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Group – 407

For task – 1

The approach was to extract the square of sudoku as accurate as possible even when is rotated.

I used a resize first to reduce to acceptable size, applied gaussian blur, adaptive thresholding and got the biggest square contour that encased the sudoku.

The next step was to rotate images that are not in a straight perspective by using the 15th hough line degrees to left or to the right, depending on the line radians.

Next step was to extract the squares of the sudoku, using adaptive thresholding and contour.

In case of not all squares being present I created an alghoritm to see if there are enough squares, if not to generate them by using distance between sorted squares of the y and generate depending of the position of it.

Then I used the image to see if in that square extracted contains a number ot not by applying first bitwise transformation and counting of the pixels in the image, I find index of the square by dividing by length of the square of sudoku and apply transformation if it goes out of bounds.

For task 2

The same approach for the first was to extract the sudoku and write a rectangle to delimitate sudoku zone.

Next step was to segmentate the image based on proeminent lines.

First step was to apply bitwise not, threshold them binary.

Next step was to apply bitwise not again, to revert and apply dilatation and erodion to keep the proeminent lines and to bring them more in image.

After I applied again bitwise not and used gaussian blur and thresholding with otsu to keep only the elements that can define our desired bounding contours.

By using approxPoly and a specific epsilon, I was able to bring the segmentation, next step was to sort by the index of the start square of the segmentation being able to label from 1 to 9 segments of the jigsaw.

The next steps was to get the squares and sort them by index of the cells.

For squares I verified in which contours is the start of the point and used the same method of veryfing if is a number in cell.

In some casses I left a fail safe, in case wit the default parameters dont work, to use another set of params to work out.