

Homework #0

Deep Learning for Computer Vision

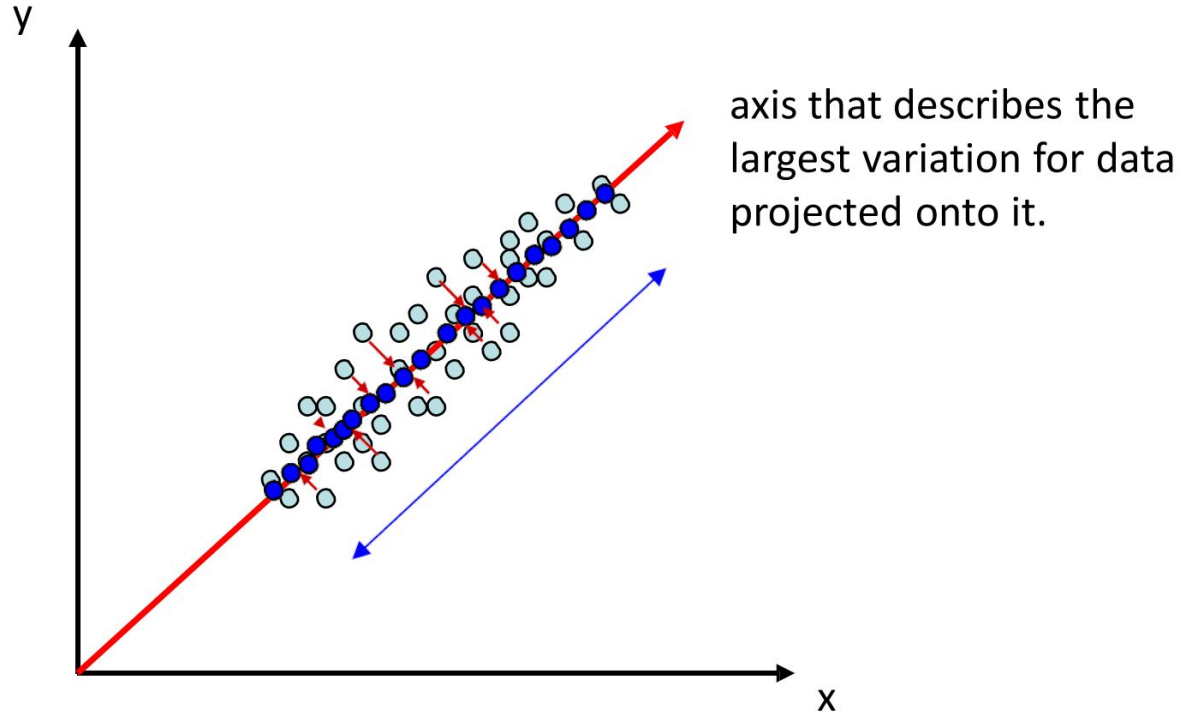
NTU, Fall 2021

110/9/28

110/10/8 (Fri.) 11:59 PM due

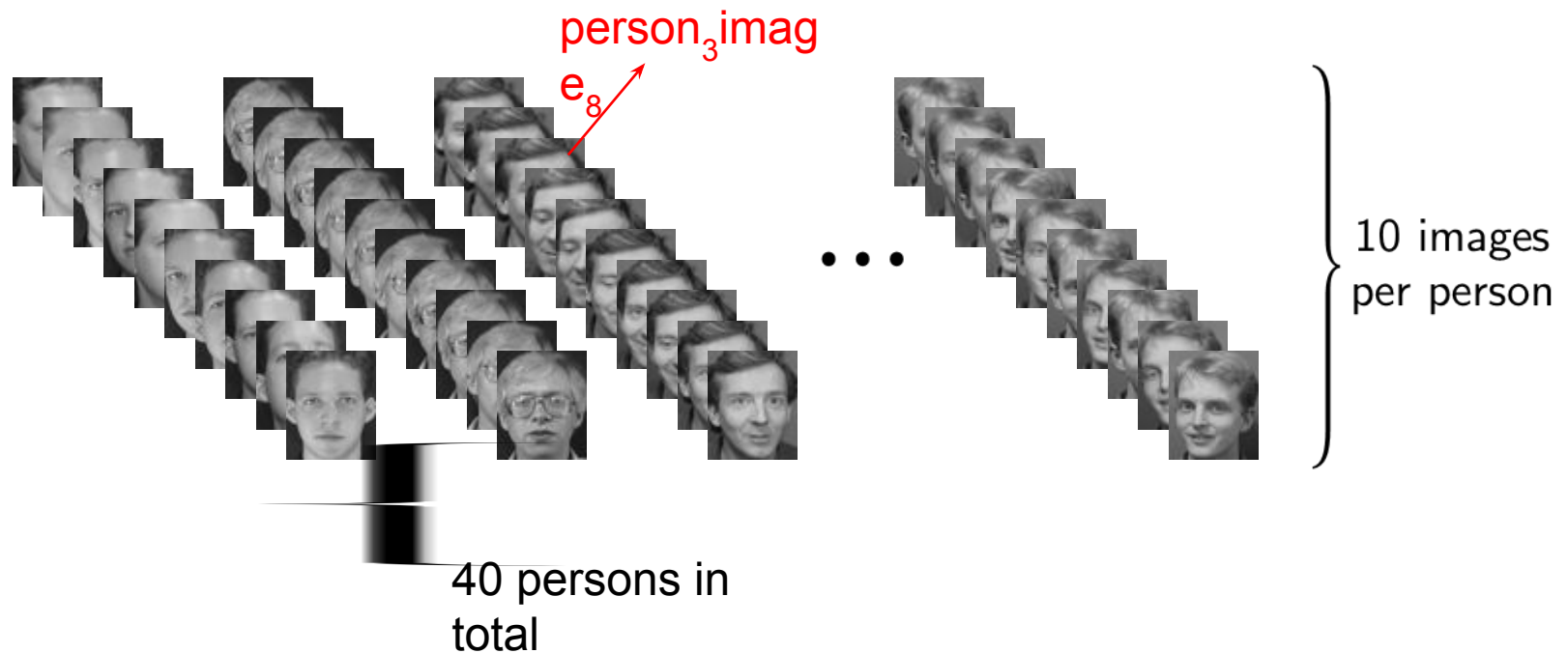
Problem 1: Principle Component Analysis

- Perform PCA as taught in the lectures



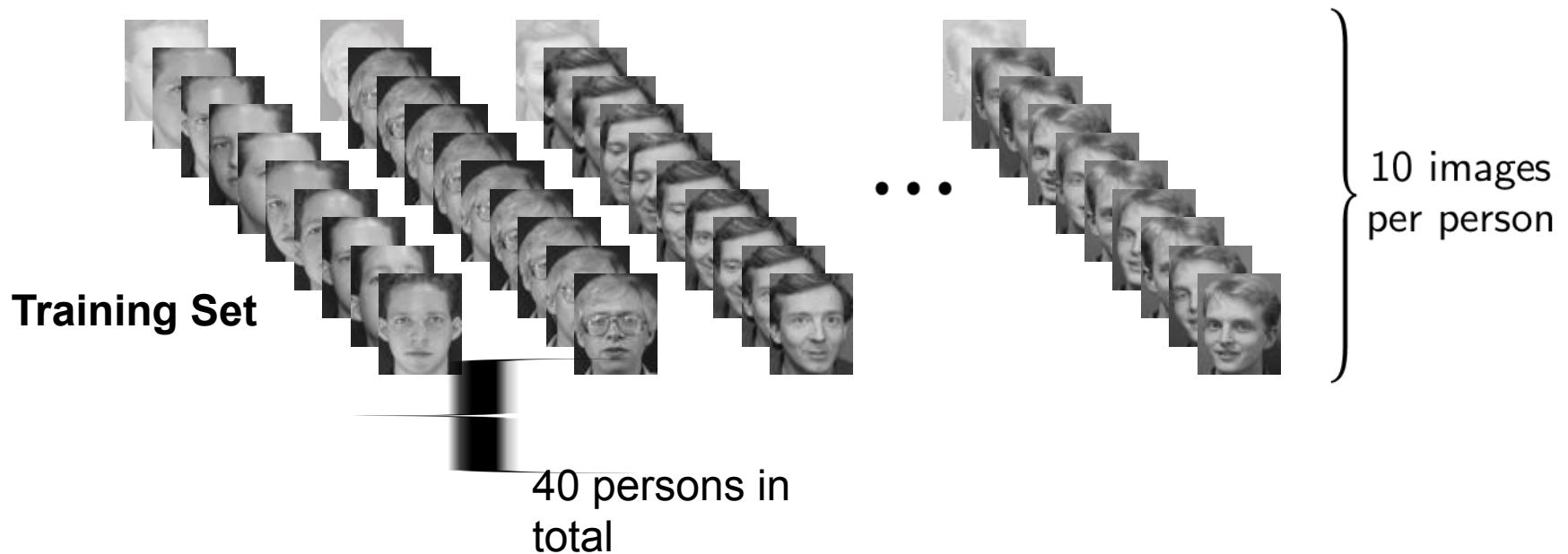
Problem 1: Principle Component Analysis

- Perform PCA as taught in the lectures
- Dataset



