Image Processing

INDIAN INSTITUTE OF TECHNOLOGY

HOW TO RUN

1) There are some small bugs in giving the inputs because by mistake I have uploaded the older file .So please copy the following changes:- At line 1048 :-

```
cin>>path>>x1>>y1>>x2>>y2>>x3>>y3>>x4>>y4>>x1_>>y1_>>x2_>>y2_>>x3_>>y3_>>x4_>>y4_;
just copy the following in place of cin>>path>>x>>y;
```

At line 922 :-

```
float sx,sy;
cin>>path>>sx>>sy>>opt;
just copy the following in place of
int sx,sy;
cin>>path>>sx>>sy;
```

2) To complie type:- g++ 1.cpp ‘pkg-config –cflags opencv –libs opencv
3) ./a.out
4) Then choose the various options that are clearly specified in command promts.

OBSERVATIONS

- I observed in case of the **nearest nieghbour** the 0.5 is rounded to 1 whereas i have rounded off it to 2 as discussed in class so there was some bit of error due to it and for **bilinear interpolation** the images was observed to be different from the borders as I have used zero border padding and i have displayed the rmse errors for them.
- I observed that in case of **rotate,shear,translate** the image gets cropped wheras i have resizes the window to display the complete image.
- For histogram equlaization also the errors are computed and there almost no error is observed.
- For comparison between the opencv and my images i have used following opencv functions:-
- **resize** $(src_image, dst_image, dsize, scale_y, scale_x, INTER_NEAREST)$ for resing the image.
- **equalizeHist** (src_image, dst_image) for equalizing the image.
- **warpAffine**$(src_image, dst_image, trans_mat, dst_image.size())$ - for equalizing the image.

ASSUMPTIONS

- The affine transformation can be applied by using the functions again and again.
- For tie points its assumed that the tie pionts are given correctly.
- For adaptive histogram equalization I have implemented both sliding window and tile adaptive histogram equalization and i have used the reflective padding for the image out of bounds.
- For the tie points i have used a rough estimate of the original image size suach that image is not cropped at all.

REFERENCE

- The assignment is done indiviusually by myself, with help of class notes , opencv documentation and adaptive histogram from Wikipedia.