# **M7Pro (Classification with K-Nearest)**

**Introduction**:

The assignment introduces students to the concept of Machine learning and how it’s applied to classify information and make predictions.

**Instructions**:

For this assignment you will complete 15.2 and 15.3 case studies ( Classification with k-nearest Neighbors Part 1 & 2.

1.Create a Python code file named M7Pro\_kNearest\_FirstLast.py   
(replace "FirstLast" with your own name)  
2. Add a title comment block to the top of the new Python file using the following form

# A brief description of the project  
# Date  
# CSC221 M7Pro – kNearest  
# Your Name

3. Part 1 (70 points)

Complete case study part 1 (15.2 Classification with k-Nearest Neighbors and the Digits Dataset) on page 599.

Make sure that the statements are added to a program and not just executed in interactive mode. Add print statements to display the following:

* Data array of image in index position 13 ( referenced in textbook)
* The first 24 images in digits.images and the first 24 values in digits.target ( referenced in textbook also)
* Cases in which predicted and expected values do not match

4. Part 2 (20 points)

Go to case study part 2 (15.3 Classification with k-Nearest Neighbors and the Digits Dataset) on page 612.

Complete the following sections:

* 15.3.1 Metrics for Model Accuracy (display confusion Matrix)
* Classification Report (page 613) Display report
* Visualizing the confusion Matrix (plot and display confusion matrix)

**Submit** your finished code solution file(s) through the assignment link below

**Grading criteria**:

• Shown next to each required point in instructions above

• Pseudocode and block comment (**10 points** )