**In class Programming Assignment - 3**

**GitHub Link:** <https://github.com/AkhilaBollepalli/ICP3>

Video Explanation: [click here](https://drive.google.com/file/d/1nSLpe98sN05seyZUxgF-hXGK_YuzksWV/view?usp=drive_link)

**Programming elements**: Keras Basics

**Use the use case in the class:**

**Problem 1:**

a. Add more Dense layers to the existing code and check how the accuracy changes.

**Input**: .csv file

**Solution:**

A screenshot of a computer

Description automatically generated

A white screen with black text

Description automatically generated

OUTPUT:

A screenshot of a computer

Description automatically generated

A graph of a graph of a model loss

Description automatically generated with medium confidence

**Problem 2:**

Change the data source to Breast Cancer dataset \* available in the source code folder and make required changes. Report accuracy of the model.

A screen shot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

OUTPUT:

A white background with black lines

Description automatically generated

A graph of a model loss

Description automatically generated

**Problem 3:**

Normalize the data before feeding the data to the model and check how the normalization change youraccuracy (code given below).

from sklearn.preprocessing import StandardScaler

sc = StandardScaler()

A white background with text

Description automatically generated

A screenshot of a computer

Description automatically generated

A close-up of a computer screen

Description automatically generated

OUTPUT:

A close-up of a computer screen

Description automatically generated

A graph of a graph of a model loss

Description automatically generated with medium confidence

Use Image Classification on the hand written digits data set (mnist)

**Problem 1:**

Plot the loss and accuracy for both training data and validation data using the history object in the source code

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**A screenshot of a computer

Description automatically generated**

**OUTPUT:**

**A graph of a graph of a graph of a graph of a graph of a graph of a graph of a graph of a graph of a graph of a graph of a graph of a graph of

Description automatically generated**

**Problem 2:**

Plot one of the images in the test data, and then do inferencing to check what is the prediction of the model on that single image.

A screenshot of a computer

Description automatically generated

A computer screen shot of text

Description automatically generated

OUTPUT:

A black and white image of a white and black object

Description automatically generated with medium confidence

**Problem 3:**

We had used 2 hidden layers and Relu activation. Try to change the number of hidden layer and the activation to tanh or sigmoid and see what happens.

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**A screen shot of a computer code

Description automatically generated**

**OUTPUT:**

**A screen shot of a graph

Description automatically generated**

**A screen shot of a graph

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**A graph with numbers and lines

Description automatically generated with medium confidence**

**Problem 4:**

Run the same code without scaling the images and check the performance?

A screenshot of a computer

Description automatically generated

A screen shot of a computer

Description automatically generated

A computer screen shot of a computer code

Description automatically generated

OUTPUT:

A graph of a graph

Description automatically generated with medium confidence

A graph with numbers and lines

Description automatically generated with medium confidence

A graph of a number of layers

Description automatically generated with medium confidence

A graph with numbers and lines

Description automatically generated