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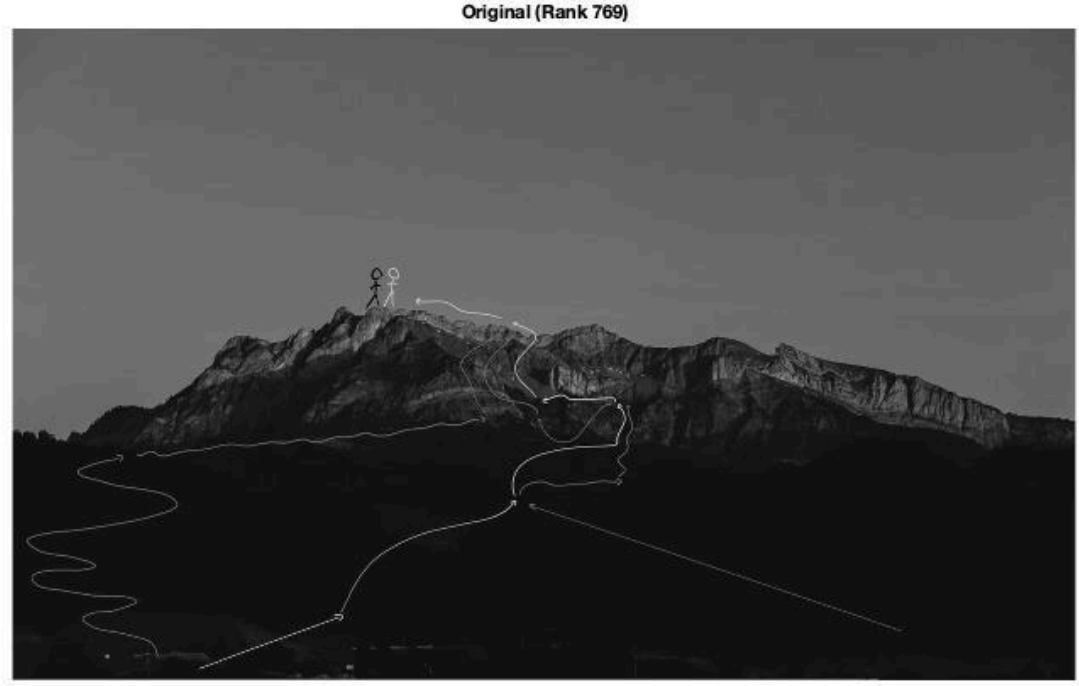
```
close all
clear all
clc


A = imread('lahs23end.jpg');
A = rgb2gray(A);
```

show image in black & white

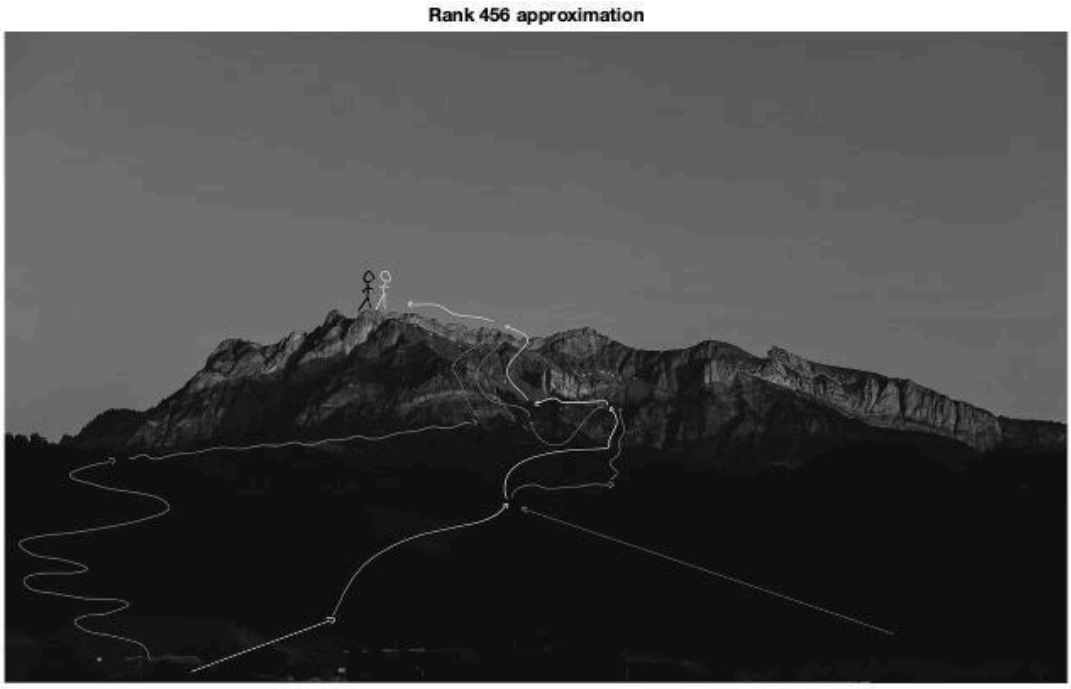
```
%(A is a giant matrix in the shape of the image - each value between 0 and
 255)

figure(1)
imshow(A)
title(['Original (',sprintf('Rank %d)',rank(double(A)))])
```



