

AIP ASSIGNMENT - 1

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1)A) SIFT:

Given Images:



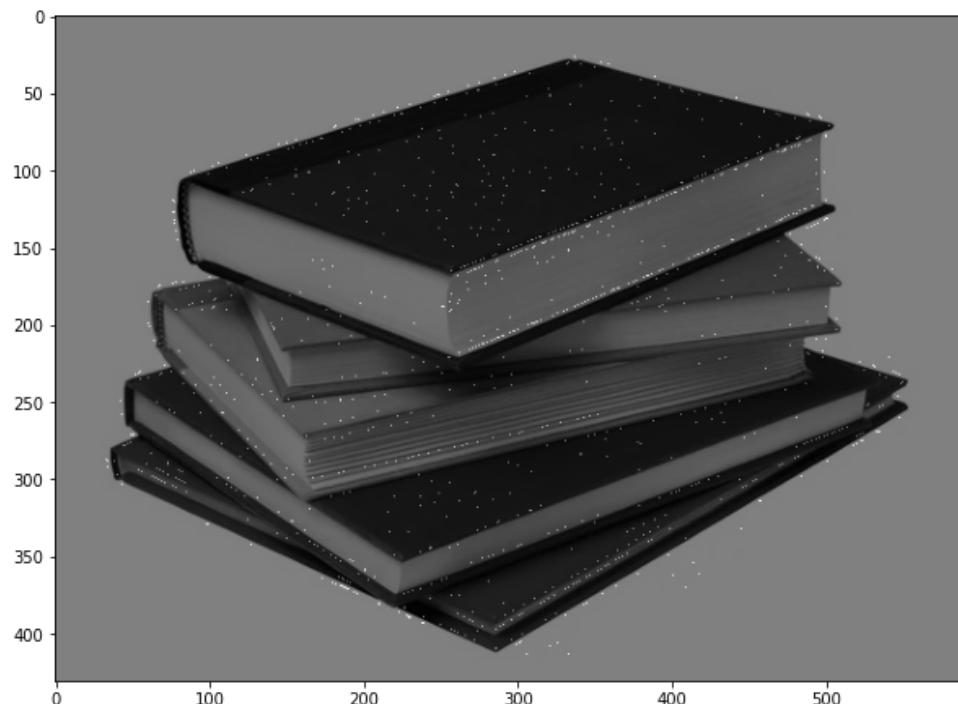
Gray Scale Images:



The Scale Space Extremas for original and transformation Images are below:

1)Sift on Original Images:

