AI Project 2: TAGGING

Rubén Reyes A. – 1382357

Marc Espinosa G. - 1495036

WHAT HAVE WE DONE?

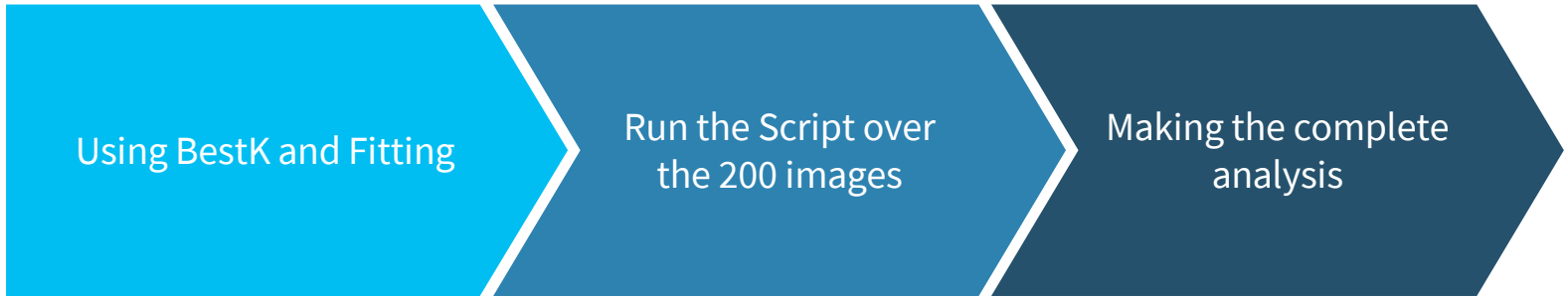
Algorithms Implementation

- K-Means Algorithm
- Labels Process
- Optional: BestK + Fitting

Complete analysis of 200 images

- We've designed a script to make the analysis
- We used "first" initialization
- We test with "single_thr" = 0,25 and 0,75
- The images given were ".png" in RGB
- We test a pair images to show deeper details
- We use global graphics to analyse all the information

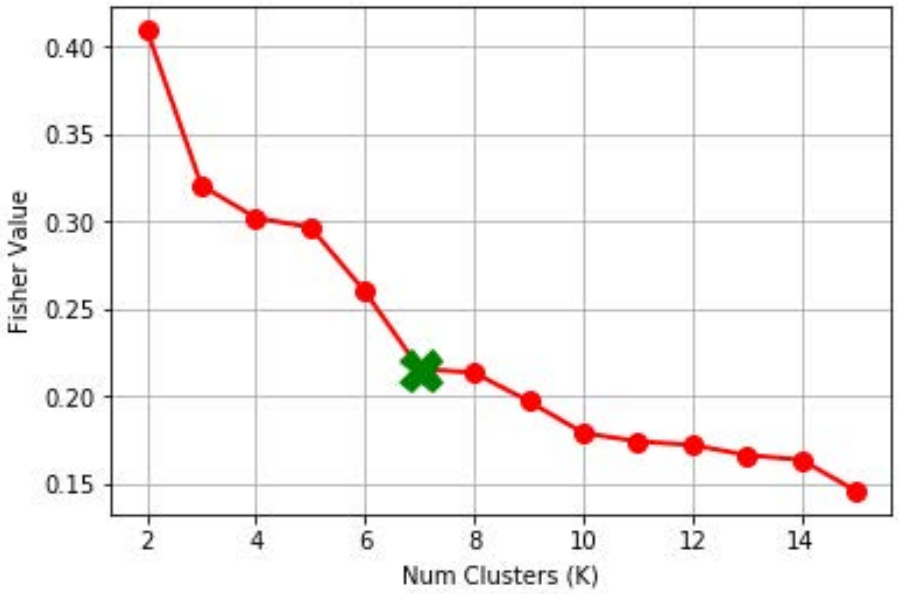
OUR PROCESS ROUTE



1.

HOW WE GOT BEST_K AND FITTING WORK ?

We used Best_K and Fitting to make the analysis



$$DiscriminantFisher = \frac{IntraClassDistance}{InterClassDistance}$$

This is the result of running BestK, Fitting and Plot_Results.

