

CSE-5368 Neural Networks

Spring 2024 Quiz 04

Time: 12 Minutes

Complete the following function.

Only use numpy.

DO NOT USE Tensorflow, Keras, or any other package(s).

```
import numpy as np
def calculate_confusion_matrix(y_hat, y):
    #y_hat: Array of actual outputs [num_of samples,num_of classes]
    #y: Array of desired (target) outputs [num_of samples]. This array #
    includes the indexes of the desired (true) class.
    # return confusion_matrix[number_of_classes,number_of_classes].
    # Each element Confusion matrix [n,m] should be shown as the percent of
    times that an input of class n is classified as class m.

def calculate_confusion_matrix(y_hat, y):
    confusion_matrix = np.zeros((y_hat.shape[1], y_hat.shape[1]))
    y_hat_max_indexes = np.argmax(y_hat, axis=1)
    # Calculate confusion matrix
    for k in range(y.shape[0]):
        confusion_matrix[y[k], y_hat_max_indexes[k]] += 1
    # Calculate percentage
    for k in range(y_hat.shape[1]):
        if np.sum(confusion_matrix[k]):
            confusion_matrix[k]=100*confusion_matrix[k]/np.sum(confusion_matrix[k])
    return confusion_matrix
```