

Indexing big colored image bank : Texture 3.0

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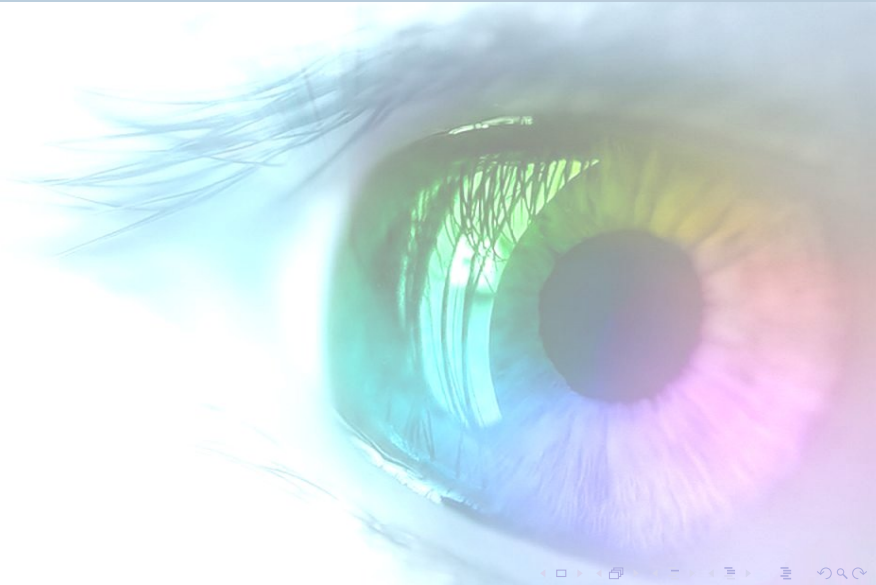
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Outline

- 
- 1 Introduction
 - 2 Team presentation
 - 3 User requirement
 - 4 Work achievement
 - 5 Results and Discussion
 - 6 Project Management
 - 7 Conclusion

Context and environment



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Deadlines

XLIM-SIC Laboratory of University of Poitiers

- Noel Richard (Researcher in Color images) : Supervisor
- David Helbert (Researcher in Signal-Image-Communications) : Supervisor
- Thierry Urruty (Researcher in Color images) : Customer

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Software

- Design software programs :
indexation of images database, calculate descriptor
according to nature images
- Adapt the last up to date designed color and texture
attributes to the current image classification
- Compare our results (using CLEF challenge metrics)
- Provide an abstract of the comparisons and a technical
report

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SIFT(Scale-Invariant Feature Transform)

Key-points detection (x,y,σ)

- Scale-space extrema detection
Find the best locations which characterize well the image
- Key-point location
Improve the position of the keypoints detected
- Orientation assignment
Assign orientations to the key-points
- key-point descriptor
Describe the key-point with with a vector of 128 dimension

SIFT(Scale-Invariant Feature Transform)

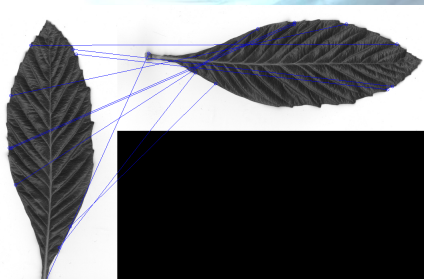


FIGURE: SIFT test1

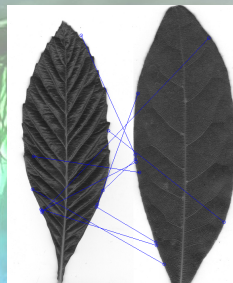
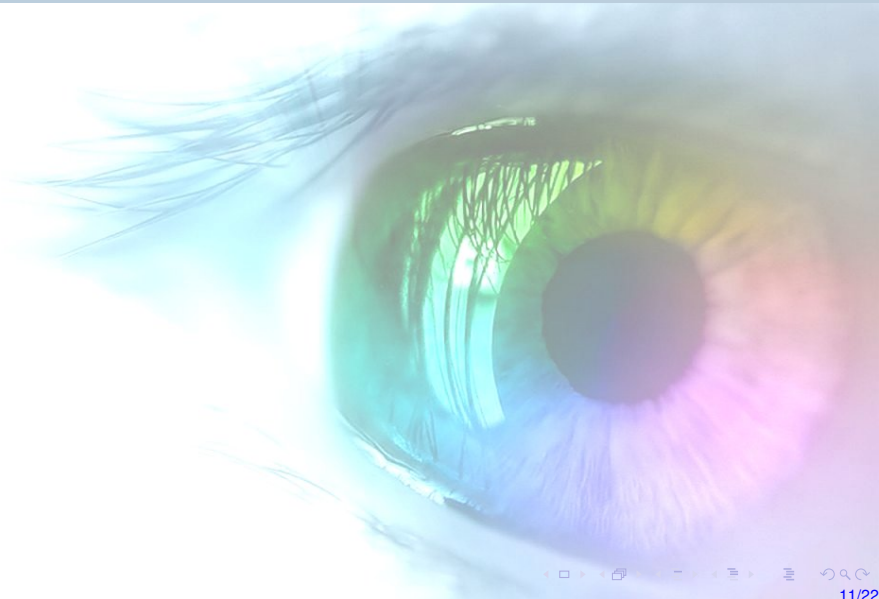


FIGURE: SIFT test2

C₂O



Classification (Bag of words)

Reducing the number of points.

