OpenCV – Drawing in images

Introduction

The goal of this lecture is to understand how you can draw primitives in images with OpenCV.

Documents

- https://docs.opencv.org/4.5.4/d6/d6e/group__imgproc__draw.html
- https://docs.opencv.org/4.5.4/d3/d96/tutorial_basic_geometric_drawing.html
- https://docs.opencv.org/4.5.4/df/d61/tutorial_random_generator_and_text.html

Exercise 1: Basic drawing

Create an empty 800x800 white image and draw on it:

- a line
- a circle
- a rectangle
- an ellipse
- a filled polygon
- a text

Save the result in a *png* file.

Exercises 2: Synchronized drawings in multiple images

Design and define a class which will allow you to draw simultaneously one primitive in a set of images.

The class named *MultiDrawing* will contain:

these attributes:

- *images*: A vector of cv::Mat which will contain all the images where you will draw primitives in parallel.
- *currentColor*: the current color (red by default).
- *currentThickness*: the current thickness (2 by default).
- *currentLineType*: the current Line type (LINE_AA by default).

these methods:

- *AddImage* (const String & filename); //read a color image and store the corresponding cv::Mat object in the vector of images.
- *RemoveAllImages* (void); //remove all the images associated with your object.
- *DisplayAllImages (void); // display simultaneously all the images with one window for each of them.*
- *SetCurrentColor (???);*
- *SetCurrentThickNess (???);*
- *SetCurrentLineType (???);*
- *??? GetCurrentColor (void);*

- *??? GetCurrentThickness (void) ;*
- *??? GetCurrentLineType (void) ;*
- *DrawLines* (Point pt1, Point pt2);
- *DrawCircles* (Point center, int radius);
- *DrawRectangles* (Point pt1, Point pt2);
- *DrawTexts* (const String & text, Point org, int fontFace, double fontScale);

Each time you will call a method with a name beginning with *Draw* it will draw the corresponding primitive with the current color, current thickness, and current line type in all the images of the object.

Here an example of main you may have:

```
int main ( void )
{
      MultiDrawing obj;

      obj.AddImage ( “test1.tif” );
      obj.AddImage ( “test2.jpeg” );
      obj.AddImage ( “test3.png” );

      obj.SetCurrentColor ( ??? (blue color) );
      obj.DrawRectangles (Point (10, 10), Point (200, 200) );
      obj.DrawLiness (Point (10, 10), Point (200, 200) );

      obj.SetCurrentColor ( ??? (green color) );
      obj.DrawTexts (“Toto n’aime pas la soupe”, ??? );

      obj.DisplayAllImages ();

      return 0;
}
```