

Numerical Methods / Scientific Computing

Project 3: SVD Image Compression

1. Write computer code to use SVD to compress an image. Follow the theory in Section 12.4.3 from the book and the sample code “Image compression by SVD” uploaded on Canvas. The sample code is for gray scale images. For the project, you are required to develop a similar code for color images. Search the internet to learn how to process color images.
2. Take a picture of yourself with the camera and use the SVD to compress it. One parameter in your code should be the number p of singular values that are used in the reduction (refer to Section 12.4.2). In your report provide the following information:
 - a. The percentage of the storage memory used for p singular values versus the storage memory used for the original picture, for various values of p .
 - b. The error between the matrix A storing the original image and the reduced matrix A_p obtained when the first p singular values are used.