No.of Features(Books)= 1056

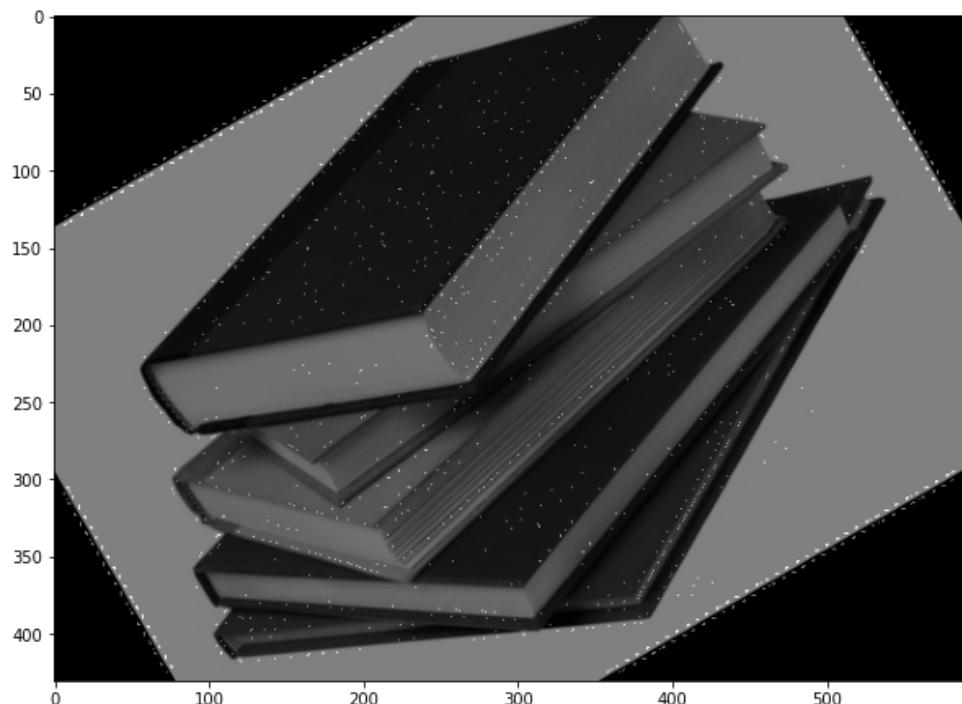


No.of features(Building)=5415

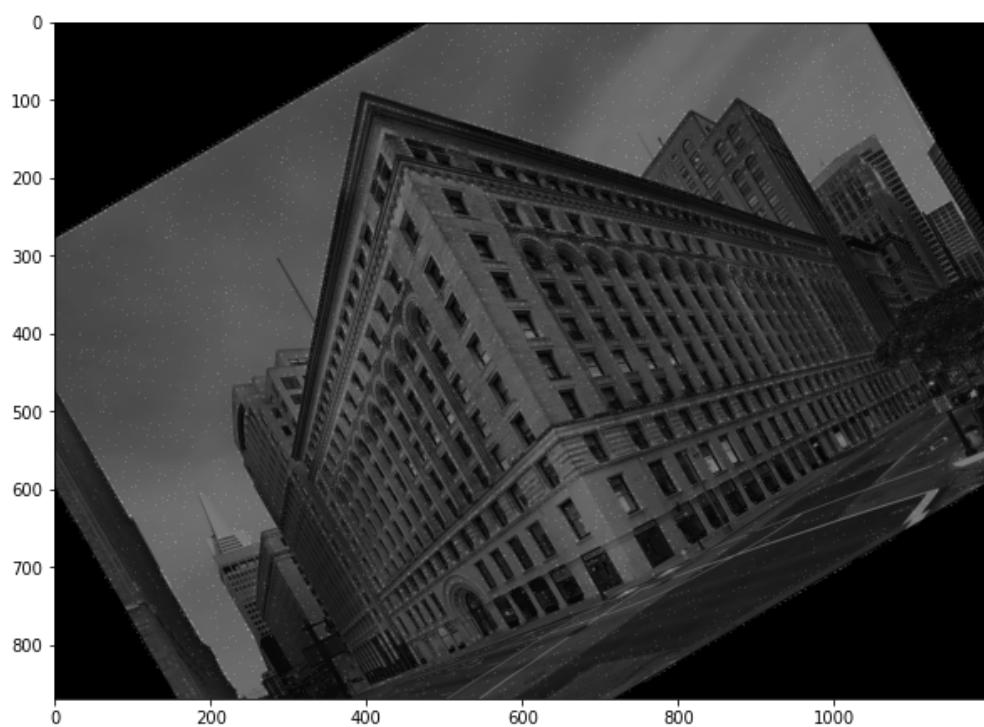


2)Rotated Images(30 degrees):

