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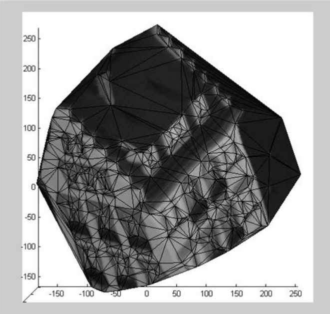
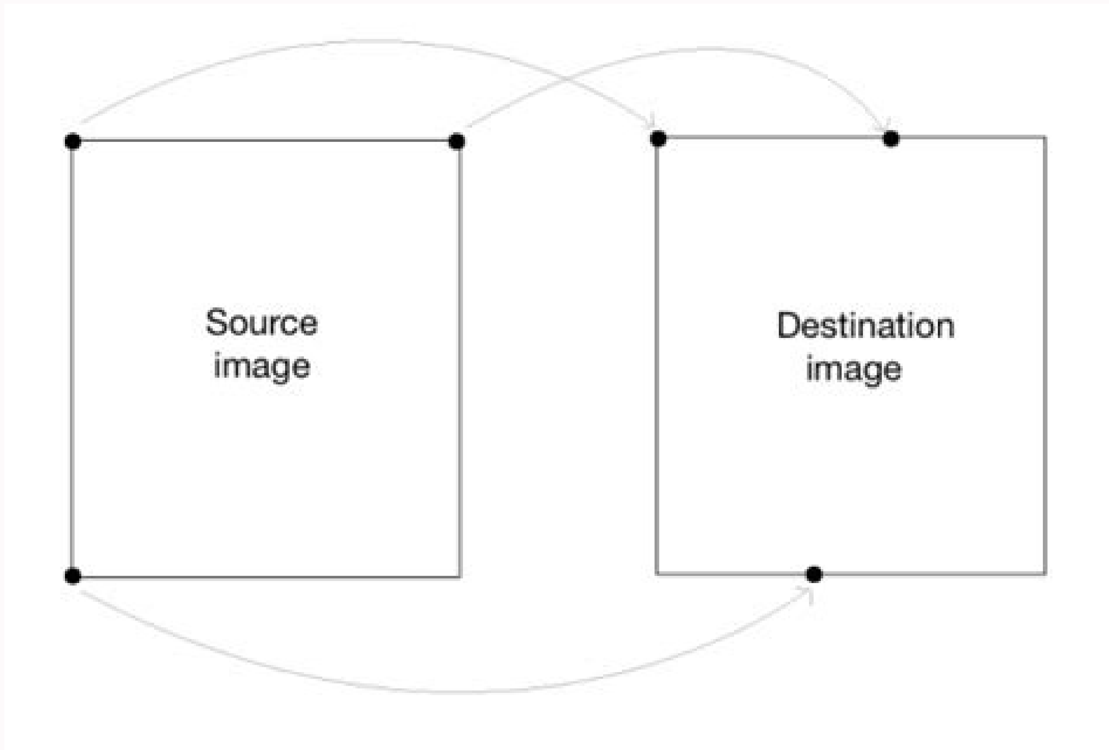
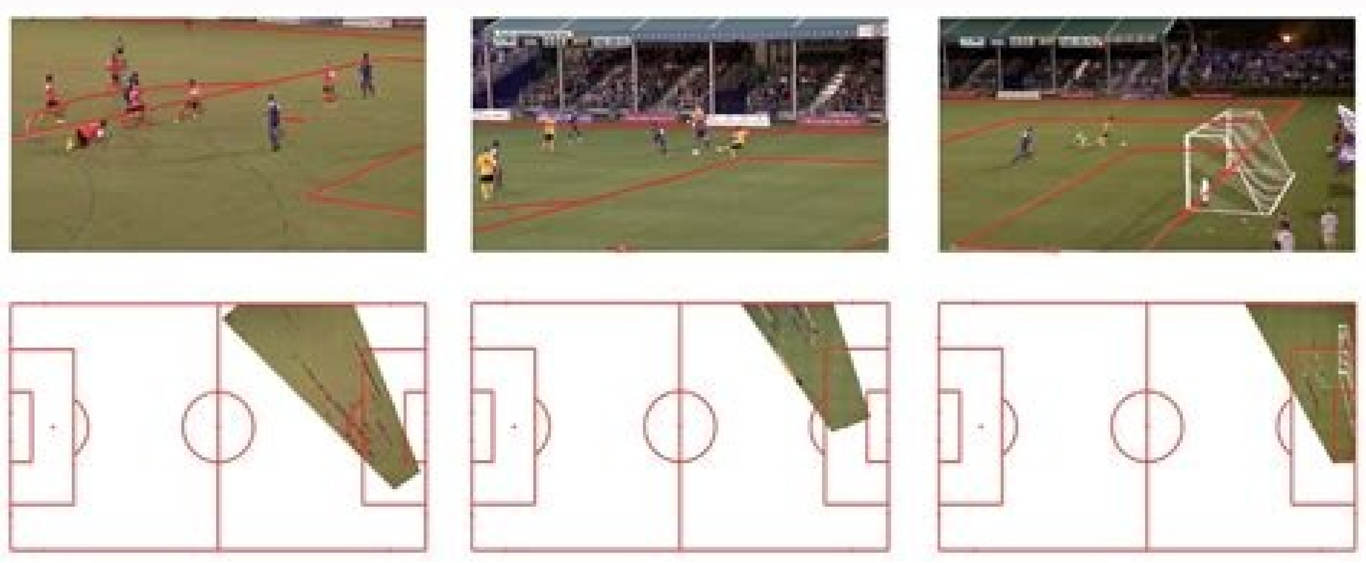
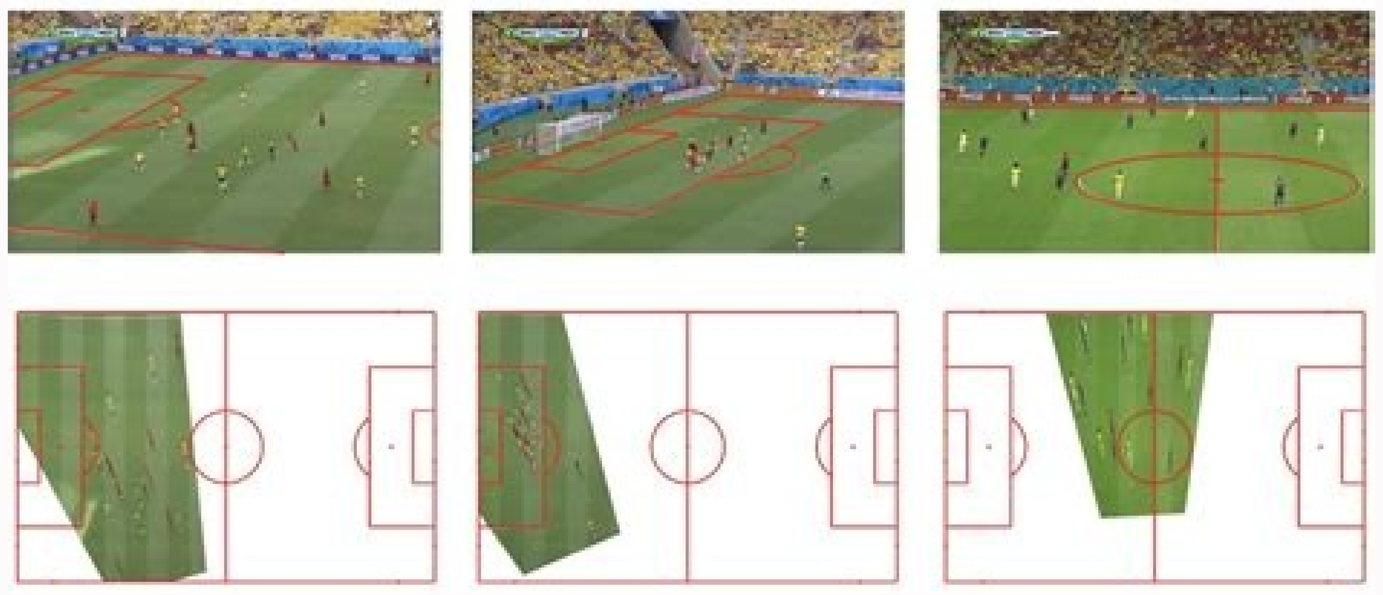
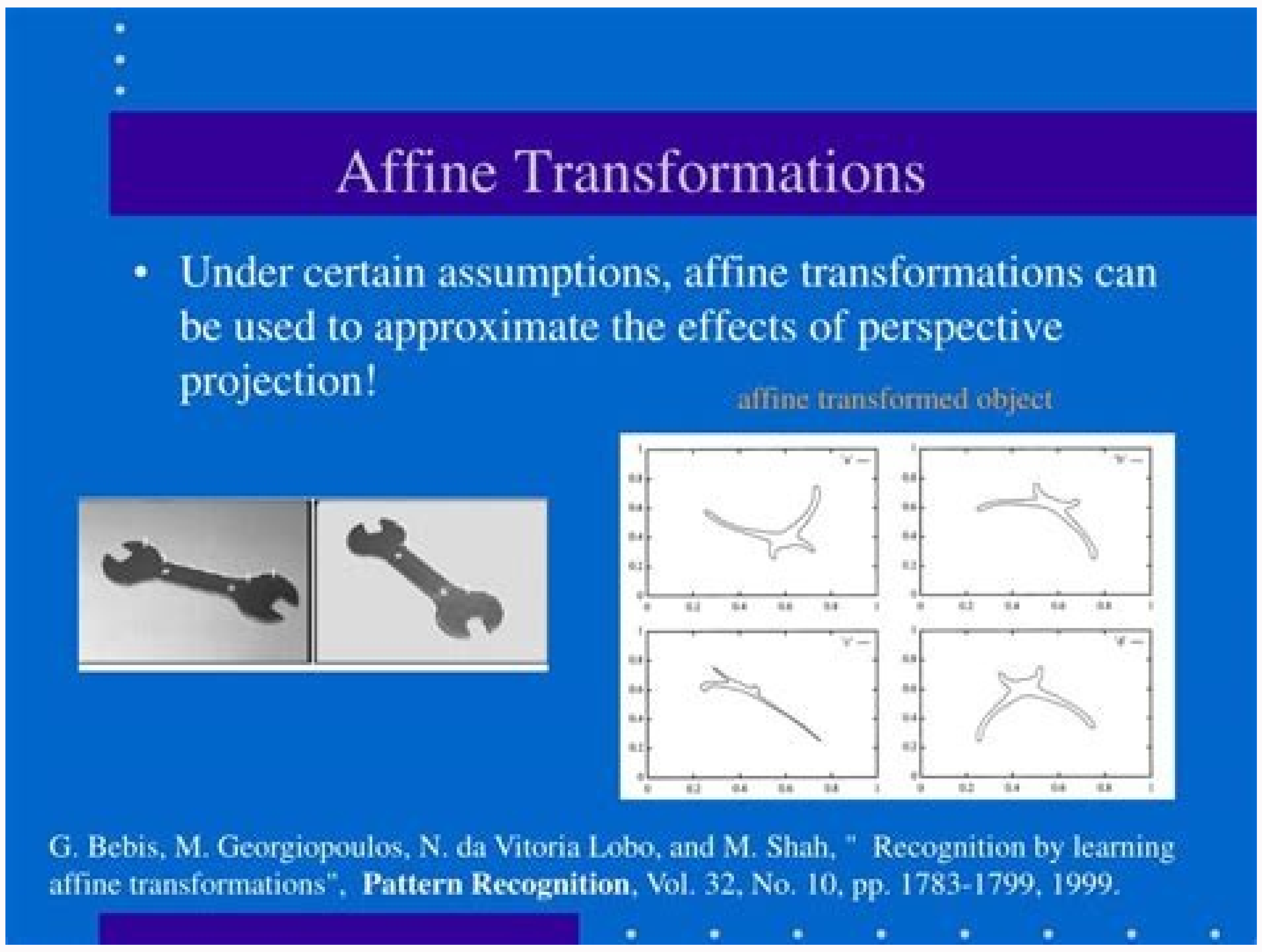
Opencv affine transformation 3d

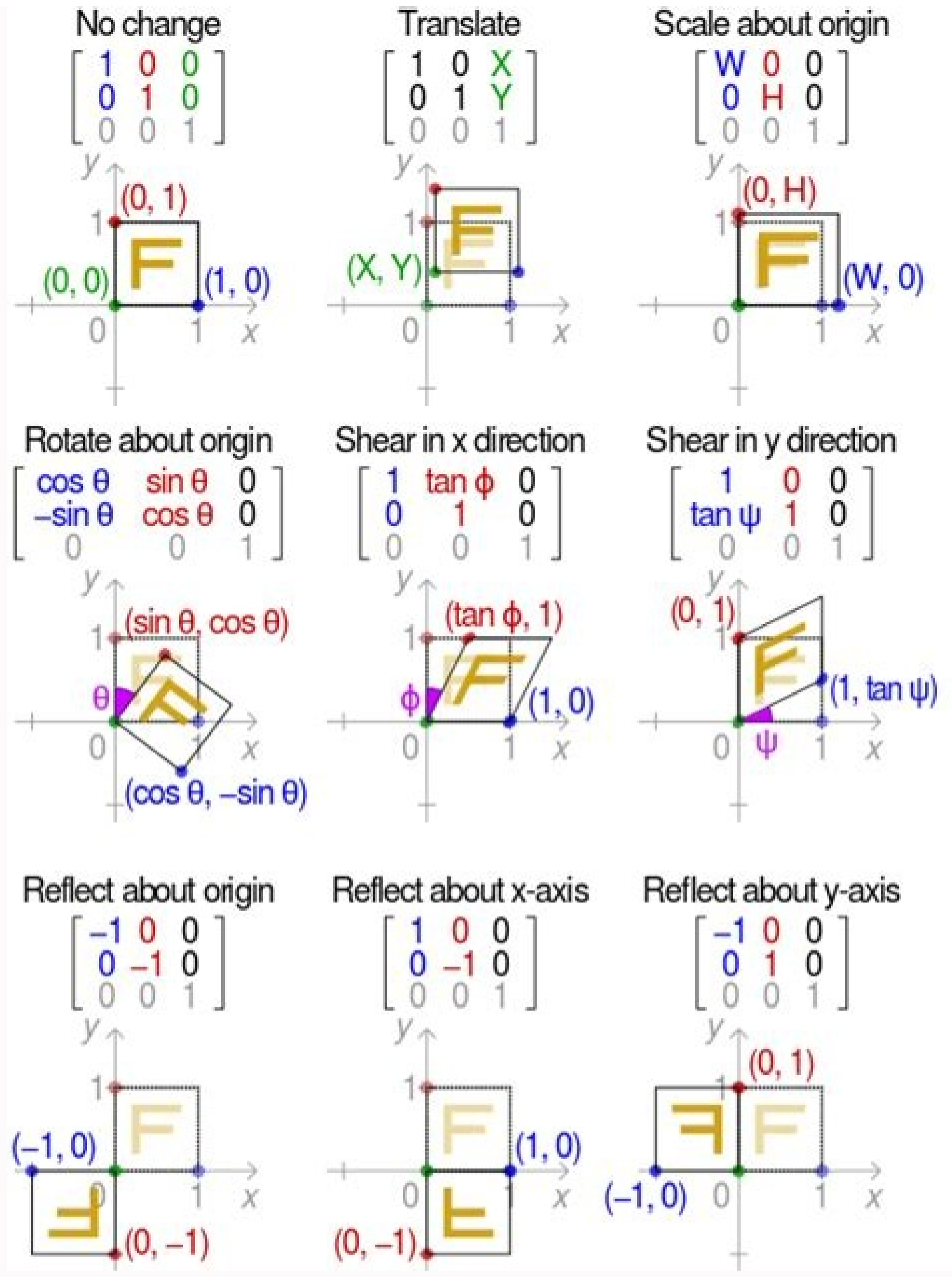












I think a 3D refined transformation should include resizing / cutting in 3 dimensions (I.E. X, Y, Axis Z). From the above, we can use a refined transformation to express: rotations (linear transformation) Translations (vector addition) operations on the scale (linear transformation) can be seen that, in essence, a refined transformation represents a relationship between two images. We use the CV function :: Warpaffine for this purpose. OpenCV Documentation Objective In this tutorial you will learn how: theory What is a refined transformation? We said that a refined transformation is fundamentally a relationship between two images. Remember width = number of columns and height = number of rows. If you know the movement in the direction (x, y), let it be, you can create the transformation matrix as follows: you can transmit it to a nnpy matrix of type np.float32 and pass it in the cv2.warpaffine () function. See the result: The rotation of an image for a corner is obtained from the module transformation matrix but OpenCV provides resized rotation with adjustable rotation center so you can rotate in any position you prefer. The information on this report can come, approximately, in