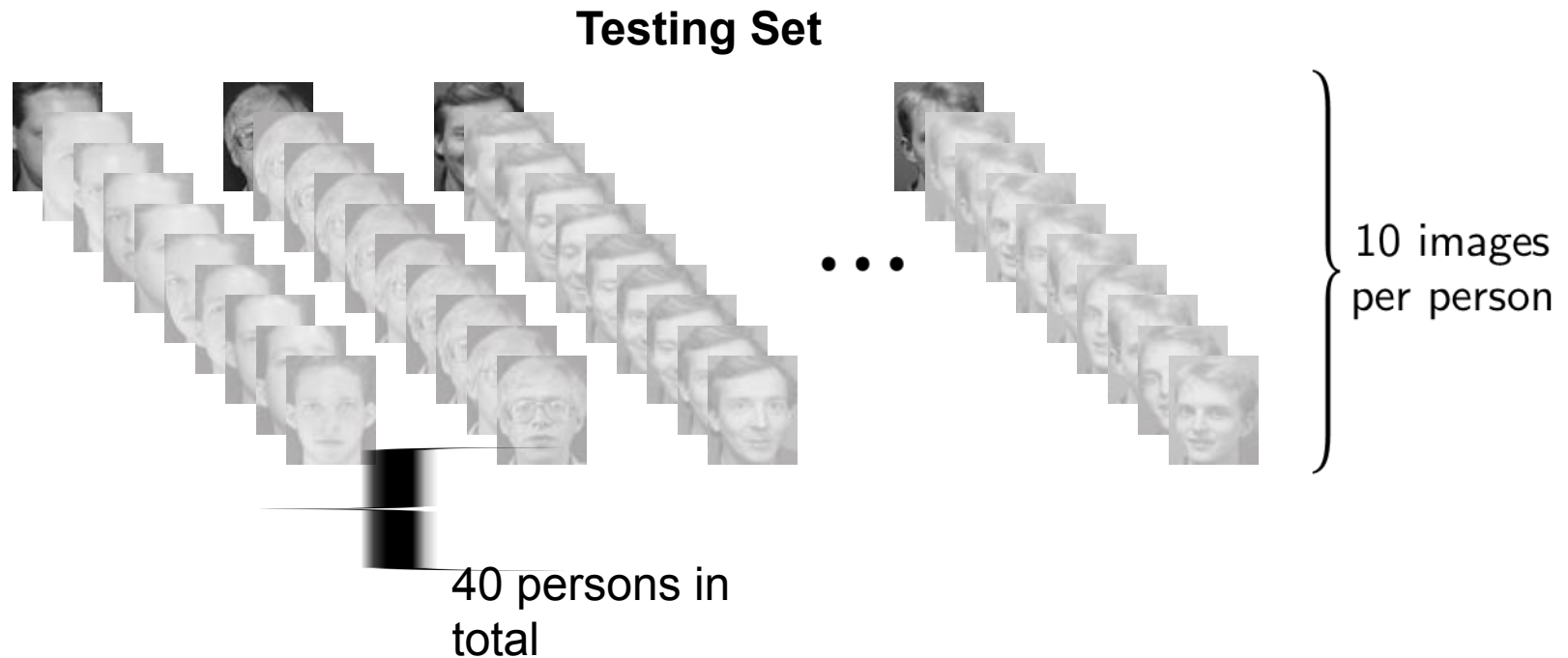
Problem 1: Principle Component Analysis

- Perform PCA as taught in the lectures
- Dataset



Problem 1: Principle Component Analysis

- Perform PCA as taught in the lectures
- Dataset



Problem 1: Principle Component Analysis

- Plot the mean face and first four eigenfaces
- Project face images onto the eigenspace
- Plot the reconstructed image
- Compute mean squared error (MSE)
- Apply k -nearest neighbors for classification

Remarks

- You are allowed to use **any** programming language you desire, including all related packages/functions.
- In your report, provide detailed explanations or discussions about your answer.
- If unsure about your answer, write down how you obtained it as detailed as possible.
- Convert your report into a pdf file and upload it to NTU COOL before the deadline.