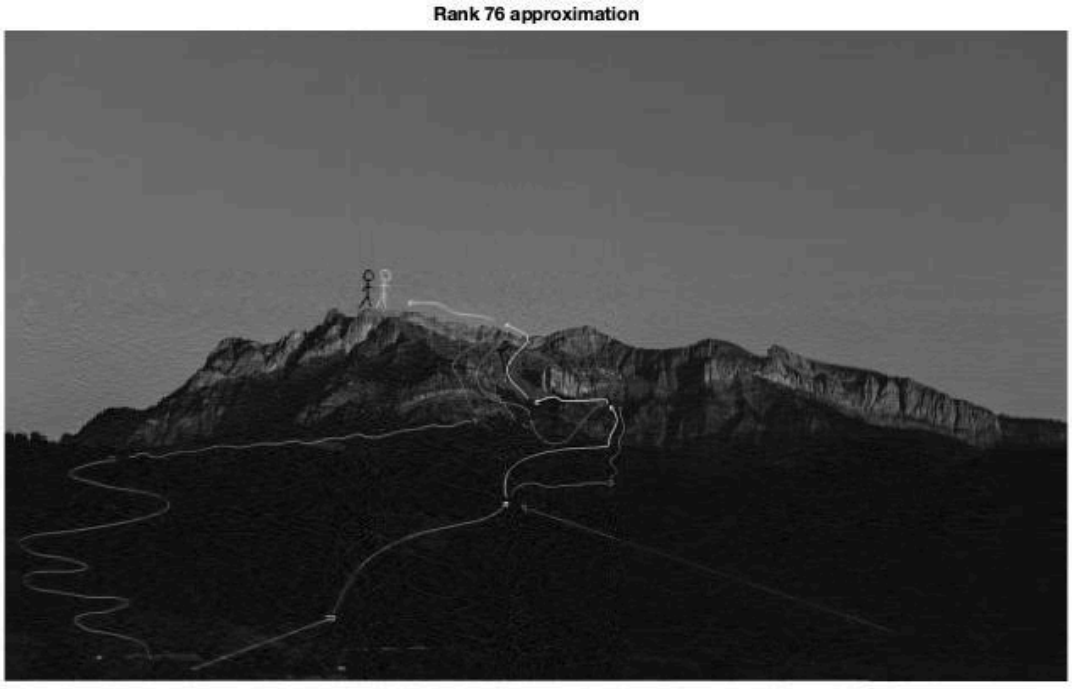
SVD of matrix A with singular values bigger than 0.01

```
figure(2)
[U1,S1,V1] = svdsketch(double(A),1e-2);
Anew1 = uint8(U1*S1*V1');
imshow(uint8(Anew1))
title(sprintf('Rank %d approximation',size(S1,1)))
```



