification of feature independent dataset and a benchmark image dataset.

1. (30 pts) Modify the **binary logistic regression classifier with Iris dataset (https://usu.instructure.com/courses/752775/files/90791144?wrap=1)** ↓ (https://usu.instructure.com/courses/752775/files/90791144/download?download_frd=1) (dataset **link (https://usu.instructure.com/courses/752775/files/90750087?wrap=1)** ↓ (https://usu.instructure.com/courses/752775/files/90750087/download?download_frd=1)) with this **2D dataset (https://usu.instructure.com/courses/752775/files/90750091?wrap=1)** ↓ (https://usu.instructure.com/courses/752775/files/90750091/download?download_frd=1) (# examples: 100, # features: 2, binary labels). Perform **min-max normalization** ▭ (https://en.wikipedia.org/wiki/Feature_scaling) instead of z normalization.

2. (70 pts) Perform 5/not 5 classification from MNIST data (you can use/tune the ConvNet of the **Conv-MNIST notebook (https://usu.instructure.com/courses/752775/files/90791143?wrap=1)** ↓ (https://usu.instructure.com/courses/752775/files/90791143/download?download_frd=1) .

  A. (10 pts) All examples labeled as '5' will be considered as positive class. All other labels {0, 1, 2, 3, 4, 6, 7, 8, 9} will be considered as negative class. Train/test sampling will be same as the notebook.
  B. (20 pts) Visualize 10 random test examples, the predicted labels, and the actual labels.
  C. (20 pts)Maximize the performance by tuning architecture, hyperparameters, and normalization method.. Add notes and comments to explain your choices.
  D. (20 pts) Report accuracy, precision, recall, and F1.

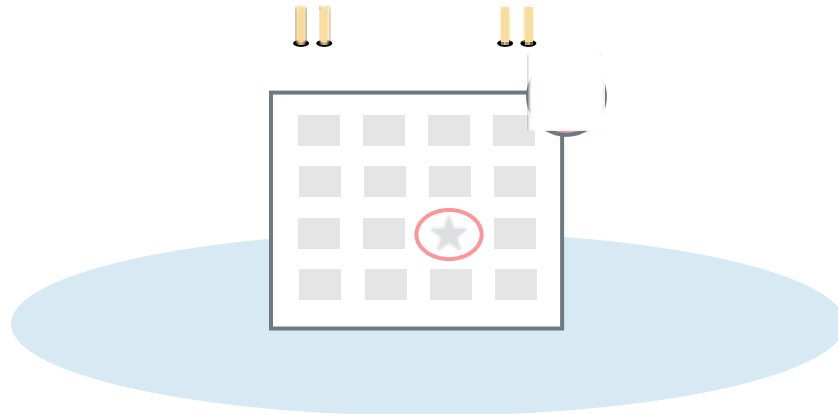Submit two Colab/Jupyter notebooks in the A2 folder in Canvas by **02/27/24, 11:59 pm MT**.

Note:

❓ or a quick start guide of TensorFlow, please refer to the **TensorFlow basics slide (https://usu.instructure.com/courses/752775/files/90750090?wrap=1)** . If you are familiar with TF1x, for transforming the code to TF 2x (Colab's current default), please refer to the following resources.

https://www.youtube.com/watch?v=JmSNUeBG-PQ ⬀ (https://www.youtube.com/watch?v=JmSNUeBG-PQ)

https://www.tensorflow.org/guide/migrate/upgrade ⬀ (https://www.tensorflow.org/guide/migrate/upgrade)

Best of luck !

Availability Dates
2/15/2024 to 2/27/2024