

# Assignment 2

- Write complete code to train a **shallow neural network to detect your face**.
- **Use your own images to generate the dataset.**
- Data split (**60% training + 20% validation + 20% testing**)
- You have to write the code without use of any library. Only Numpy (and Pillows if needed) is allowed.

# Assignment 2

- Submit the code, **dataset** and report containing results
  - Submission should include training code.
  - Prediction code should be separate and a function named “prediction” with features as input and estimated count as output.
  - Report the mean error on test, validation and training sets.
- Submission Date: **November 19, 2025 before 11:59 pm on Microsoft teams under Assignment 2**

# Notes

- Libraries for machine learning can NOT be used. For example gradient descent has to be implemented yourself rather than using function from any library.
- Libraries for peripheral functions such as plotting, reading/writing of files etc can be used such as numpy.
- Zero tolerance for plagiarism

# Report

- Dataset Details
  - Gathering and Cleaning
  - Size
  - Feature details and scaling (if any)
  - Code and methodology
- Mathematical Model details (hypothesis, objective function, parameter optimization)
- Output of the model
- Model training details (iterations etc)
- Plots
  - Training loss
  - Error/metric for training, cross validation and test
- Complete Codes
  - Instructions on running the code – Annex A
  - Training Code along with optimal parameters – Annex B
  - Prediction Code – Annex C

# Grading Criteria

- Project is 10 absolute points
- Grading will be out of 100
  - Code comments - 10
  - Training - 30
  - Prediction function - 15
  - Accuracy – 15
  - Report 30