Image Resizing

Table of Contents

Objective:

- Shrinking image to show Moire effect on concentric circles
- Image enlargement using bilinear interpolation
- Image enlargement using nearest neighbour interpolation

Colormap

- Number of intensities = 256
- displayGrayScale is a lambda function which displays an image with 256 intensities

```
myNumOfColors= 256;
myColorScale = [ [0:1/(myNumOfColors-1):1]' , [0:1/(myNumOfColors-1):1]' , [0:1/(m
displayGrayScale = @(image, title) displayImageWithColorBar(image, title, myColorS
```

Defining and Reading test input files

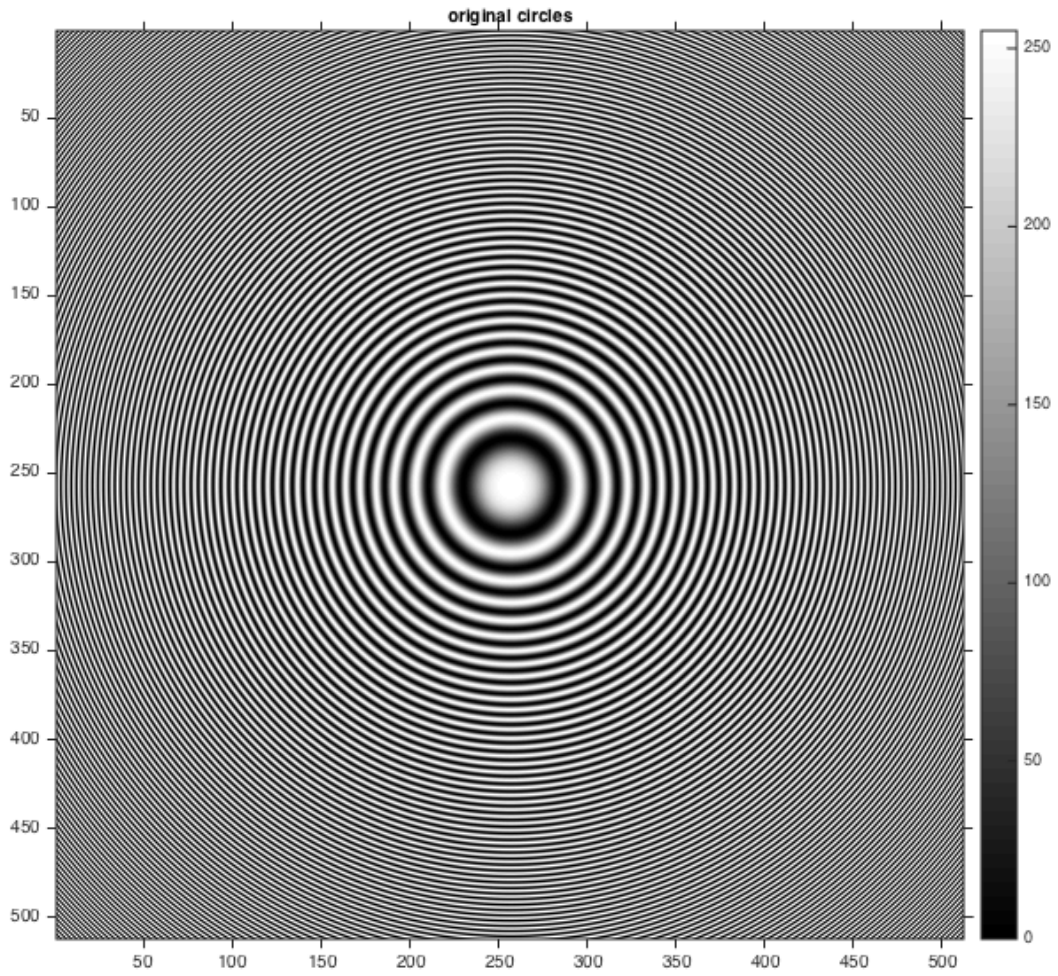
```
barbara_filename = '../data/barbaraSmall.png';
circles_filename = '../data/circles_concentric.png';

barbara = imread(barbara_filename);
circles = imread(circles_filename);
```

