

# Indexing big colored image bank : Texture 3.0

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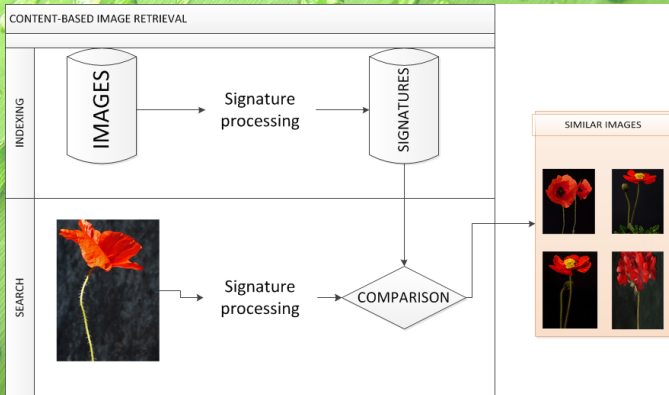
# Outline

- 1 Introduction to the project context
- 2 Work and results
- 3 Project management
- 4 Conclusion

# Project context (1/3)

## Objective

Test a solution for content based image indexing flaw : standard descriptors (SIFT, SURF, etc) lacking real color and texture information.



## Project context 2/3

### What is a descriptor ?

Algorithm applied to an image which output is a short vector of numbers which is invariant to common image transformations and can be compared with other descriptors in a database.

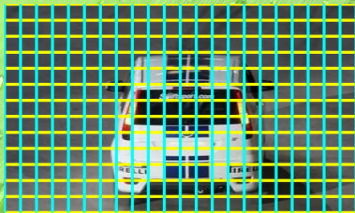


FIGURE: Densegrid

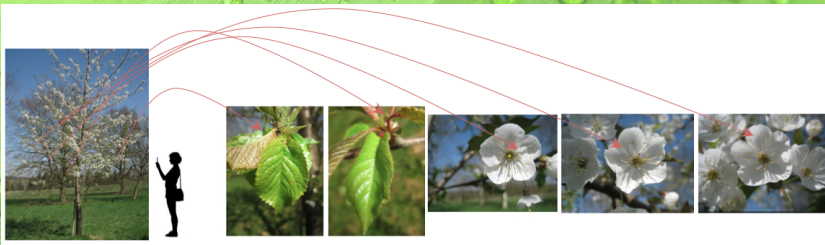


FIGURE: Interest points

## Project context 3/3

### What is a CLEF ?

International contest which purpose is to provide a place where labs and companies solution for multimedia analysis of life can compete against each other.



# Team presentation





# User requirement



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# SIFT (1/2)



## SIFT (2/2)



## C<sub>2</sub>O (1/4)

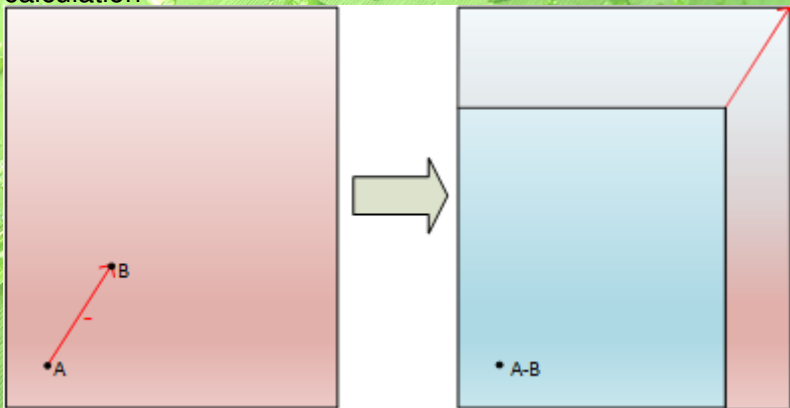
- Limitation of marginal approach
- Necessity to get a vectorial treatment
- Include better texture and color informations

## C<sub>2</sub>O (2/4)

- Conversion to a perceptual space (adapted to human perception).
- C<sub>2</sub>O matrix calculation.
- C<sub>2</sub>O signature extraction.

## C<sub>2</sub>O (3/4)

- Computation of the C<sub>2</sub>O matrix by the color difference calculation





# $C_2O$ (3/4)

- The  $C_2O$  matrix for a poorly textured image :



FIGURE: Image to characterize

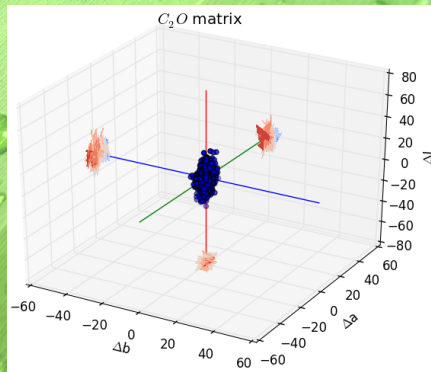


FIGURE: Signature

# C<sub>2</sub>O (3/4)

- The C<sub>2</sub>O matrix for a poorly textured image :
- The C<sub>2</sub>O matrix for a more textured and colored image :



