Computer Vision HW#1 Report r09922144 王懷德

原圖:

Code :

- Part1

使用 imread, imwrite 讀寫，(a)(b)使用 for loop 將上下(左右)交換完成一二題。
(c)一張圖經過 upside-down, right-side-left 即可 diagonally flip。

- Part2

(d)(e)使用小畫家旋轉,縮小。
(f) for loop 及 if 判斷即可。

- (a) upside-down lena.bmp

```
void upsidedown(Mat img) {
    for (int i = 0; i < img.rows / 2; i++) {
        for (int j = 0; j < img.cols; j++) {
            int temp = img.at<uchar>(i, j);
            img.at<uchar>(i, j) = img.at<uchar>(img.rows - i-1, j);
            img.at<uchar>(img.rows - i-1, j) = temp;
        }
    }
```

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- (b) right-side-left lena.bmp
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```
void leftsideright(Mat img) {
    for (int i = 0; i < img.rows ; i++) {
        for (int j = 0; j < img.cols/2; j++) {
            int temp = img.at<uchar>(i, j);
            img.at<uchar>(i, j) = img.at<uchar>(i, img.cols-j-1);
            img.at<uchar>(i , img.cols-j-1) = temp;
        }
    }

    // write image
    imwrite("leftsideright.jpg", img);
}
```

- (c) diagonally flip lena.bmp
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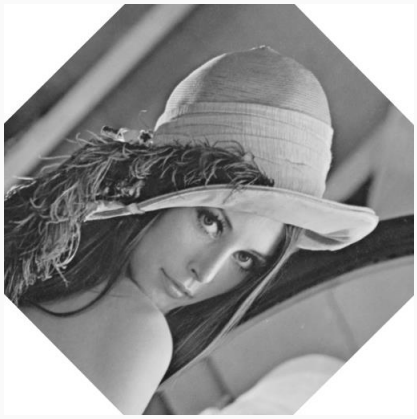
- (d) rotate lena.bmp 45 degrees clockwise
- 
- (e) shrink lena.bmp in half

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- (f) binarize lena.bmp at 128 to get a binary image
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```
}
void binarize(Mat img) {
    for (int i = 0; i < img.rows ; i++) {
        for (int j = 0; j < img.cols; j++) {

            if (img.at<uchar>(i, j) > 128){
                img.at<uchar>(i, j) = 255;
            }
            else img.at<uchar>(i, j) = 1;
        }
    }
```