No.of Features(Books)= 1521

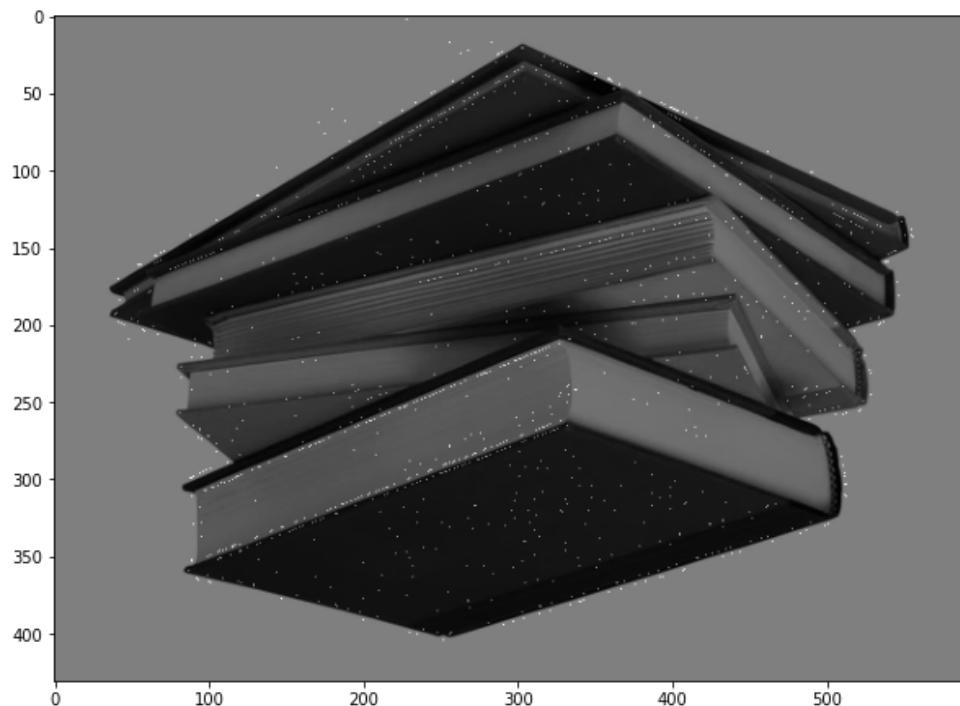


No.of features(Building)= 5731

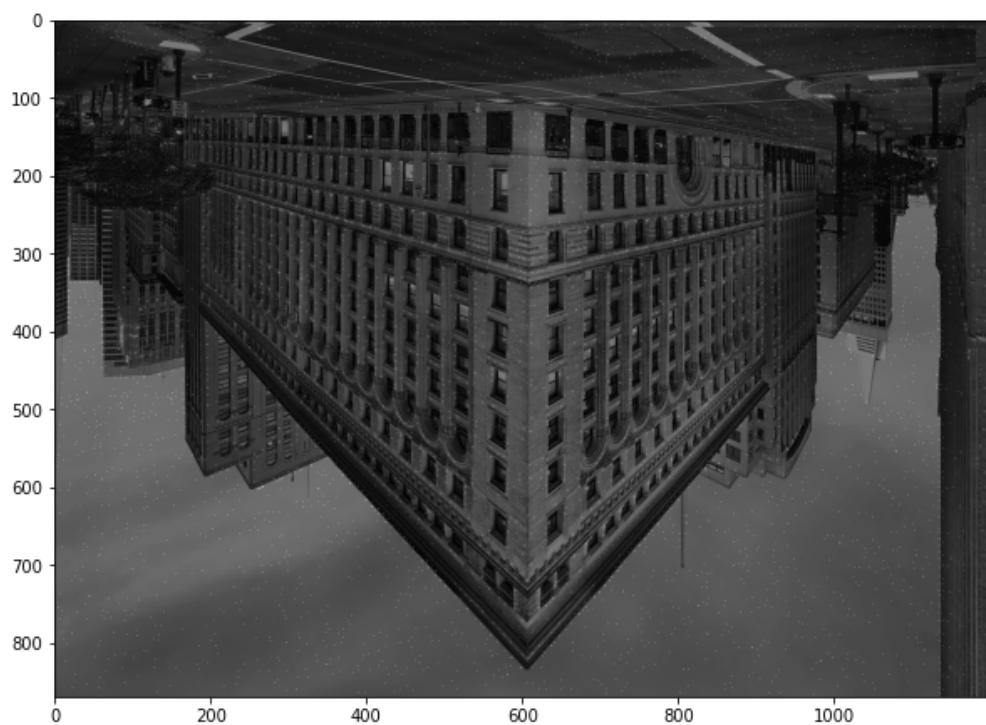


2)Rotated Images(180 degrees):

