**CS-7390 - Breakout room assignment - 1**

**November 2, 2020**

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1. **What OpenCV function is used to generate an affine transformation?**

**getAffineTransform**

1. **How many corresponding pairs are required as input?**

**3**

1. **What is the dimension of the matrix returned by (1)?**

**3 x 3**

1. **What values are returned for these points?**

**[0.8533333572686888, 0.1505882412779565, 0;**

**-0.08031373865464154, 0.3714509552600337, 84.48000335693359]**

1. **What function is used to apply a transformation to an image?**

**warpAffine**

1. **What transformation is applied to the purple circles?**

**Shear transformation**

1. **Modify the program to explicitly create**

**cv:Mat warp\_mat = (Mat\_<double>(2,3) << a,b,c,d,e,f);**

**What values can you provide for a,b,c,d,e,f to move the image 1/4 of the way to the left and 1/2 of the way down in the window?  Provide a screenshot.**

**double a = 1.0;**

**double b = 0.0;**

**double c = -64.0;**

**double d = 0.0;**

**double e = 1.0;**

**double f = 128.0;**

Graphical user interface, application

Description automatically generated

1. **Change a b c d e f to recreate this same rotation with your image.  Take a screen shot.**

**double a = cos(M\_PI/4);**

**double b = -sin(M\_PI/4);**

**double c =0;**

**double d =sin(M\_PI/4);**

**double e =cos(M\_PI/4);**

**double f = 1.0;**

Graphical user interface, application

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**(9) Where is the center of rotation in 8?**

**Top left corner**

**(10) Why are the purple circles NOT staying with the corners of the image?**

**Because we hardcoded the points in the desTri brlow.**

**for( int i = 0; i < 3; ++i ) {**

**cv::circle(dst, dstTri[i], 5, cv::Scalar(255, 0, 255), -1, cv::LINE\_AA);**

**}**