two ways: we know both (x) and we also know that they are related. See a example for a displacement of (100.50): Import import CV2 NUMPY as NP IMG = CV2.imread ('Messi5.jpg', 0) Rows, Cols = img.Shape M = np.Float32 ([[1 , 0,100], [0,1,50]]) dst = cv2.warpaffine (img, m, (cols, rows)) cv2.imshow ('img', dst) cv2.waitkey (0) cv2.destroyallwindows () WARNING The third argument of the CV2.Warpaffine function () is the size of the output image, which should be in the form of (width, height). [begin {split} a = begin {bmatrix} a_ {00} e {01} \} A_ {01} e A_ {11}} end {Bmatrix} _ {2 \ volte 2} B = \ Begin {BMatrix} B_ {00}}} {10} \ end {Bmatrix} _ {2 \ volte 1} \ end {split} \] \ [\ begin {split} m = \ begin {bmatrix} A & B \ fine {bmatrix} = \ begin {bmatrix} A_ {00} e A_ {01} & B_ {00}}} A_ {10} e A_ {11} {11} b_ {10} end {bmatrix} _ {2 per times 3} end {split}] Considering that we want to transform a vector 2D (x = begin {bmatrix} x Using (A) and (B), we can do the same with: cdot [x, y, 1] ^ {t}) [begin {split} t = begin {bmatrix} a_ {00} x + a_ {01} y + b_ {00} a_ {10 } X + a_ {11} y + b_ {10} end {bmatrix} end {split} How do we get a similar transformation? You will see these functions: CV2.getPerspectiveTransform OpenCV offers two transformation functions, CV2.Warpaffine and CV2.WarPPerspective, with which you can have all types of transformations. The usual way to represent a refined transformation is using a matrix (2 times 3). You can also download it here #include "openc2 / imgcodecs.hpp" #include "openc2 / highgui.hpp" #include "openc2 / imgproc.hpp" #include using the namespine cv; Using the STD namespace; CONST CHAR * SOURCE_WINDOW = "Source Image"; CONST CHAR * WARP_WINDOW = "WARP"; CONST CHAR * WARP_ROTATO_WINDOW = "WARP + ROTATI"; main int (int, char ** argv) {point2f stirctri [3]; Point2F dstrtre [3]; MAT ROT_MAT (2, 3, CV_32FC1); Mat warp_mat (2, 3, CV_32FC1); MAT SRC, WARP_DST, WARP_ROTATE_DST; src = imread (argv [1], imread_color); warp_dst = mat :: zeros (src.rows, src.cols, src.type ()); streets [0] = point2f (0.0); STRTRI [1] = point2f (src.cols - 1.f, 0); STRTRI [2] = Point2F (0, SRC.ROWS - 1.F); DStters [0] = point2f (src.cols * 0.0f, src.rows * 0.33f); DStters [1] = point2f (src.cols * 0.85f, src.rows * 0.25f); Dstrtri [2] = point2f (src.cols * 0.15f, src.rows * 0.7f); warp_mat = getefferetransform (strikes, dstrtre); WARPAFFINE (SRC, WARP_DST, WARP_MAT, WARP_DST.SIZE ()); Central point = point (warp_dst.cols / 2, warp_dst.rows / 2); double angle = -50.0; Double scale = 0.6; rot_mat = getrationmatrix2d (center, angle, warpaffine (warp_dst, warp_rotata_dst, rot_mat, warp_dst.size ()); namedwindow (source_window, (source_window,); IMSHOW (SOURCE_WINDOW, SRC); namedwindow (warp_window, window_autosize); IMSHOW (WARP_WINDOW, WARP_DST); namedwindow (warp_rotato_window, window_autosize); IMSHOW (WARP_ROTATO_WINDOW, WARP_ROTATO_DST); Westkey (0); Return 0; } Explanation declare some variables that we will use, like matrices to store our results and 2 arrays of points to store 2D points