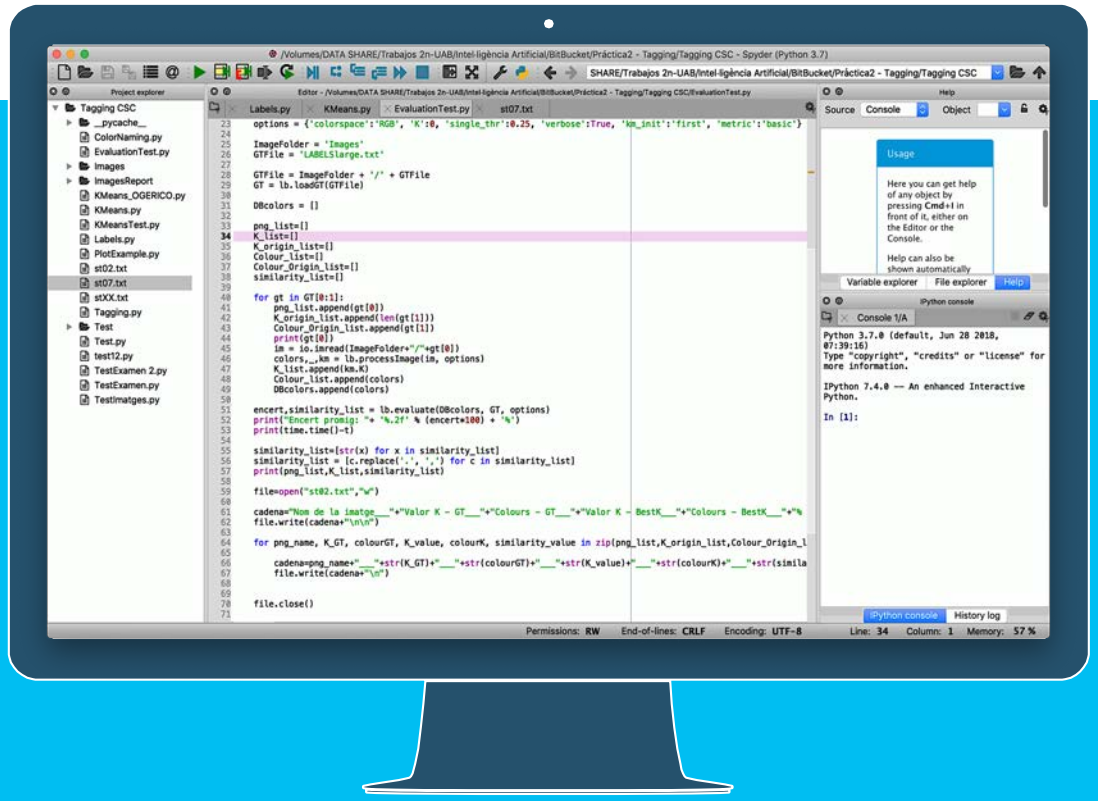
2.

HOW HAVE WE PREPARED EVERYTHING?