FIGURE: Image to characterize

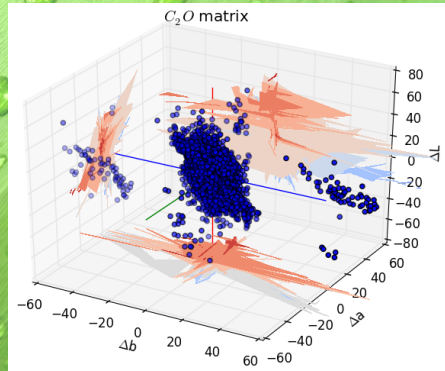


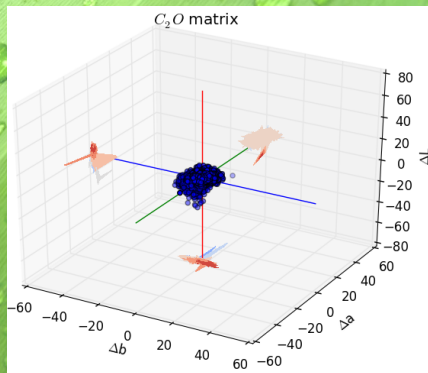
FIGURE: Signature

# C<sub>2</sub>O (3/4)

- The C<sub>2</sub>O matrix for a poorly textured image :
- The C<sub>2</sub>O matrix for a more textured and colored image :
- The C<sub>2</sub>O matrix for a more textured image :

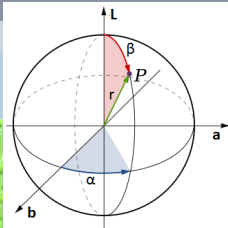


**FIGURE:** Image to characterize

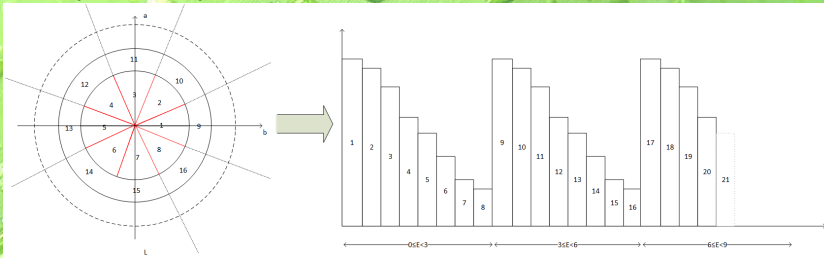


**FIGURE:** Signature

# $C_2O$ (4/4)

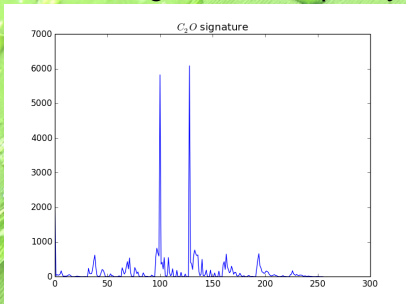
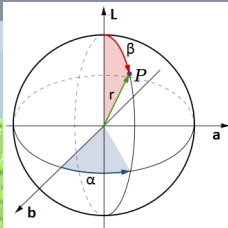


- The spherical quantization :



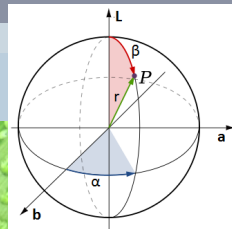
# C<sub>2</sub>O (4/4)

- The spherical quantization :
- The C<sub>2</sub>O signature for a poorly textured image :

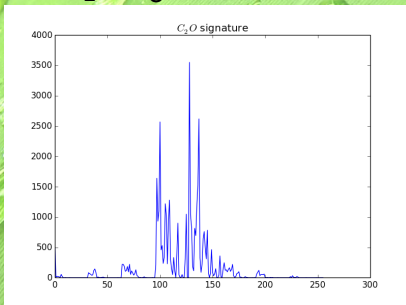




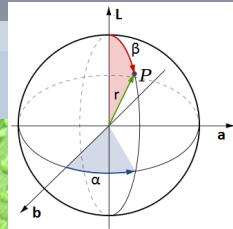
# C<sub>2</sub>O (4/4)



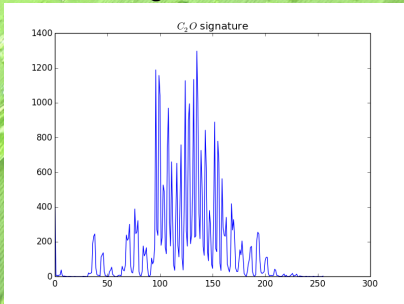
- The spherical quantization :
- The C<sub>2</sub>O signature for a poorly textured image :
- The C<sub>2</sub>O signature for a more textured image :



