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MyMainScript Q1

Report for Q1.

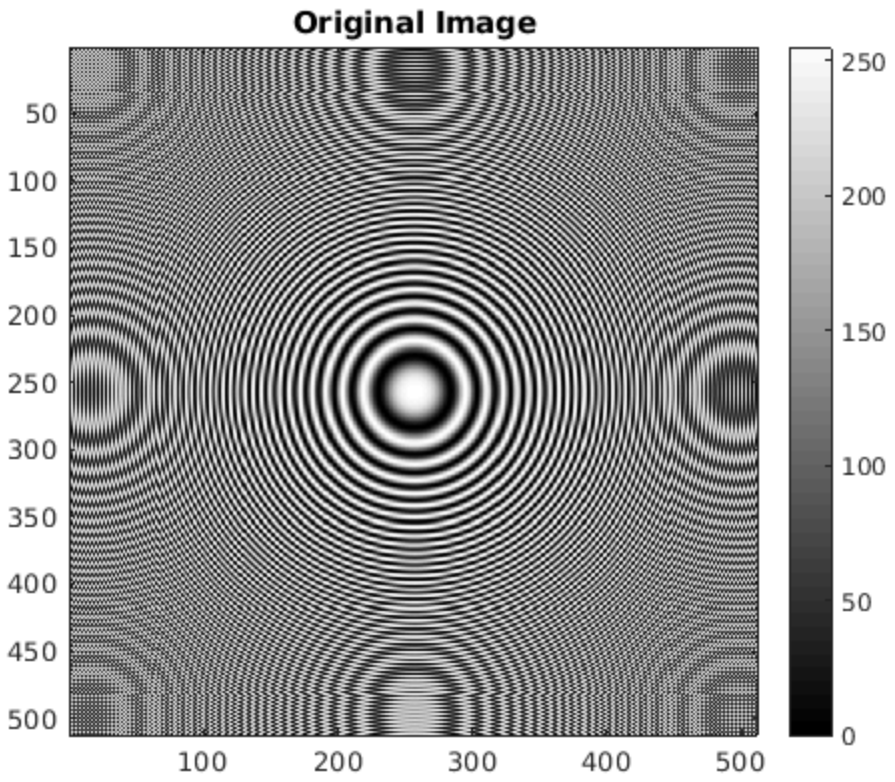
```
myNumOfColors = 255;
myColorScale = [ [0:1/(myNumOfColors-1):1]',[0:1/
(myNumOfColors-1):1]' , [0:1/(myNumOfColors-1):1]' ];

ib = imread('../data/barbaraSmall.png');
Ic = imread('../data/circles_concentric.png');
```