We’ve prepared an script to get all the results

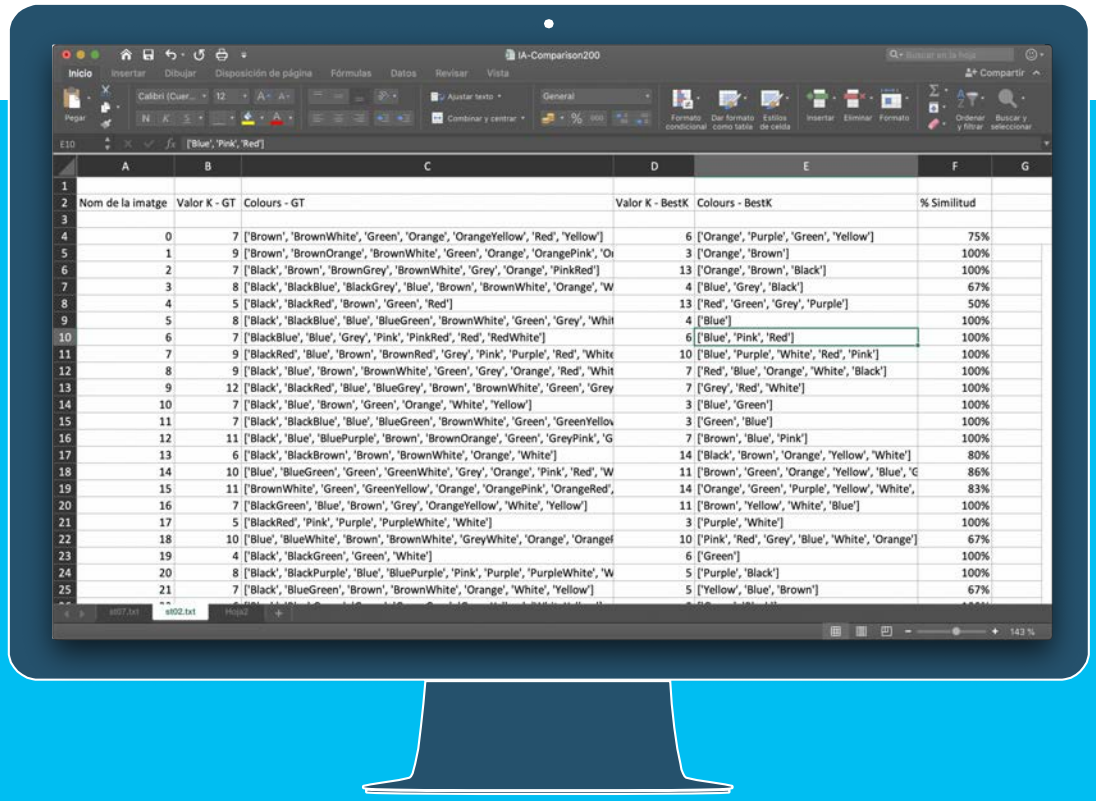
USING EVALUATIONTEST.PY

We modified the script to save all the results in .txt



USING EXCEL

And then, we managed all the data and we make different plots



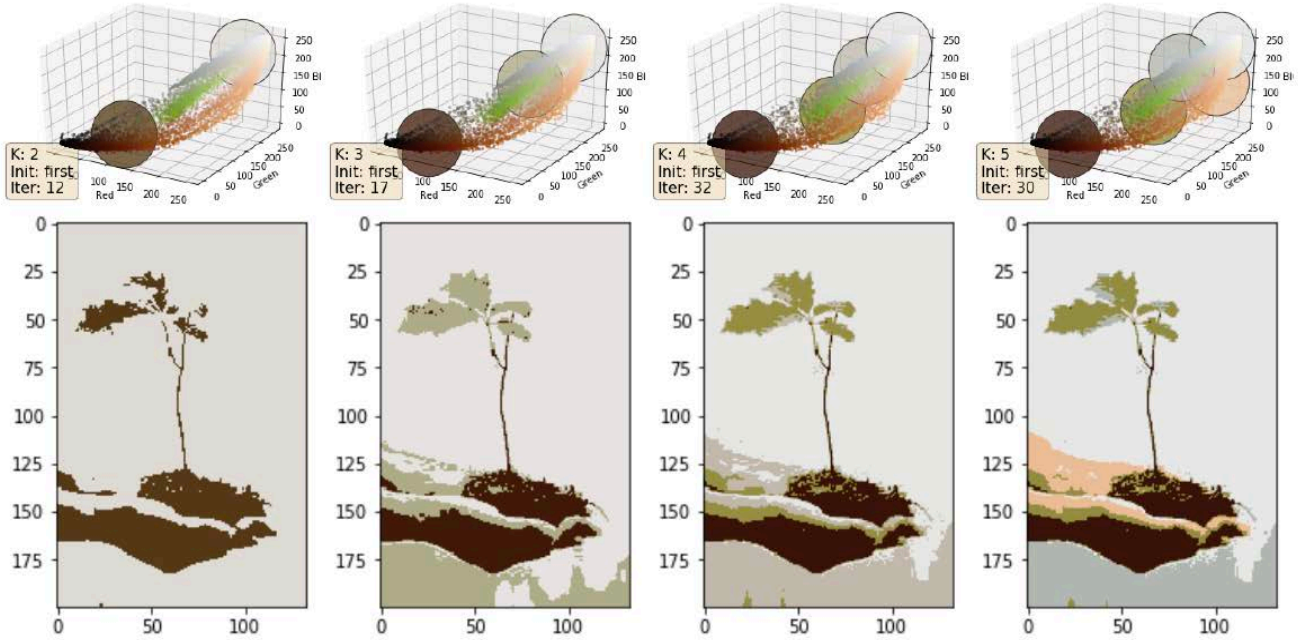
	A	B	C	D	E	F
1						
2	Nom de la imatge	Valor K - GT	Colours - GT	Valor K - BestK	Colours - BestK	% Similitud
3						
4	0	7	['Brown', 'BrownWhite', 'Green', 'Orange', 'OrangeYellow', 'Red', 'Yellow']	6	['Orange', 'Purple', 'Green', 'Yellow']	75%
5	1	9	['Brown', 'BrownOrange', 'BrownWhite', 'Green', 'Orange', 'OrangePink', 'O	3	['Orange', 'Brown']	100%
6	2	7	['Black', 'Brown', 'BrownGrey', 'BrownWhite', 'Grey', 'Orange', 'PinkRed']	13	['Orange', 'Brown', 'Black']	100%
7	3	8	['Black', 'BlackBlue', 'BlackGrey', 'Blue', 'Brown', 'BrownWhite', 'Orange', 'W	4	['Blue', 'Grey', 'Black']	67%
8	4	5	['Black', 'BlackRed', 'Brown', 'Green', 'Red']	13	['Red', 'Green', 'Grey', 'Purple']	50%
9	5	8	['Black', 'BlackBlue', 'Blue', 'BlueGreen', 'BrownWhite', 'Green', 'Grey', 'Whit	4	['Blue']	100%
10	6	7	['BlackBlue', 'Blue', 'Grey', 'Pink', 'PinkRed', 'Red', 'RedWhite']	6	['Blue', 'Pink', 'Red']	100%
11	7	9	['BlackRed', 'Blue', 'Brown', 'BrownRed', 'Grey', 'Pink', 'Purple', 'Red', 'White	10	['Blue', 'Purple', 'White', 'Red', 'Pink']	100%
12	8	9	['Black', 'Blue', 'Brown', 'BrownWhite', 'Green', 'Grey', 'Orange', 'Red', 'Whit	7	['Red', 'Blue', 'Orange', 'White', 'Black']	100%
