Assignment 02

Due: 24.10.2025

FM: 30

Objective

The aim of this assignment is to understand and implement **SIFT feature extraction** and **image matching** techniques. Implement the followings:

- Detect and describe image features using the SIFT algorithm.
- Match keypoints between two or more images.
- Visualize matches and analyze performance under transformations (rotation, scale, illumination etc).

Submission format: Submit codes and a report (PDF) with detailed results.
Use libraries: cv2, NumPy.
Download a small dataset of 2 - 3 pairs of related image (same object captured at different times or under different conditions; consider sub-images also to test).

The pipeline:
Input Image → Gaussian Pyramid → DoG Pyramid → Keypoint Detection → Localization → Orientation Assignment → Descriptor Computation → Matching