%% SVD of matrix A with singular values bigger than 0.1

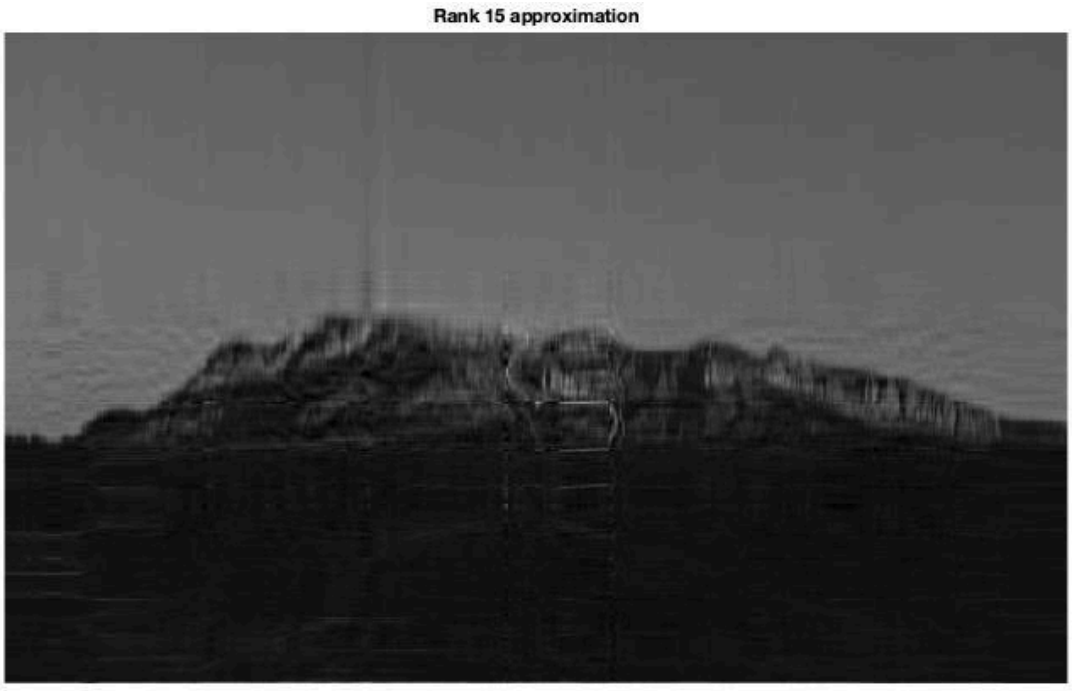
```
figure(3)
[U2,S2,V2] = svdsketch(double(A),1e-1);
Anew2 = uint8(U2*S2*V2');
imshow(Anew2)
title(sprintf('Rank %d approximation',size(S2,1)))
```



%% SVD of matrix A with 15 biggest singular values

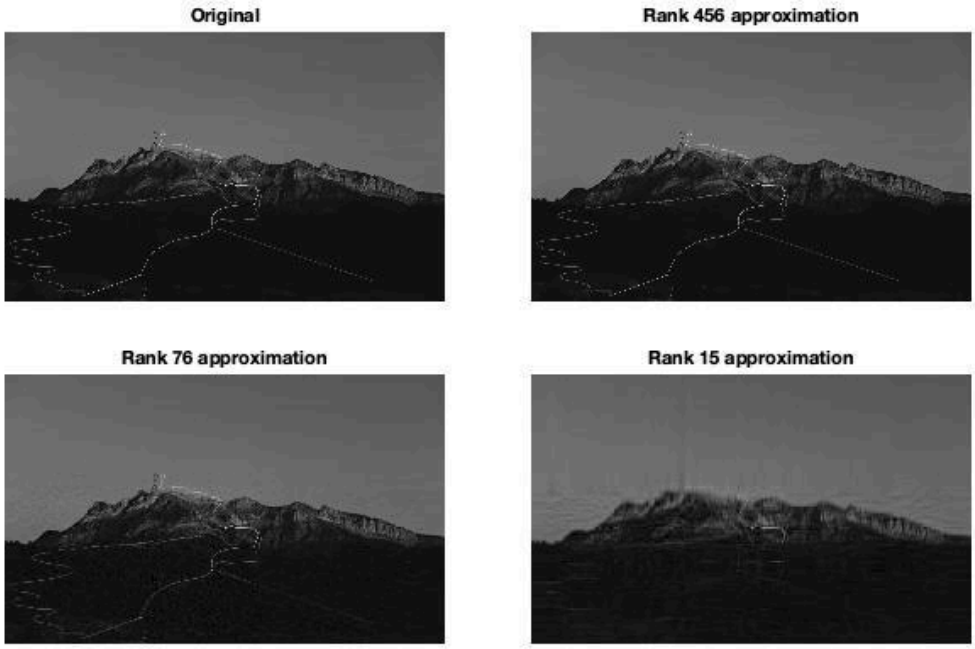
```
[U3,S3,V3,apxErr] = svdsketch(double(A),1e-1,'MaxSubspaceDimension',15);
Anew3 = uint8(U3*S3*V3');

figure(4)
imshow(uint8(Anew3))
title(sprintf('Rank %d approximation',size(S3,1)))
```



graphical comparison

```
tiledlayout(2,2,'TileSpacing','Compact')
nexttile
imshow(A)
title('Original')
nexttile
imshow(Anew1)
title(sprintf('Rank %d approximation',size(S1,1)))
nexttile
imshow(Anew2)
title(sprintf('Rank %d approximation',size(S2,1)))
nexttile
imshow(Anew3)
title(sprintf('Rank %d approximation',size(S3,1)))
```



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