13	9	12	['Black', 'BlackRed', 'Blue', 'BlueGrey', 'Brown', 'BrownWhite', 'Green', 'Grey	7	['Grey', 'Red', 'White']	100%
14	10	7	['Black', 'Blue', 'Brown', 'Green', 'Orange', 'White', 'Yellow']	3	['Blue', 'Green']	100%
15	11	7	['Black', 'BlackBlue', 'Blue', 'BlueGreen', 'BrownWhite', 'Green', 'GreenYellow	3	['Green', 'Blue']	100%
16	12	11	['Black', 'Blue', 'BluePurple', 'Brown', 'BrownOrange', 'Green', 'GreyPink', 'G	7	['Brown', 'Blue', 'Pink']	100%
17	13	6	['Black', 'BlackBrown', 'Brown', 'BrownWhite', 'Orange', 'White']	14	['Black', 'Brown', 'Orange', 'Yellow', 'White']	80%
18	14	10	['Blue', 'BlueGreen', 'Green', 'GreenWhite', 'Grey', 'Orange', 'Pink', 'Red', 'W	11	['Brown', 'Green', 'Orange', 'Yellow', 'Blue', 'G	86%
19	15	11	['BrownWhite', 'Green', 'GreenYellow', 'Orange', 'OrangePink', 'OrangeRed',	14	['Orange', 'Green', 'Purple', 'Yellow', 'White',	83%
20	16	7	['BlackGreen', 'Blue', 'Brown', 'Grey', 'OrangeYellow', 'White', 'Yellow']	11	['Brown', 'Yellow', 'White', 'Blue']	100%
21	17	5	['BlackRed', 'Pink', 'Purple', 'PurpleWhite', 'White']	3	['Purple', 'White']	100%
22	18	10	['Blue', 'BlueWhite', 'Brown', 'BrownWhite', 'GreyWhite', 'Orange', 'Orange	10	['Pink', 'Red', 'Grey', 'Blue', 'White', 'Orange']	67%
23	19	4	['Black', 'BlackGreen', 'Green', 'White']	6	['Green']	100%
24	20	8	['Black', 'BlackPurple', 'Blue', 'BluePurple', 'Pink', 'Purple', 'PurpleWhite', 'W	5	['Purple', 'Black']	100%
25	21	7	['Black', 'BlueGreen', 'Brown', 'BrownWhite', 'Orange', 'White', 'Yellow']	5	['Yellow', 'Blue', 'Brown']	67%

3.

