OpenCV Core Module Worksheet

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Activity One

(a) Write a program using OpenCV that displays on the console the result of the following equation:

$$R = \begin{bmatrix} 0.866 & -0.500 & 0 \\ 0.5 & 0.866 & 0 \\ 0 & 0 & 1 \end{bmatrix} \times \begin{bmatrix} 1.0 & 0.0 & 0.0 \\ 0.0 & 1.0 & 0.0 \\ 0.0 & 0.0 & 1.0 \end{bmatrix}$$

(b) Write a program using OpenCV that displays on the console the value of the following matrix at point (1,2):

$$A = \begin{bmatrix} 0.866 & -0.500 & 0.000 & 10.000 \\ 0.500 & 0.866 & 0.000 & 5.100 \\ 0.000 & 0.000 & 1.000 & 0.000 \\ 0.000 & 0.000 & 0.000 & 1.000 \end{bmatrix}$$

Activity Two

Write a program using OpenCV that instantiates the following Matrix:

$$F = \begin{bmatrix} 0.866 & -0.500 & 0 \\ 0.5 & 0.866 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

(a) Using OpenCV's cv::copyTo() function, copy F to a new cv::Mat object, G.

(b) Change F's contents and display it and G on the console. Are F and G the same?

(c) Using OpenCV's cv::clone() function, clone F to a new cv::Mat object, H.

(d) Change F's contents and display it and H on the console. Are F and H the same?

Activity Three

(a) Write a program using OpenCV that reads in an image, halves its width and height, and then saves the changed image.