

Assignment 2 (EE6347)

You are given an incomplete program as a ipynb file. Complete the program to create a deep neural network with 2 hidden layers using the `Sequential` and `Dense` layer in `Keras` and perform classification on the `MNIST handwritten dataset`. Perform the following steps:

- (a) In the first experiment, use `100 relu` neurons in the `first layer` and `50 tanh` neurons in the `second layer`. Employ `BatchNormalization` and a `Dropout` of 0.2. 1 + 1 + 1 marks
- (b) Now, use `sgd` optimizer with a fixed learning rate = 0.07 and `nesterov = False`. Evaluate the performance of the network in terms of training and validation accuracy over 20 epochs and a batch size of 128. 4 x 0.5 marks
- (c) Clearly print the history of the fit which should show the training and validation accuracy as a function of epochs. 1 mark
- (d) Plot the `training` and the `test accuracy` in a `single graph` as a function of the `number of epochs`. Put x-axis label as '`epochs`' and y-axis label as '`accuracy`'. Use two data legends: one for training and another for test. The legends should be at the bottom right corner of the plot. 1 + 1 + 1 marks