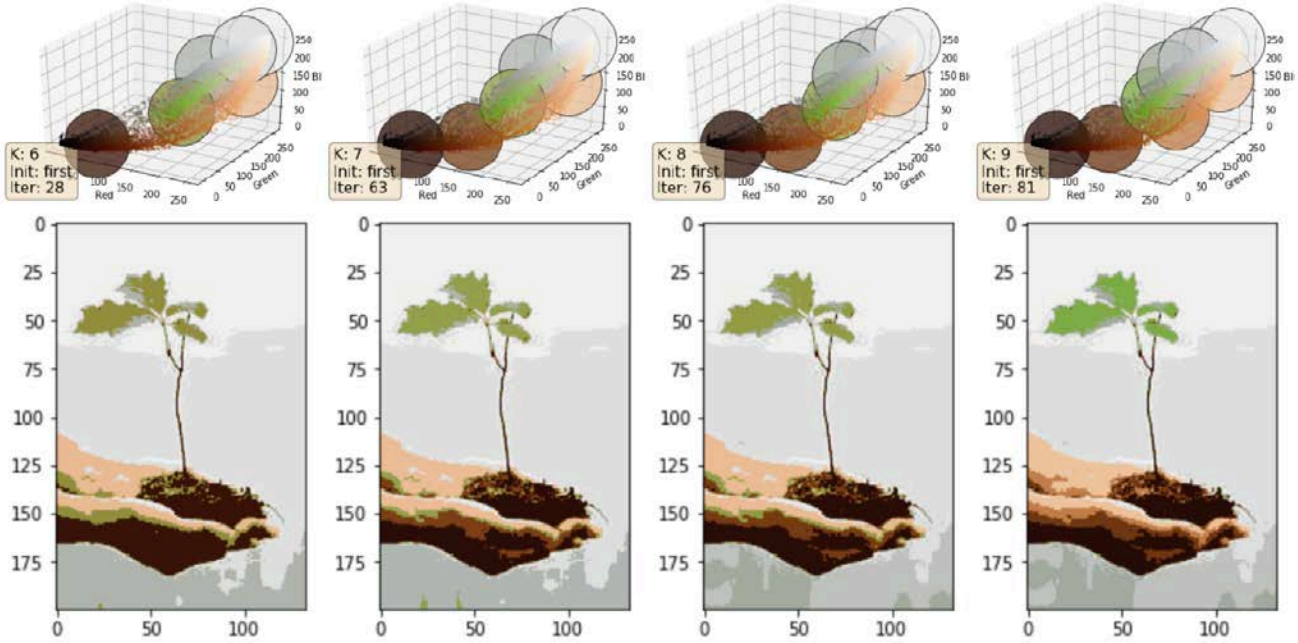
EXAMPLE OF THE ANALYSIS

This example has been done with all the images to get the information

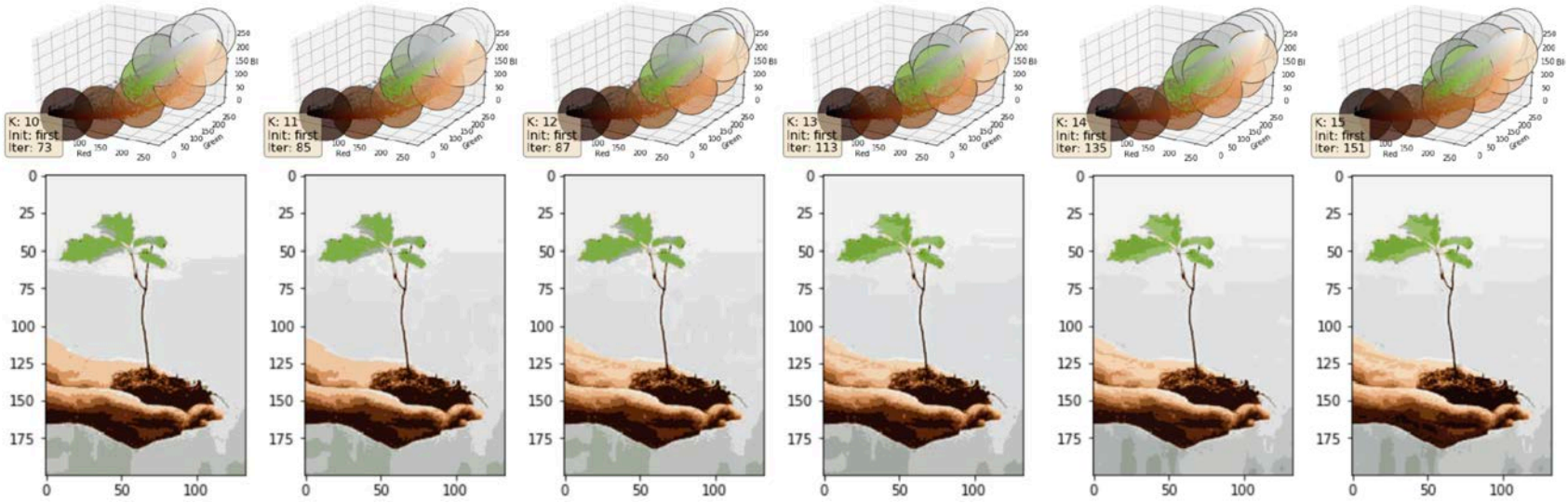
EXAMPLE OF THE ANALYSIS



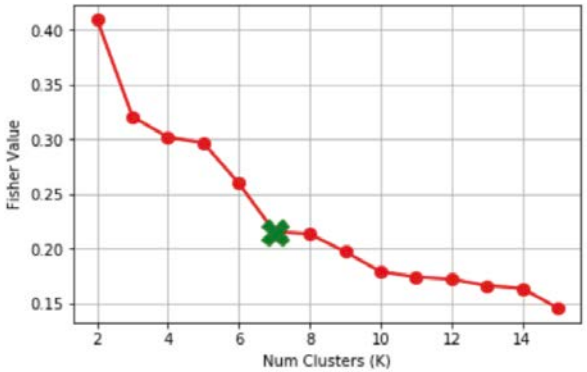
EXAMPLE OF THE ANALYSIS

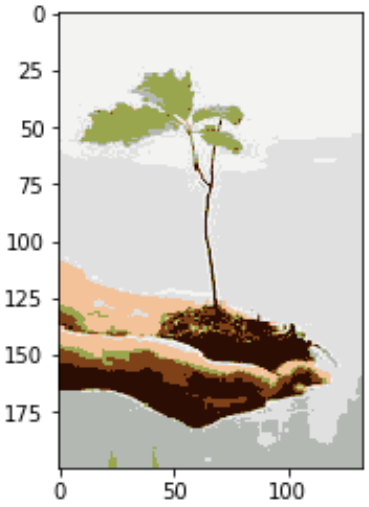


EXAMPLE OF THE ANALYSIS

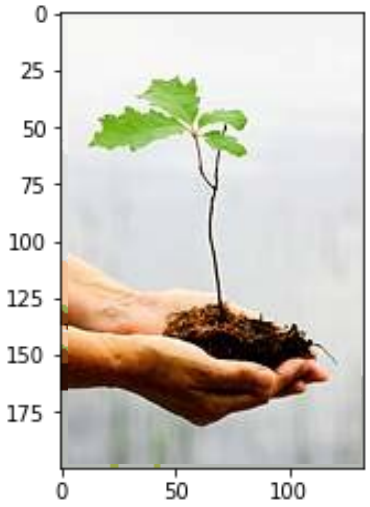


EXAMPLE OF THE ANALYSIS





