

Homework 10 (*due: Apr 28*)

MACHINE LEARNING - COSC 4360

Department of Computer Science and Electrical Engineering

Spring 2025

Exercises

Create a **New Project** for every exercise. Take a screenshot of the source code along with its output and place the **source code** and the **screenshot** in a **zipped folder** named **LastNameFirstName_HW10**

Exercise 1

Given the following source code: *Lec37.0_CNN_MNIST_withWeights.py*, modify the architecture of the CNN by adding CNN layers. Report the new *training*, *validation* and *test accuracy*.

Exercise 2

In continuation of Ex. 1, **predict** the classification outcome of *two* handwritten digits. Print the images as well as the predictions.

Exercise 3

Given the following datasets: *train.zip* and *validation.zip*, and the accompanying source code: *Lec37.1_CNN_cats+dogs.py*. This a CNN that classifies images between cats and dogs. Modify the number of **EPOCHS** to a larger value. Report whether the accuracy improves. In addition, **predict** the classification outcome of *two* images, one **cat** and one **dog**. Print the images as well as the predictions. The *two* images should *not* be from the datasets.

Note: The code should run without any issues on Visual Studio.

Note: Submit through **Canvas**