that define our affine transformation. See the code below: img = cv2.imlead ('sudokusmall.png') lines, cols, ch = img.shape pts1 = np.float32 ([[56.65], [368.52], [28.387], [389.390]]) PTS2 = NP.FLOAT32 ([[0.0], [300.0], [0.300], [300.300]]) m = cv2.getperspectiveTransform (PTS1, PTS2) DST = CV2.Warperspective (IMG , M, (300,300)) PLT.SUBLOT (121), PLT.IMSHOW (IMG), PLT.TITLE ('INPUT') PLT.SUBLOT (122), PLT.IMSHOW (DST), PLT.TITLE ('Output') PLT.SHOW () Result: Ã ¢ â,¬ "Vision per computer: algorithms and applications', Richard Szeliski Ã, © Copyright 2016, Eastwillow. OpenCV-Python Tutorial Learn to apply different geometric transformation to images like translation , rotation, transformation aged, etc. A transformation that can be expressed in the form of multiplication to the matrix (linear transformation) followed by a vector addition (translation). The preferable interpolation methods are cv2.Inter_Area per narrowing and cv2.inter_cubic (Slow) & CV2.inter_linear for zoom. from I look at: STRTRI [0] = Point2F (0, 0); STRTRI [1] = point2f (src.cols - 1, 0); STRTRI [2] = point2f (0, src.rows - 1); DStters [0] = point2f (src.cols * 0.0, src.rows * 0.33); DStters [1] = point2f (src.cols * 0.85, src.rows * 0.25); dstrtre [2] = point2f (src.cols * 0.15, src.rows * 0.7); You may want to draw these points to get a better idea on how they change. So our task is to find (m) we know (m) and (x). However, there is no accepted answer and I don't understand the only answer there. This is Duplicate question of OpenCV: rigid transformation between two clouds to 3D points. Built with sphinx using a theme provided by Read Read Read Documents. I am confused that the reason why the answer in the post to say "This is why you don't have an option to set a rigid 3D refined transformation, because you are already running one" I should have commented on the original post but I It cannot be due to the requirement of reputation. CV2.Warpaffine takes a 2x3 transformation matrix while CV2.Warperspective takes a 3x3 transformation matrix as input. To find the transformation matrix, we need three points from the input image and their corresponding positions in the output image. To find this transformation matrix, it is necessary 4 points on the input image and the corresponding points on the output image. WARPAFFINE (WARP_DST, WARP_ROTATO_DST, ROT_MAT, WARP_DST.SIZE ()); Finally, we show our results in two Windows more the original image for a good fit: NamedWindow (Source_Window, Window_Autosize); IMSHOW (SOURCE_WINDOW, SRC); namedwindow (warp_window, window_autosize); IMSHOW (WARP_WINDOW, WARP_DST); namedwindow (warp_rotato_window, window_autosize); IMSHOW (WARP_ROTATO_WINDOW, WARP_ROTATO_DST); We just need to wait for the user to come out of the Waitkey program (0); Result After completing the code above, we can give him the path of an image as a topic. This rotation is compared to the image center awaits that the user comes from the program the tutorial code is shown below. Among these 4 points, 3 of them should not be collinear. The