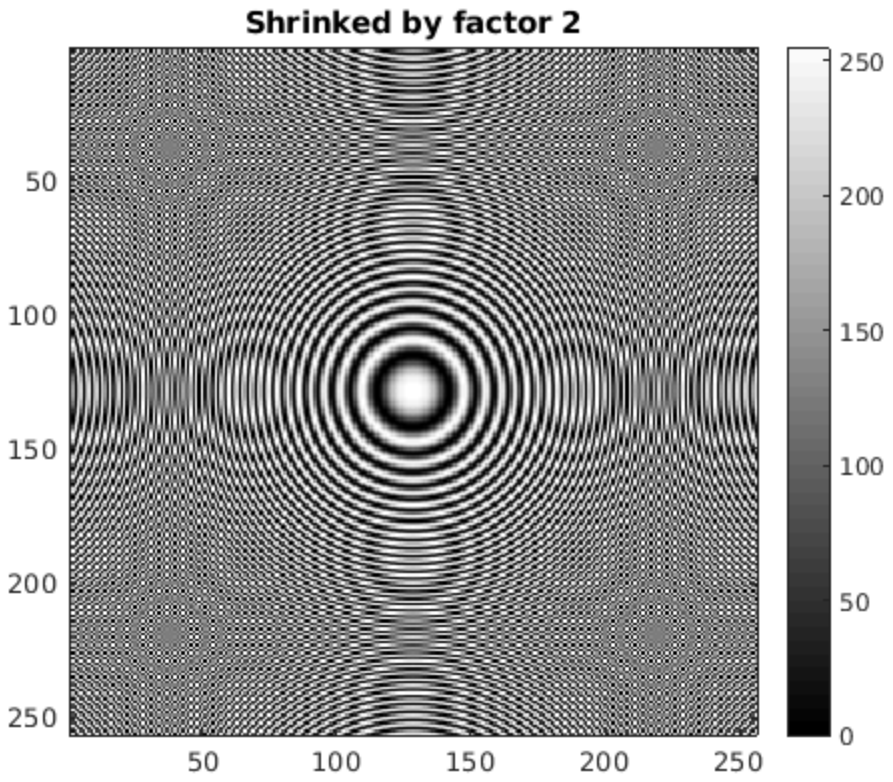
Image Shrinking

Shrinking By factor 2

```
X = myShrinkImageByFactorD(2);
imagesc(Ic,[0,255]), title('Original
 Image'),colormap(myColorScale),daspect ([1 1 1]); axis tight;
 colorbar;
% colorbar;
```




```
imagesc(X,[0,255]), title('Shrinked by factor