No.of Features(Books)= 1056

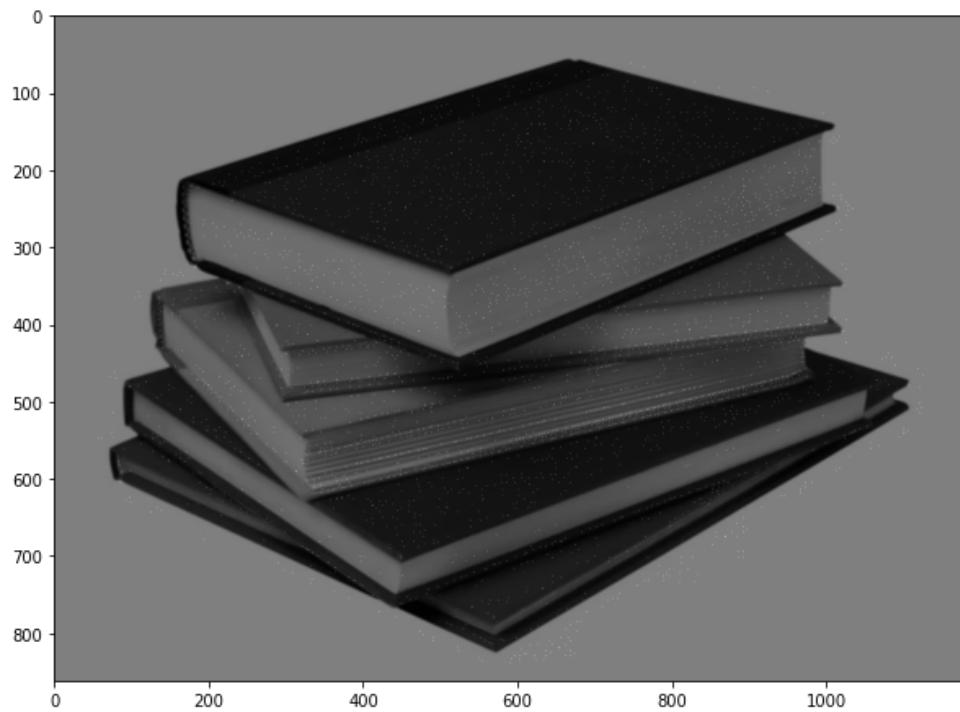


No.of features(Building)= 5415



3)Upscaled Images:

No.of Features(Books)= 3020

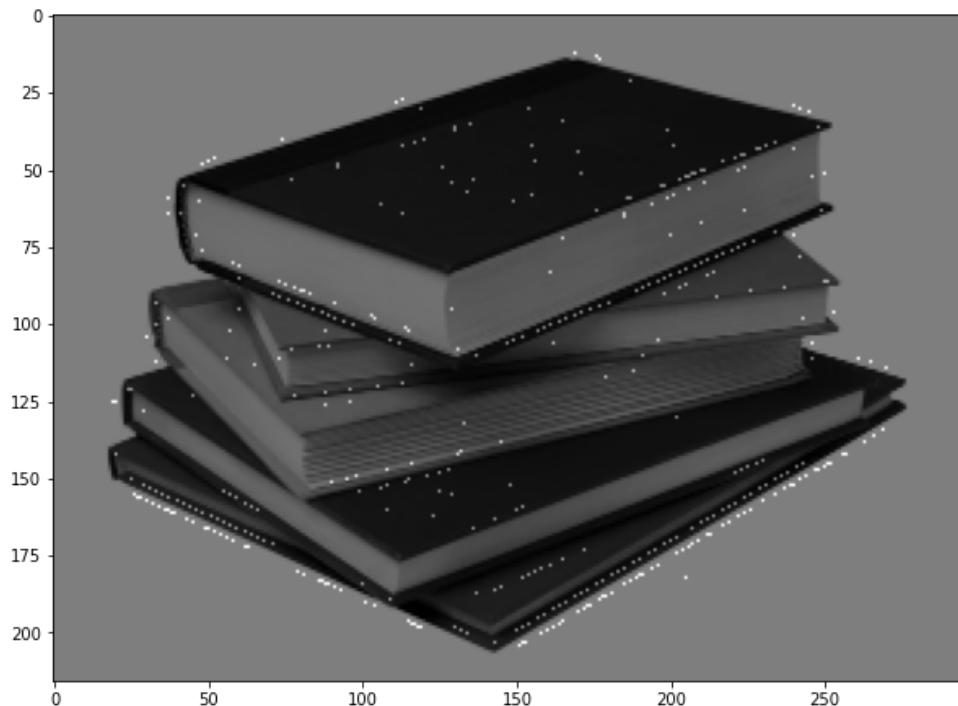


No.of features(Building)= 34315



4)Downscaled Images:

No.of Features(Books)= 401

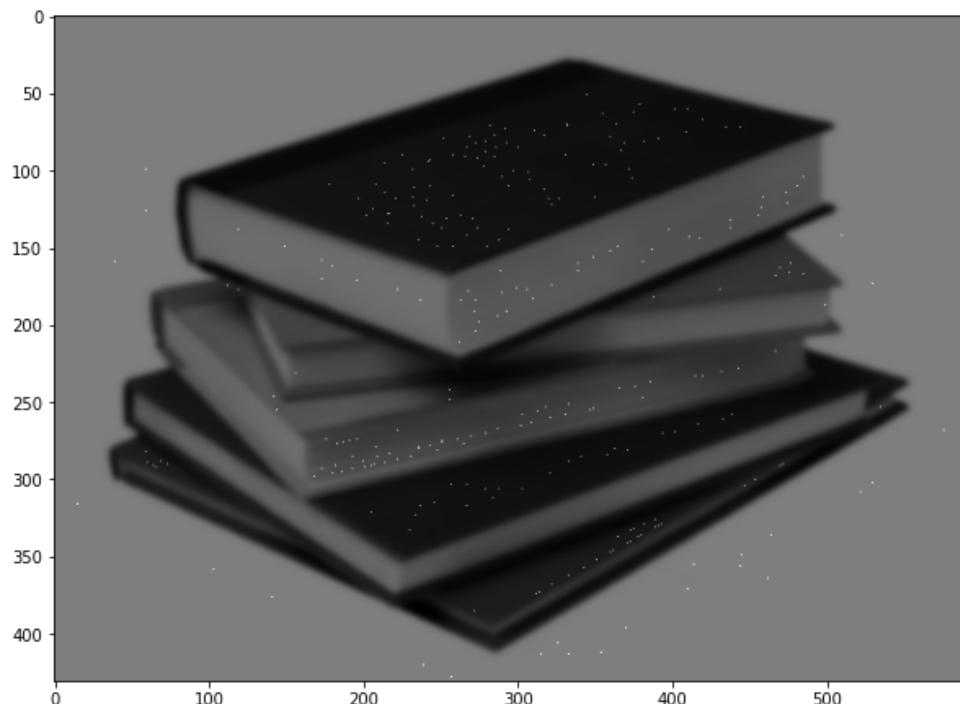


No.of features(Building)= 1572



5)Gaussian Blur:

No.of Features(Books)= 276

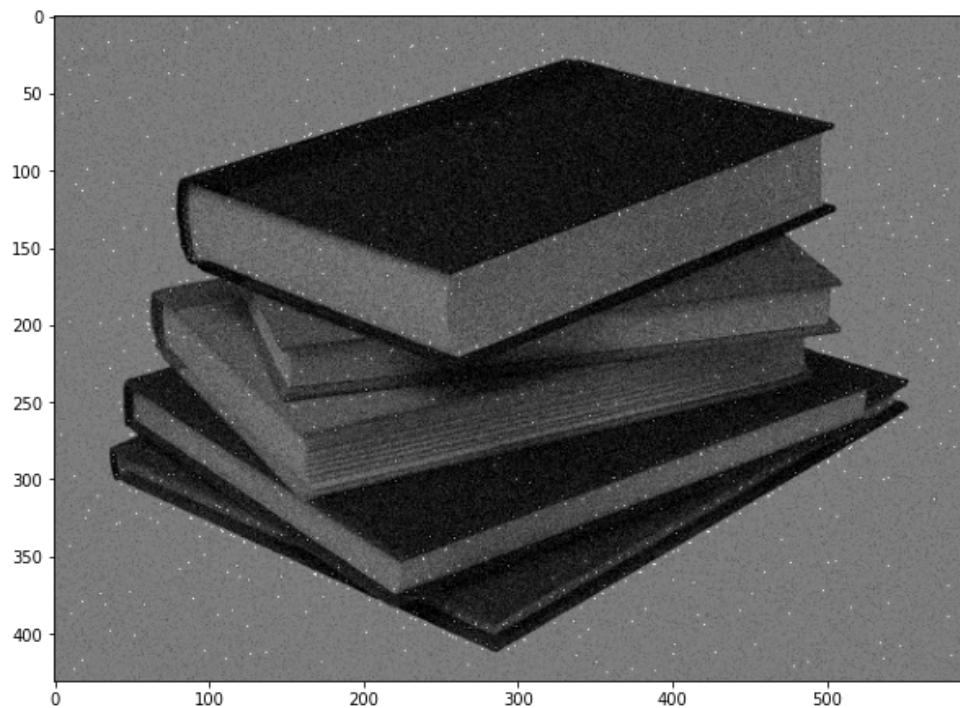


No.of features(Building)= 4560



6)Gaussian Noise:

No.of Features(Books)= 867



No.of features(Building)= 3683



SIFT Analysis on the above Images:

Parameters used:

No.of Octaves=1

sigma=1.6

No.of Gaussians=8

1)**Original** :No.of features of building is higher than books as expected. This might be due to more corners and books has a plane uniform background unlike building.

2)**Rotation**: Rotation made more edges and corners in the image, hence they have increased a bit, not much though. ***Note that Rotation about 180 degrees gave the same number of features as the image is just flipped upside down.***

3)**Upscaling**: I got around 3 times increase in features in books, around 6 times increase in features in building. This is because perhaps number of pixels increased in the image due to upscaling

4)**Downscaling**: No.of Features decreased due to loss of information due to decrease in pixels

5)**Gaussian Blur**: Due to gaussian blur, number of features decreased significantly as gaussian blur smoothens the image

6)**Gaussian Noise**: It is a random noise, hence the features are dependent on image as well and they may vary each time as noise is random

	No.of features in Books	No.of features in Building
Original	1056	5415
Rotated(180 degrees)	1057	5415
Rotated(30 degrees)	1521	5731
Upscaled	3020	34315
Downscaled	401	1752
Gaussian Blur	276	4560
Gaussian Noise	842	3639