# C<sub>2</sub>O (4/4)



- The spherical quantization :
- The C<sub>2</sub>O signature for a poorly textured image :
- The C<sub>2</sub>O signature for a more textured image :
- The C<sub>2</sub>O signature for a more textured and colored image :



# Bag of word



# K-nn



# Result





# Discussion



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- 1 Introduction to the project context
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# Scheduling (1/2)

- The previsional forecast Gantt chart :

| ID | Task Name                                     | Start      | Finish     | Duration | mai 2015 |     |      |      |      |      |     | juin 2015 |  |
|----|---|------------|------------|----------|----------|-----|------|------|------|------|-----|-----------|--|
|    |   |            |            |          | 26/4     | 3/5 | 10/5 | 17/5 | 24/5 | 31/5 | 7/6 |           |  |
| 1  | Writing the state of the art                  | 27/04/2015 | 01/05/2015 | 1w       |          |     |      |      |      |      |     |           |  |
| 2  | Preparing the database                        | 01/05/2015 | 14/05/2015 | 2w       |          |     |      |      |      |      |     |           |  |
| 3  | Constitution of database structure            | 01/05/2015 | 04/05/2015 | 2d       |          |     |      |      |      |      |     |           |  |
| 4  | Calculation of SIFT descriptors               | 04/05/2015 | 08/05/2015 | 1w       |          |     |      |      |      |      |     |           |  |
| 5  | Calculation of SURF descriptors               | 08/05/2015 | 14/05/2015 | 1w       |          |     |      |      |      |      |     |           |  |
| 6  | Programming                                   | 14/05/2015 | 29/05/2015 | 2w 2d    |          |     |      |      |      |      |     |           |  |
| 7  | Programming C2O descriptor calculation        | 14/05/2015 | 20/05/2015 | 1w       |          |     |      |      |      |      |     |           |  |
| 8  | Programming the distance calculation function | 20/05/2015 | 26/05/2015 | 1w       |          |     |      |      |      |      |     |           |  |
| 9  | Writing of the technical documentation        | 26/05/2015 | 29/05/2015 | 4d       |          |     |      |      |      |      |     |           |  |
| 10 | Writing of the report                         | 29/05/2015 | 09/06/2015 | 1w 3d    |          |     |      |      |      |      |     |           |  |
| 11 | Preparation of the oral presentation          | 09/06/2015 | 15/06/2015 | 1w       |          |     |      |      |      |      |     |           |  |

- All time affectation done before the beginning of the project
- Rarely respected in important project

# Scheduling (2/2)

- The project backlog :

| SPRINT 5 <b>BACKLOG PRODUIT</b> |              |                           |  |            |            |   |          |         |                  |     |
|---------------------------------|--------------|---------------------------|--|------------|------------|---|----------|---------|------------------|-----|
| Sprint                          | Catégorie    | Sous catégorie            | Nom / Description                              | Importance | Estimation | Critères de Vérification                        | Acteur   | Status  | Notes            | Bug |
| 5                               | Dev Logiciel | Test                      | C2o - HULK                                     | 75         | ??         |   |          | A faire |                  |     |
| 5                               | Dev Logiciel | Test                      | SFT - calcul sur HULK                          | 75         | 1,5        |   | Ibrahima | A faire | Présent sprint 2 |     |
| 5                               | Dev Logiciel | Recherche documentaire... | classification - doc                           | 55         | 2          |   |          | A faire |                  |     |
| 5                               | Dev Logiciel | Redaction documentation   | CLEF metrics - doc                             | 65         | 0,5        | présentation équipe scientifique                | Thomas   | A faire |                  |     |
| 5                               | Dev Logiciel | Redaction documentation   | documentation sur le processus "complet"       | 60         | 1          | présentation à l'ensemble des acteurs du projet |          | A faire |                  |     |
| 5                               | Dev Logiciel | Redaction documentation   | SFT - doc                                      | 50         | 0,5        | présentation équipe scientifique                |          | A faire |                  |     |
| 5                               | Présentation |                           | Présentation - ecriture                        | 40         | 2          | présentation équipe scientifique                |          | A faire |                  |     |
| 5                               | Rapport      |                           | Ecriture du document final - synthèse des docs | 40         | 2          | présentation équipe scientifique                |          | A faire |                  |     |
| 5                               | Présentation |                           | Présentation - préparation                     | 30         | 2          | présentation à l'équipe pédagogique             |          | A faire |                  |     |
| 5                               | Dev Logiciel |                           | Procédure de validation                        | 60         | 2          |   |          |         |                  |     |
| 5                               | Dev Logiciel | Redaction documentation   | Analyse des résultats                          | 75         | 2          |   |          | A faire |                  |     |
| Total                           |              |                           |  | 15,5       |            |   |          |         |                  |     |

- Allow to change the affectation of a task
- Weekly time affectation : could be adapted to unforeseen

# Project gestion





# Our experience



# Outline

- 1 Introduction to the project context
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# Objectives



# Achieved work



# Problem encountered





## Personal point of view





Thanks for attention