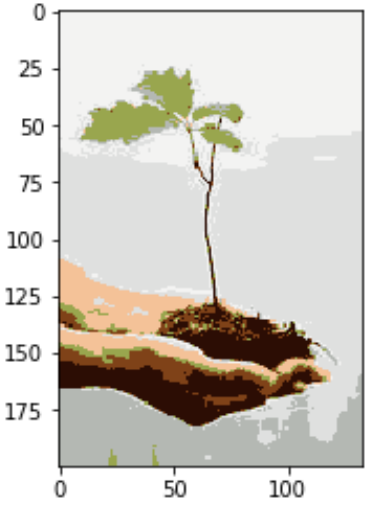
K=7 – Image Execution



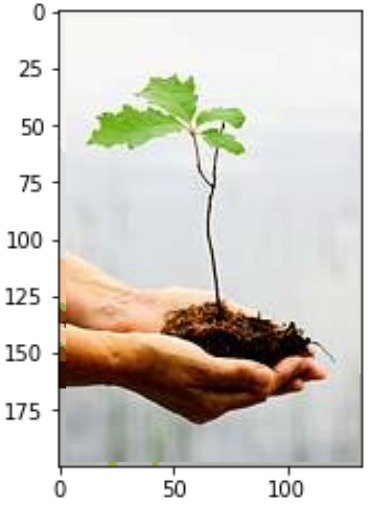
Original Image

EXAMPLE OF THE ANALYSIS

Single_thr	**0,25**	**0,75**
Colours Detected	**['Brown', 'Orange', 'White', 'Grey', 'Green']**	**['Brown', 'Orange', 'White', 'Grey', 'Green', 'BrownRed']**
% Similarity	**100%**	**83%**
Details GT	**['Black', 'Brown', 'BrownWhite', 'Green', 'Grey', 'GreyWhite', 'Orange', 'White']**	