 2'),colormap(myColorScale),daspect ([1 1 1]); axis tight; colorbar;
% colorbar;
```



Shrinking By factor 3

```
X = myShrinkImageByFactorD(3);
imagesc(X,[0,255]), title('Shrinked by factor
 3'),colormap(myColorScale),daspect ([1 1 1]); axis tight; colorbar;
% colorbar;
```

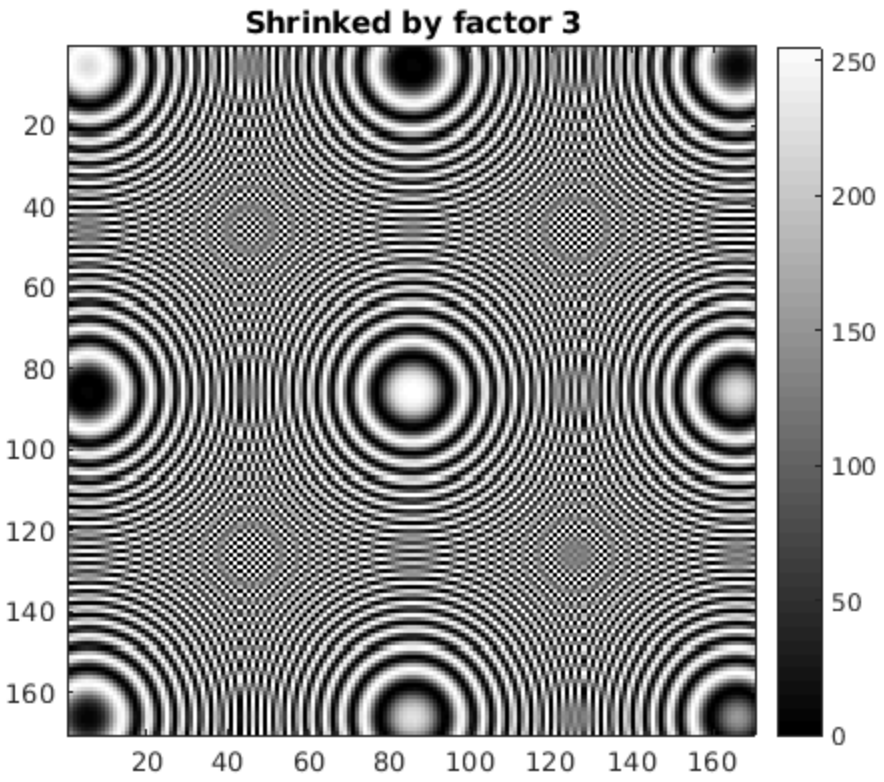
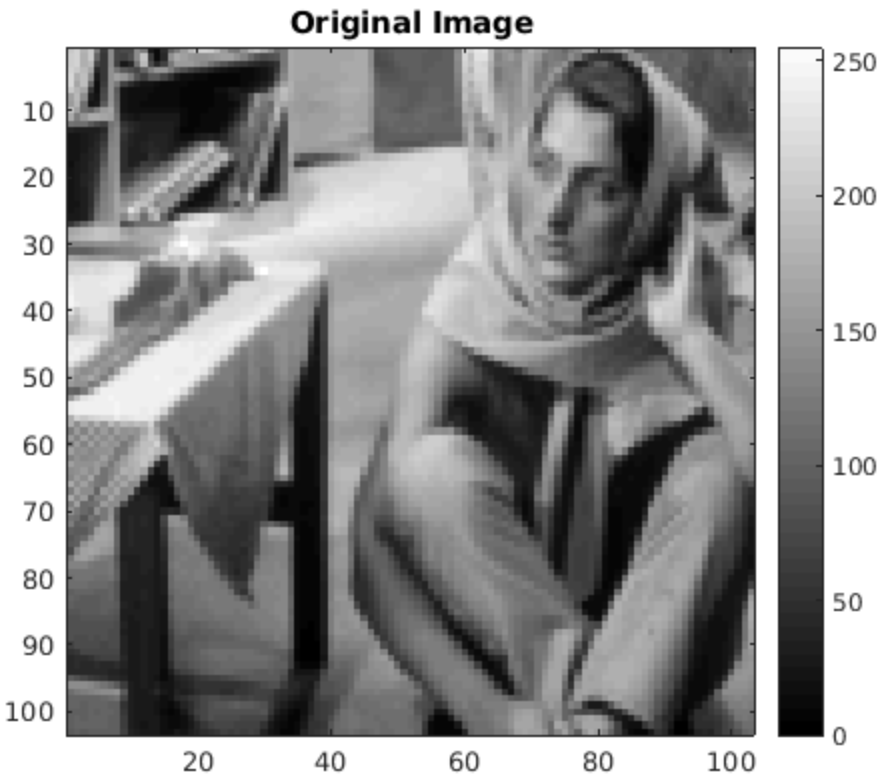