only answer says that resizing and shearing can have different meaning in the higher size and provides an example that 2D resizing is 3D translation. The straight lines will be straight even after the transformation. To obtain (t) we only need to apply (T = M CDOT X). Then apply CV2.Warperspective with this 3x3 processing matrix. Loads Apply a similar transformation on the image. It is possible to note that the size and orientation of the triangle defined by the 3 points change. A 3D rigid transformation should only have translation and e In 3 dimensions. Check under the example and also look at the points I selected (which are marked in green color): img = cv2.imlead ('drawing.png') lines, cols, ch = img.shape pts1 = np.float32 ([[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[[50,50], [200,50], [50.200]]] pts2 = np.float32 ([[10,100], [200,50], [100,250]]) m = cv2.getaffinetransform (pts1, pts2) dst = cv2.warpaffine (img, m, (cols, lines)) plt.sublot (121), plt.imshow (img), plt.title ('input ') Plt.sublot (122), plt.imshow (dst), plt.title (' output ') plt.show () See the result: for perspective transformation, a 3x3 transformation matrix is required. Apply a rotation The image after being transformed. OpenCV is supplied with a CV2.Resize () function for this purpose. For example, for an image as: after applying the first affine transformation obtaining: and finally, after applying a negative rotation (Remember that the negative means in â €

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