

# HW6 Report

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Q1 :

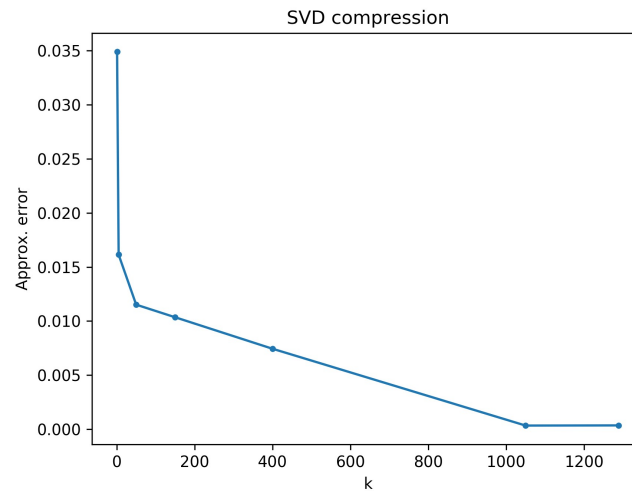


Fig.1 Error-K relation

Q2 :

Rank of R channel = 1065

Using `numpy.linalg.matrix_rank` function to get rank of a image matrix.

The function will apply SVD on the matrix, and set up a threshold to detect rank deficiency.

By default, the threshold is determined by `S.max() * max(M.shape) * eps`.

S is the singular value matrix of matrix M, eps is the epsilon value for datatype of S.

```
def print_rank(imArr):  
    rank = np.linalg.matrix_rank(imArr)  
    print('Rank= {}'.format(rank))
```

Fig.2 Code to get rank

```
origin Rank= 1065
```

Fig.3 Result

Reference:

[https://docs.scipy.org/doc/numpy-1.10.4/reference/generated/numpy.linalg.matrix\\_rank.html](https://docs.scipy.org/doc/numpy-1.10.4/reference/generated/numpy.linalg.matrix_rank.html)

Q3 :  
SVD on G channel (K = 1~5)