Image Enlargement using Bilinear Interpolation

```
i2 = myBilinearInterpolation();
imagesc(ib,[0,255]), title('Original
 Image'),colormap(myColorScale),daspect ([1 1 1]); axis tight;
 colorbar;
```




```
imagesc(i2,[0,255]), title('Enlarged Image using Bilinear
 Interpolation'),colormap(myColorScale),daspect ([2 3 1]); axis tight;
 colorbar;
```

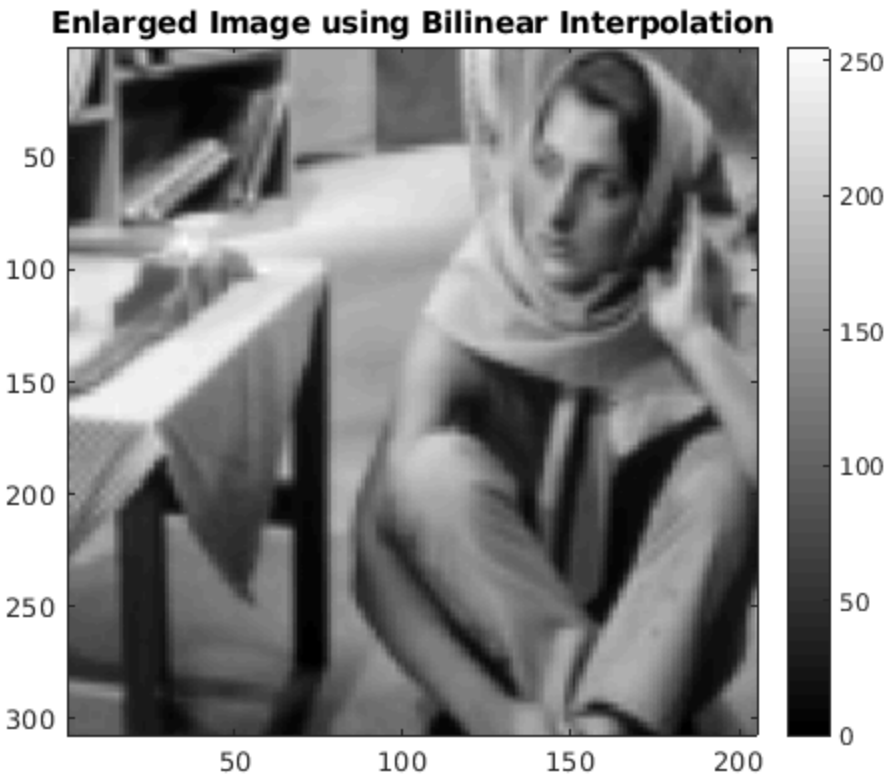
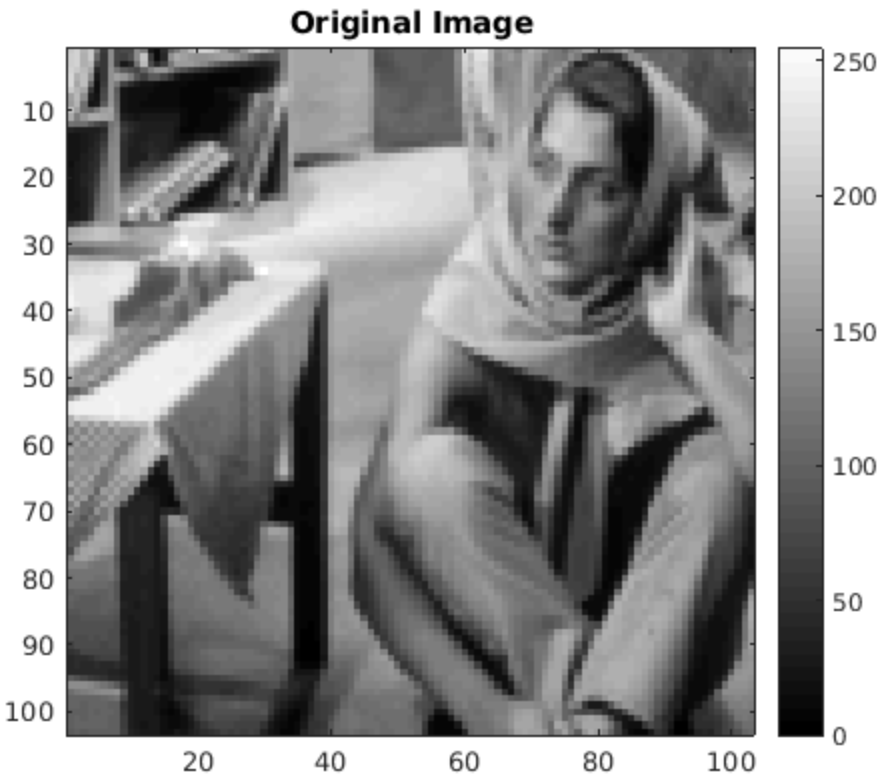


Image Enlargement using Nearest Neighbour Interpolation

```
i1 = myNearestNeighborInterpolation();
imagesc(ib,[0,255]), title('Original
 Image'),colormap(myColorScale),daspect ([1 1 1]); axis tight;
 colorbar;
```




```
imagesc(i1,[0,255]), title('Enlarged Image using Nearest
 Neighbour'),colormap(myColorScale),daspect ([2 3 1]); axis tight;
 colorbar;
```