K=7 – Image Execution



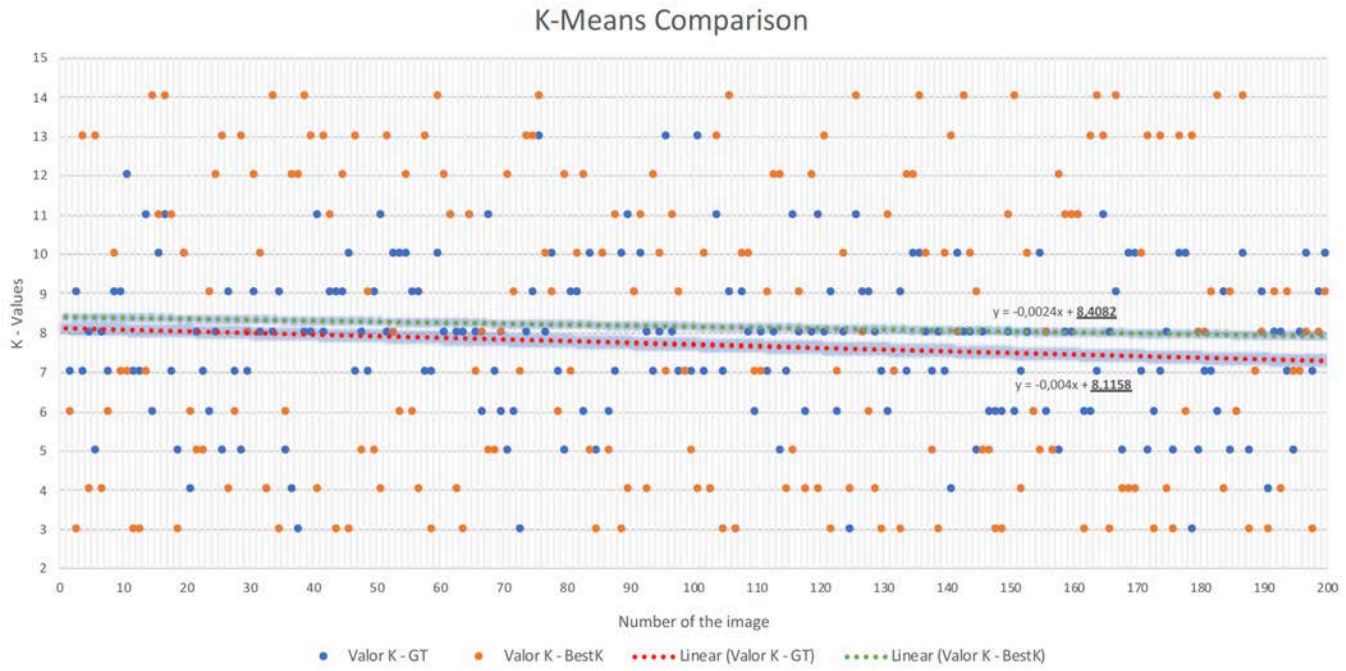
Original Image

4.

