MLRF Lecture 04

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Agenda for lecture 4

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

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. Naive descriptors and matching (*Twin it!*)
2. Descriptor matching using OpenCV and homography estimation

Discussion

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

Practice session 3: Take home messages

Twin it!: Extracting descriptors, matching them **by hand**
- Detect keypoints and extract surrounding pixels to flat vector
- Normalize them and compare them using cross correlation ($\Sigma_i f_i \cdot g_i$)

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.**

dataset   query   expected results
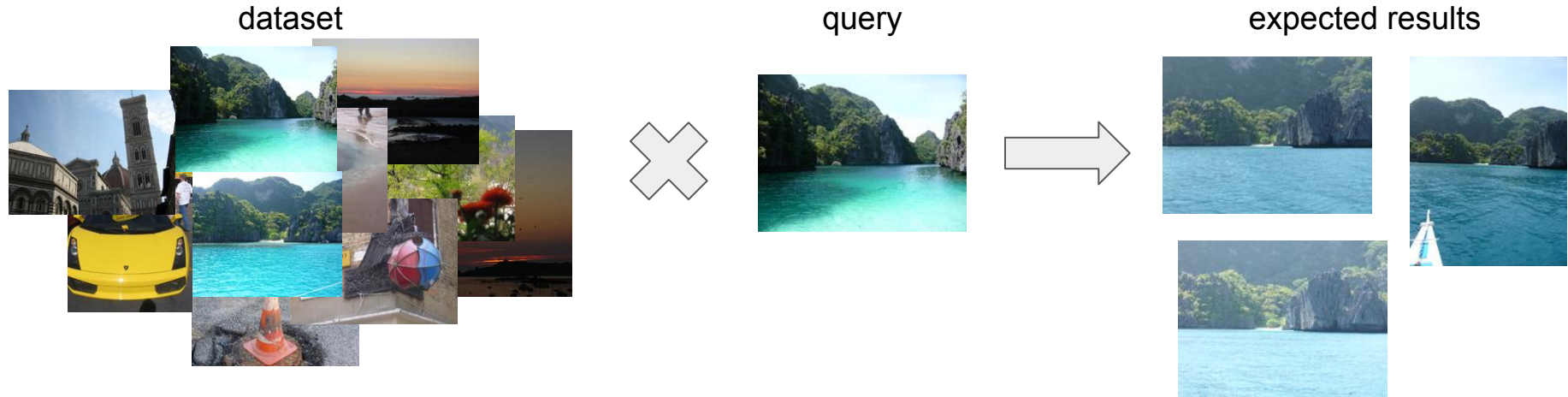
Will be graded.

Submission due by **May 24th, 23:59** on moodle.cri.epita.fr.