- K-means

- Attribute the vectors to centroid vectors.

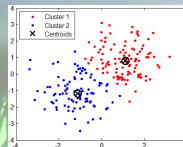


FIGURE: K-means

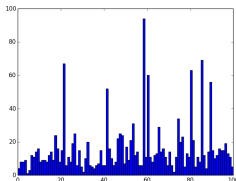
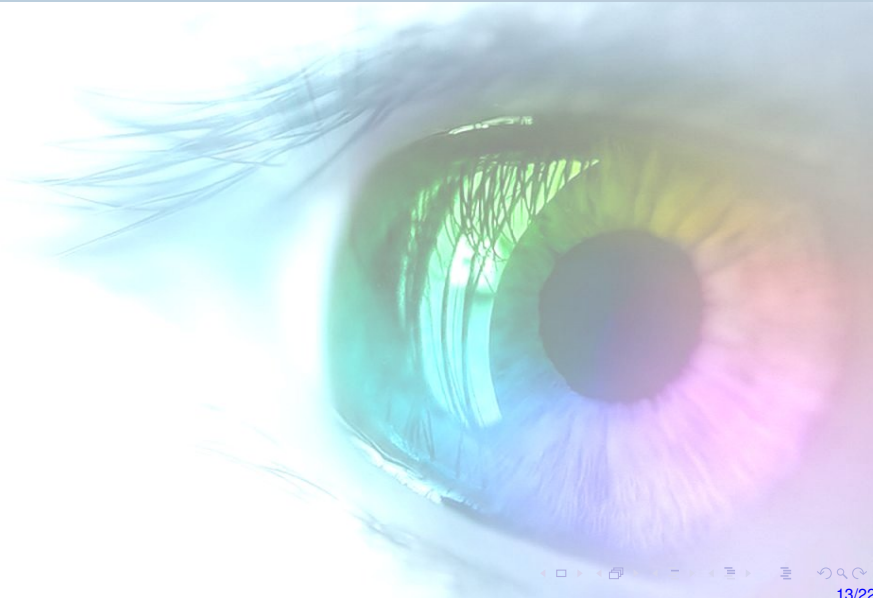


FIGURE: Signature

- Signature

- Design histogram in function of assignment of the vectors.

CLEF



Process flow

- Main function which control all the process
 - Create the tree structure.
 - Allows the choice of descriptors.

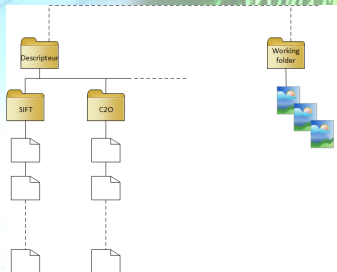


FIGURE: Tree structure

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Results

- Reduce data-base of 100 images composed of only 4 species.
- Compare the two descriptors SIFT and C₂O.

TABLE: SIFT result

ID	Training Base	Test Base	Correct	Accuracy
173	17	8	4	50%
1102	22	3	1	33%
1889	16	9	1	11%
2717	15	10	7	70%
Total	70	30	9	/

TABLE: C₂O result

ID	Training Base	Test Base	Correct	Accuracy
173	17	8	1	12.5%
1102	22	3	1	33%
1889	16	9	0	0%
2717	15	10	7	70%
Total	70	30	9	/