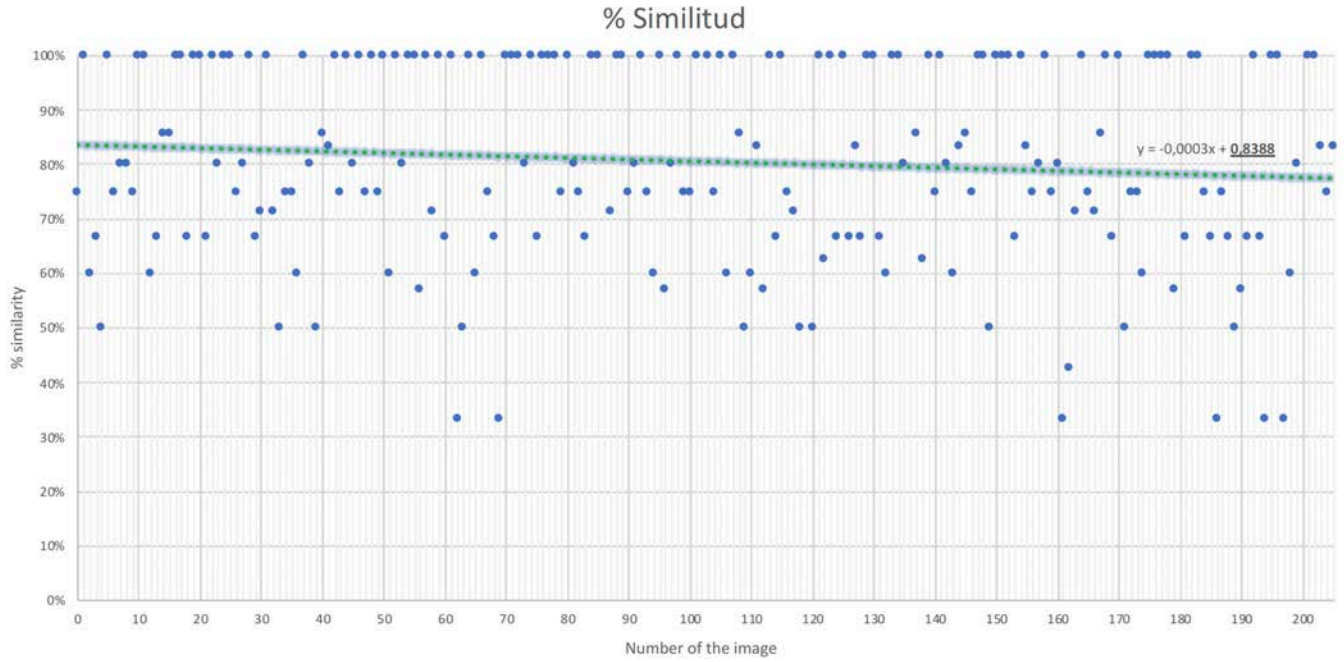
RESULTS OF THE GLOBAL ANALYSIS

- % Similarity
- K-Means Comparison (GT - BestK)

GLOBAL ANALYSIS (K-Means Comparison)

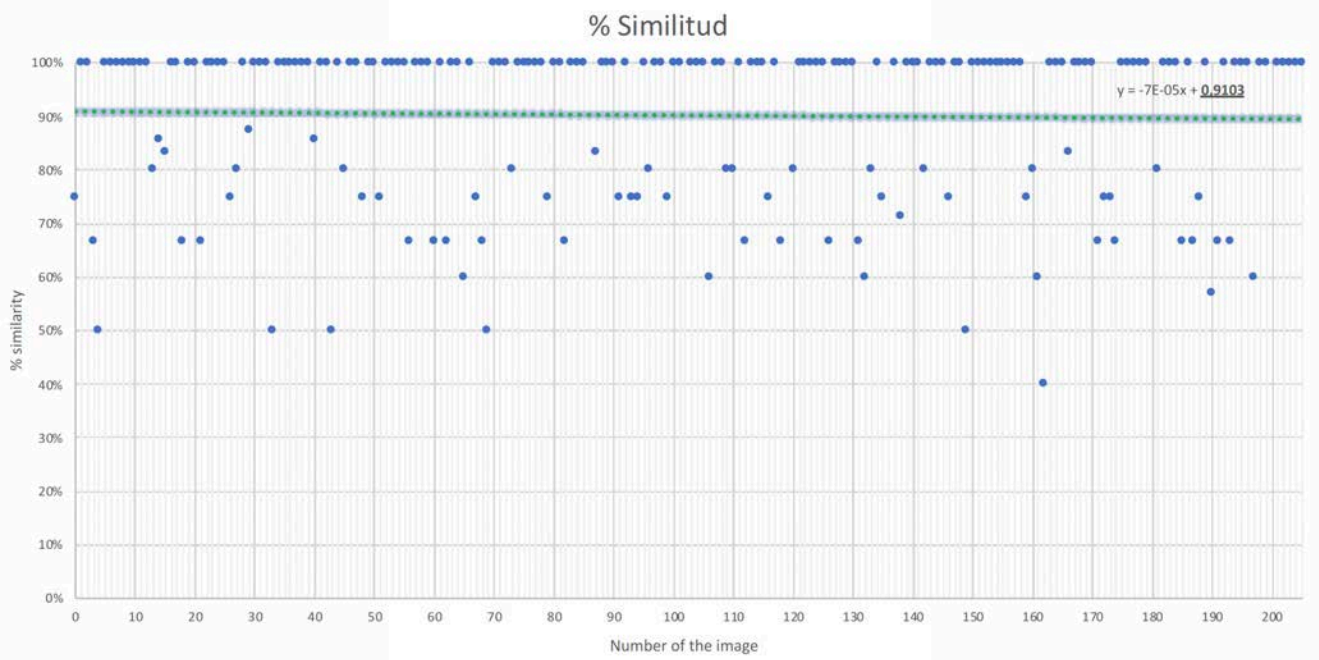


GLOBAL ANALYSIS (Similarity – 0,75)



84%

GLOBAL ANALYSIS (Similarity – 0,25)



91%

5.

CONCLUSIONS OF THE PROJECT

- A lot of working hours invested
- More knowledge about programming AI
- Learn about making a complete analysis

AI Project 2: TAGGING

Any questions?