

MLRF Lecture 04

J. Chazalon, LRE/EPITA, 2025

Agenda for lecture 4

1. Introduction
2. Content-based image retrieval (CBIR) using bags of features
3. Evaluating CBIR / Ranked Retrieval (RR) systems

Introduction

Lecture 04 part 01

Previously, in MLRF...

Summary of last lecture

Descriptor matching

- 1-way
- Cross check
- Ratio test
- Radius threshold

Descriptor indexing

- Indexing pipeline: train/query
- Linear matching
- kD-Trees
- FLANN / hierarchical k-Means
- LSH
- Approximate NN problem

Projective transformations

- Translation
- Rotation
- Scaling
- ...
- Projective

Homography estimation

- Least square
- RANSAC

Geometric validation

Debriefing of practice session 3

Content

1. Keypoint detection and description
2. Descriptor matching
3. Homography estimation

Discussion

- Who completed part 1? 2? 3?
- Any remarks, comments, questions?
- Things to keep, change, remove?

Practice session 3: Take home messages

Augmented Documents: Use an off-the-shelf detector/descriptor: ORB

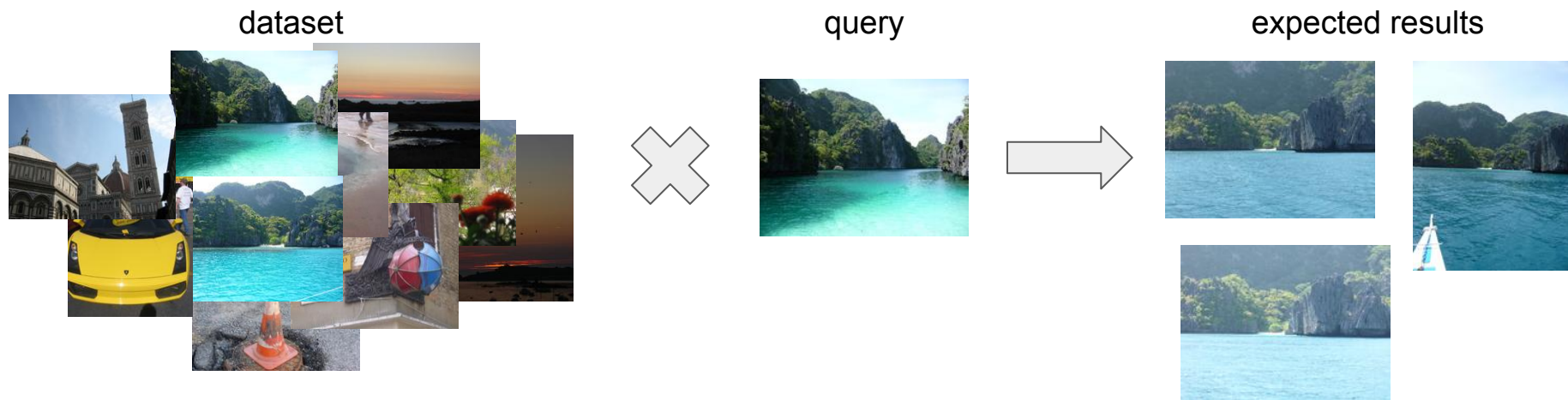
Augmented Documents: Projective transforms and Homography estimation

- OpenCV provides the solver machinery: list of matches \rightarrow 3x3 matrix
- Just some coordinate transform (2D \rightarrow 2D transform)
- Remember the classical matrix forms: **translation, rotation...**

Next practice session

Next practice session

Implement a simple **image search engine**.



Will be graded.