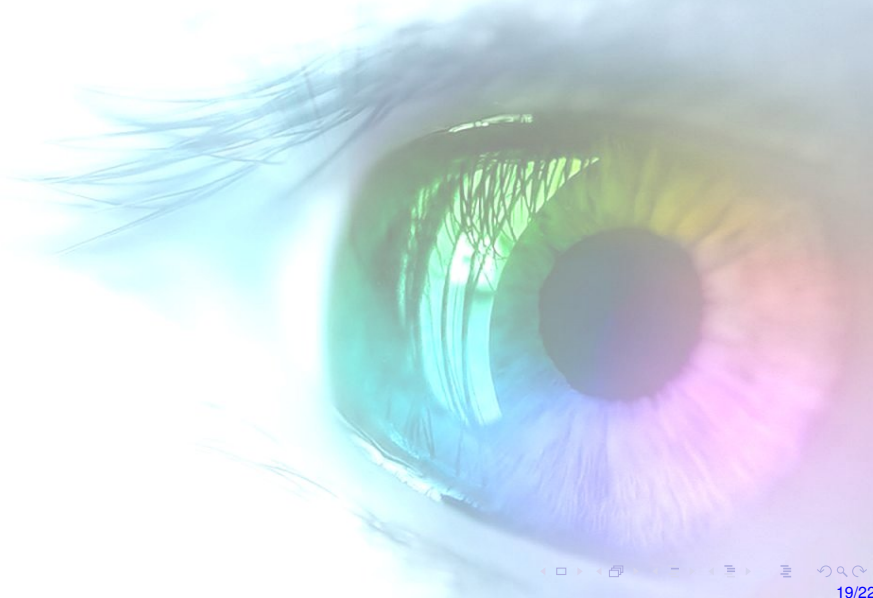
Discussion

- Classification
 - Too much reducing on the K-means (100 words).
 - Euclidean distance not the most efficient or adapt.
- C_2O
 - The concatenation way is not optimal.

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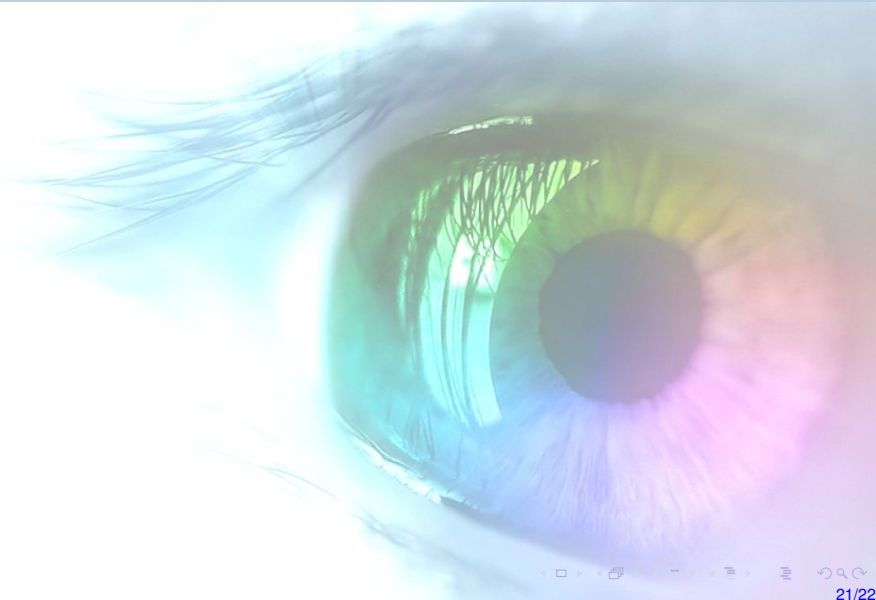
SCRUM method

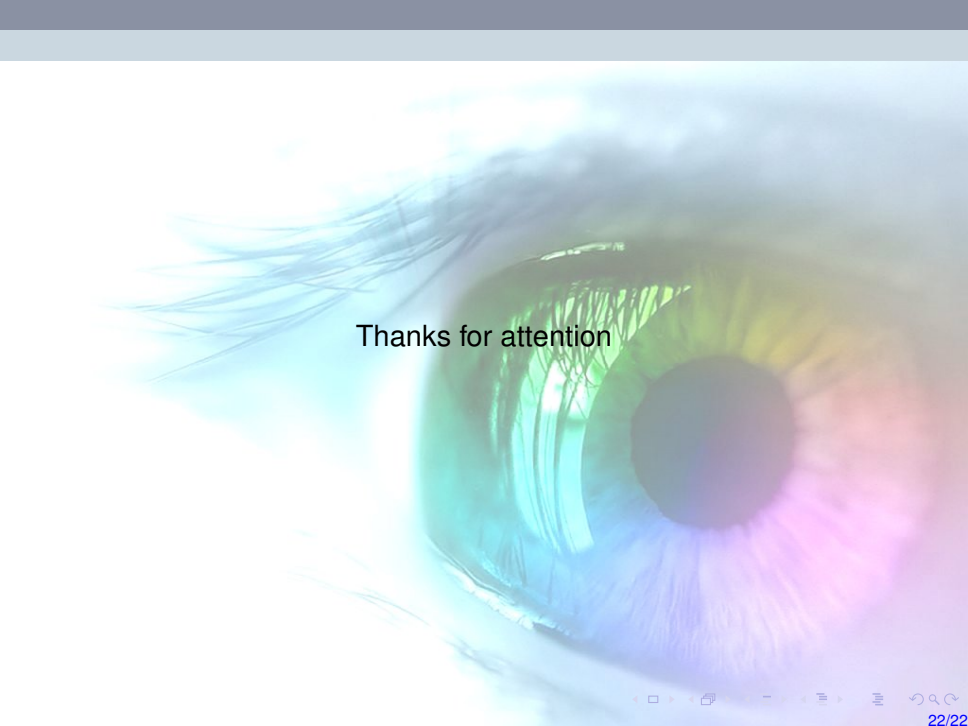


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Conclusion





Thanks for attention