Wrocław, 04.05.2023

Naive Bayes with MNIST

1. Download data set from tensorflow:

**from sklearn.datasets import fetch\_openml**

**mnist = fetch\_openml('mnist\_784', version=1)**

Alternatively you can download csv version from kaggle: https://www.kaggle.com/datasets/oddrationale/mnist-in-csv

1. Check how the data looks, how many samples you have, what is the structure of the data. Save the information in log file.
2. You can access images and labels as .data and .target
3. Show few sample handwritten digits with label description in the title
4. Split the data into training and test
5. Think which version of naive bayes you should use and train the model using sklearn
6. Show confusion matrix in graphical way (use matplotlib or similar), describe why results looks like that
7. Show accuracy for whole test and error rate for each class. Think about other useful metrics.