Image shrinking

Original Image

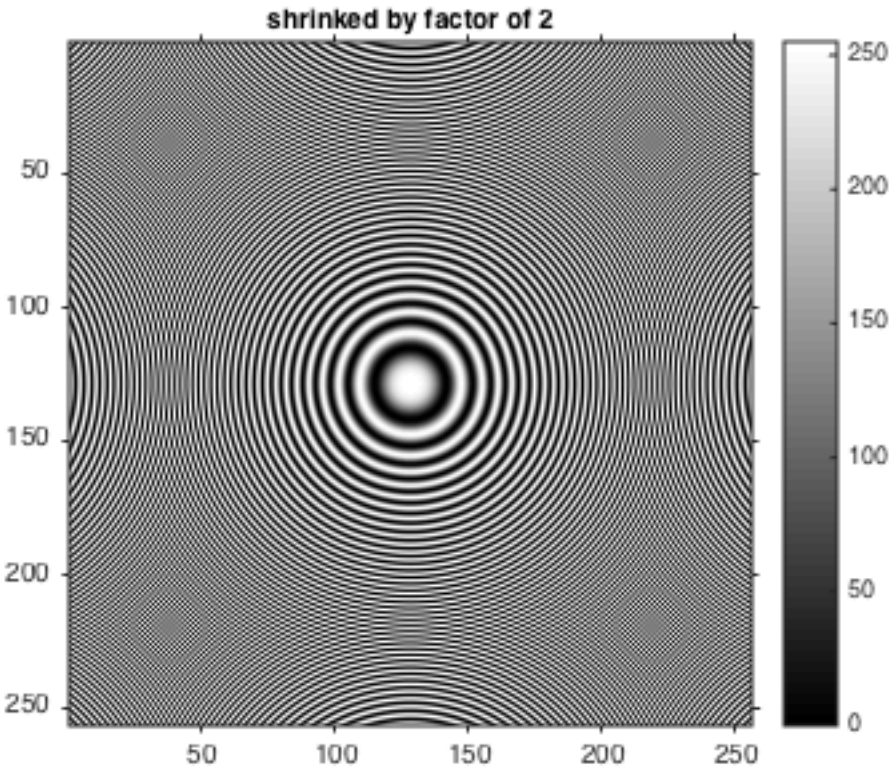
```
displayGrayScale(circles, 'original circles');
```



Shrinked by factor of 2

```
tic;
shrink_by_2 = myShrinkImageByFactorD(circles, 2);
toc;
displayGrayScale(shrink_by_2, 'shrinked by factor of 2');
```

Elapsed time is 2.763847 seconds.



Shrinked by factor of 3

```
tic;
shrink_by_3 = myShrinkImageByFactorD(circles, 3);
toc;
displayGrayScale(shrink_by_3, 'shrinked by factor of 3');
```

```
Elapsed time is 1.161185 seconds.
```