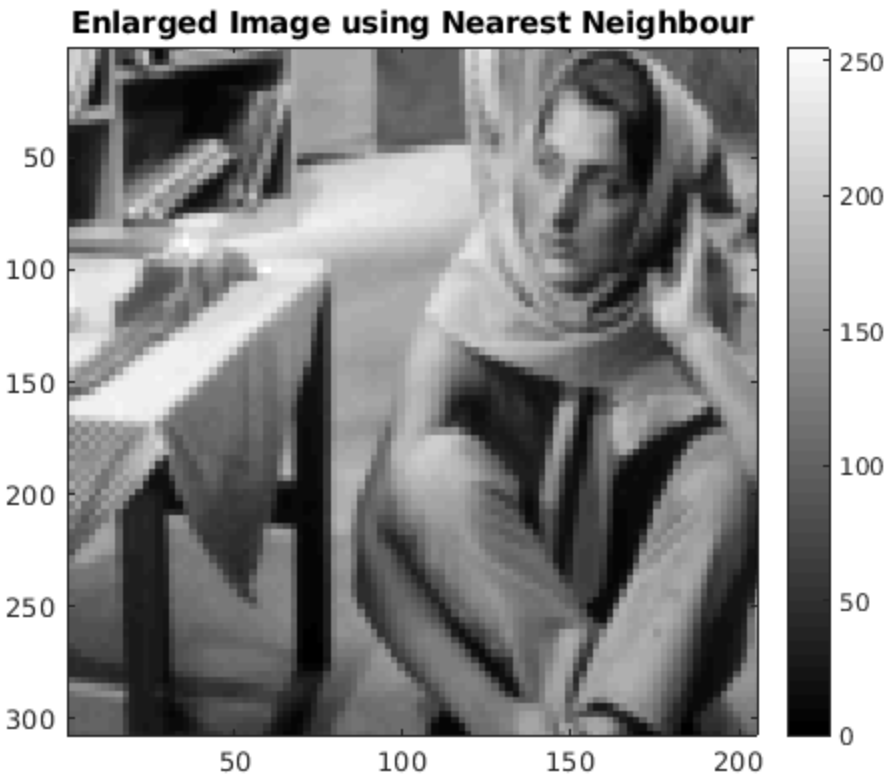
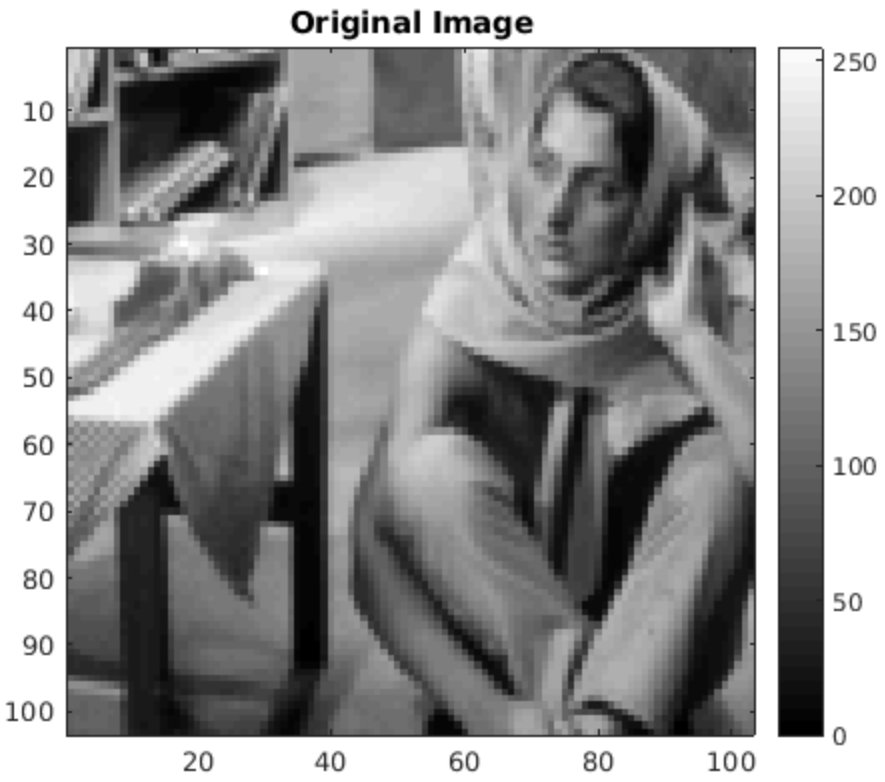
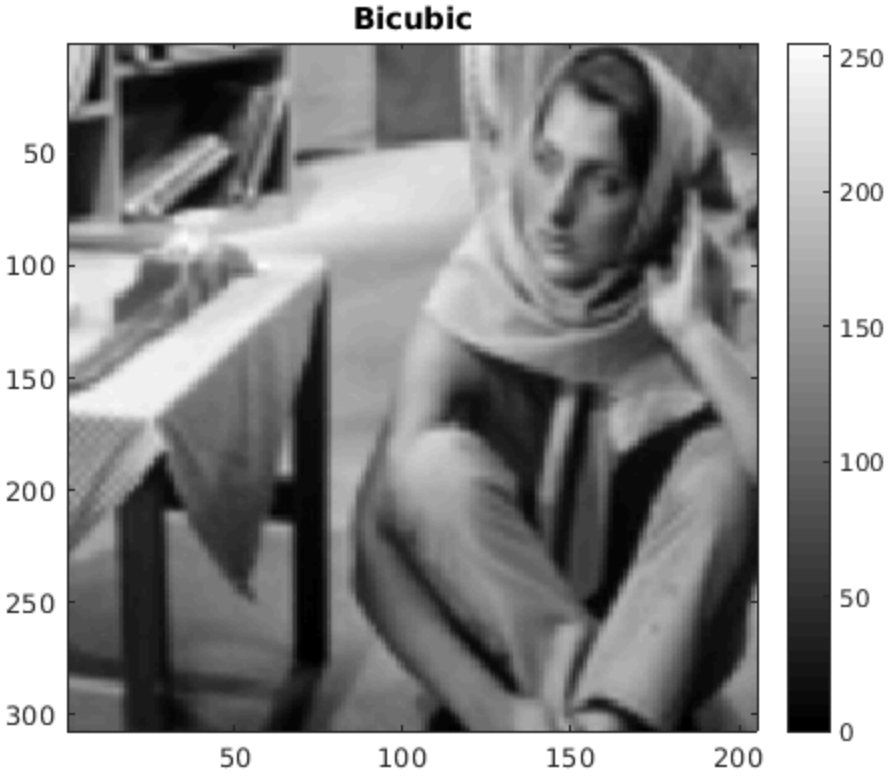


