CS 7650 – Digital Image Processing

Assignment 3 – Image Transformations for Data Augmentation

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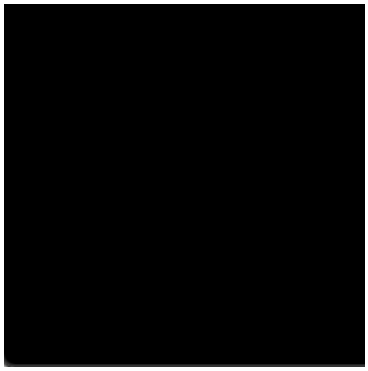
Abstract

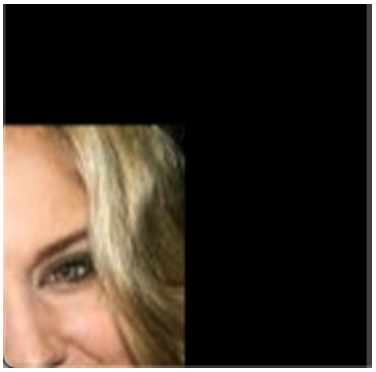
This assignment's purpose was to familiarize ourselves with image transformations using built in functions in OpenCV.

PART 1
Translate by (tx, ty) (10 points)

Input Image

Output Images



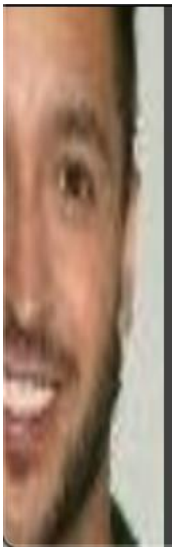


PART 2

Crop and Scale/Resize, upper left crop location and crop region size (15 points)

Input Image

Output Images



PART 3
Vertical-Flip about y-axis (10 points)

Input Image

Output Images

PART 4
Horizontal-Flip about x-axis (5 points)

Input Image

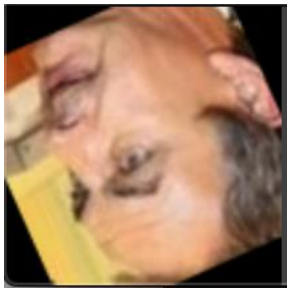
Output Images

PART 5

Rotate by five random angles between -180 deg to +180 deg (15 points)

Input Image

Output Images



PART 6

Randomly erase three (small) rectangular regions in the original image each at a different location and size (15 points)

Input Image

Output Images

PART 7a
Random intensity stretch for grayscale images (15 points)

Input Image

Output Images

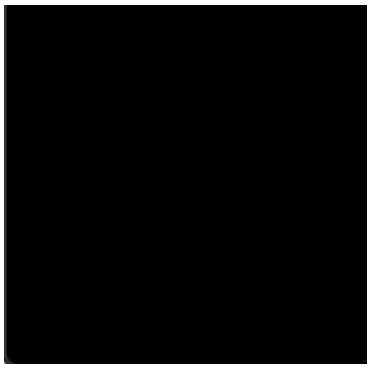




PART 7b
Random contrast stretch one or more channels in RGB images (15 points)

Input Image

Output Images



PART 8

Blurring using local averaging, use a box filter (all ones) of three sizes: 3x3, 5x5, 7x7 (15 points)

Input Image

Output Images