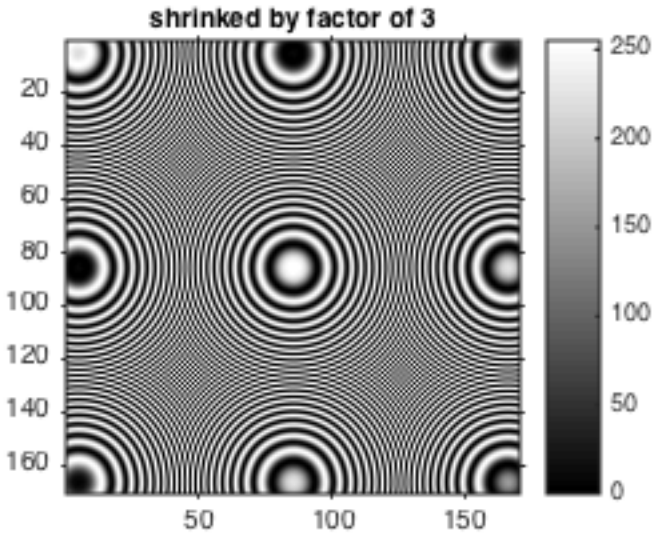


Image Enlargement

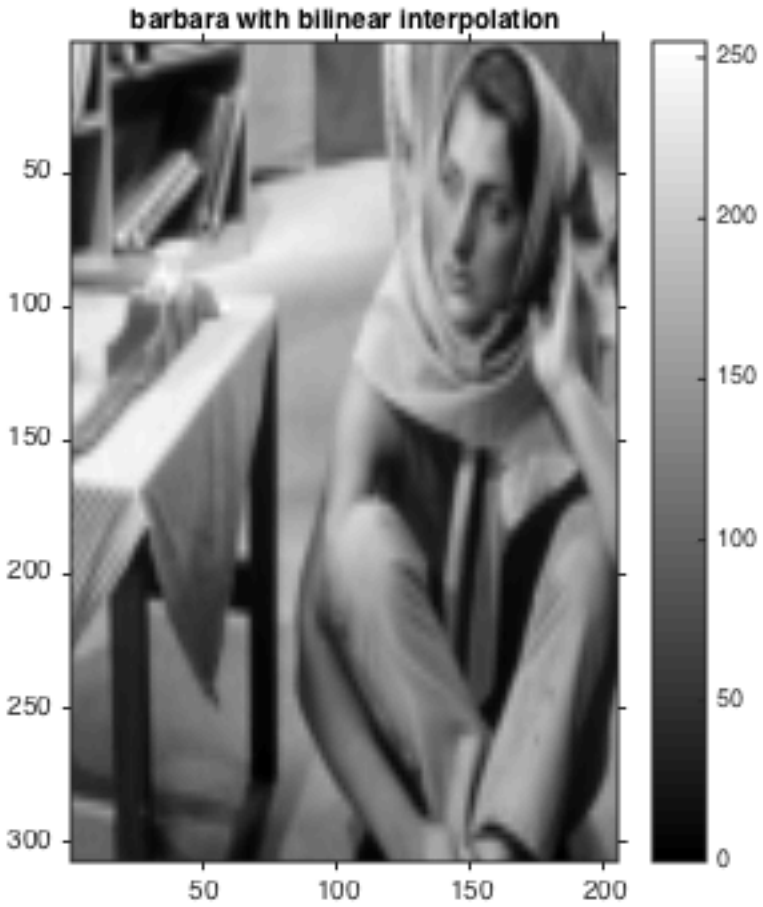
Original Image

```
displayGrayScale(barbara, 'Original Barbara');
```

Bilinear Interpolaion

```
tic;
bilinear_interpolation = myBilinearInterpolation(barbara);
toc;
displayGrayScale(bilinear_interpolation, 'barbara with bilinear interpolation');
```

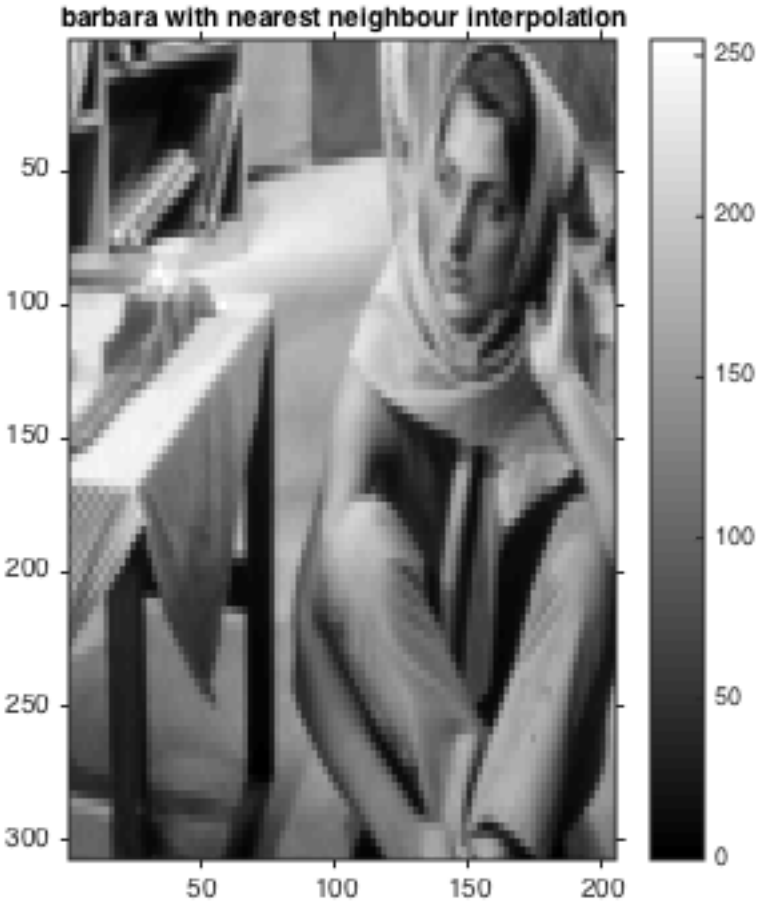
```
Elapsed time is 0.013933 seconds.
```



Nearest Neighbour Interpolation

```
tic;
nearest_neighbour_interpolation = myNearestNeighborInterpolation(barbara);
toc;
displayGrayScale(nearest_neighbour_interpolation, 'barbara with nearest neighbour
```

```
Elapsed time is 0.086596 seconds.
```



Published with MATLAB® R2014b