

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