Image Enlargement using Bicubic Interpolation

```
i3 = myBicubicInterpolation();
imagesc(ib,[0,255]), title('Original
 Image'),colormap(myColorScale),daspect ([1 1 1]); axis tight;
 colorbar;
```



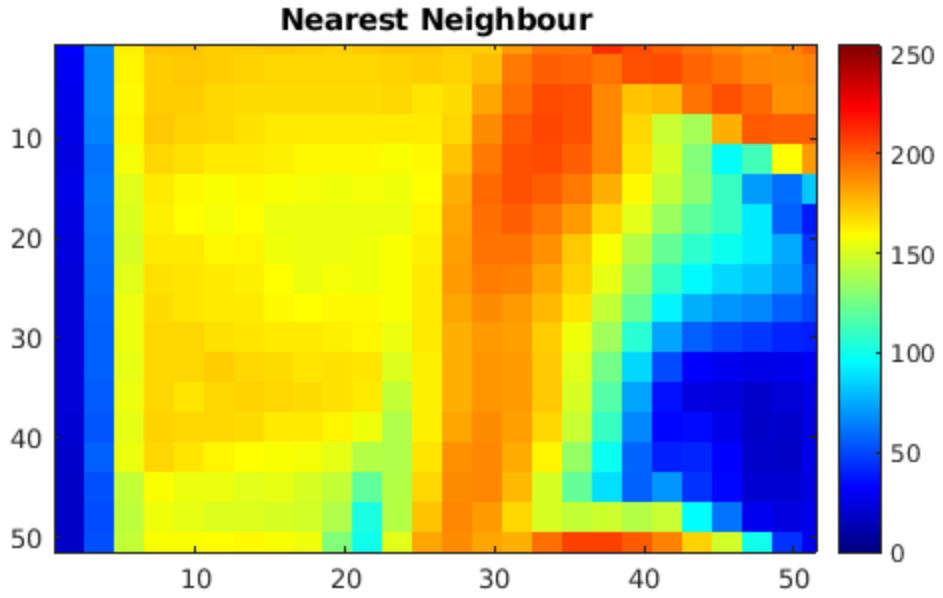

```
imagesc(i3,[0,255]), title('Bicubic'),colormap(myColorScale),daspect
 ([2 3 1]); axis tight; colorbar;
```



Comparison of different Interpolation using jet colormap

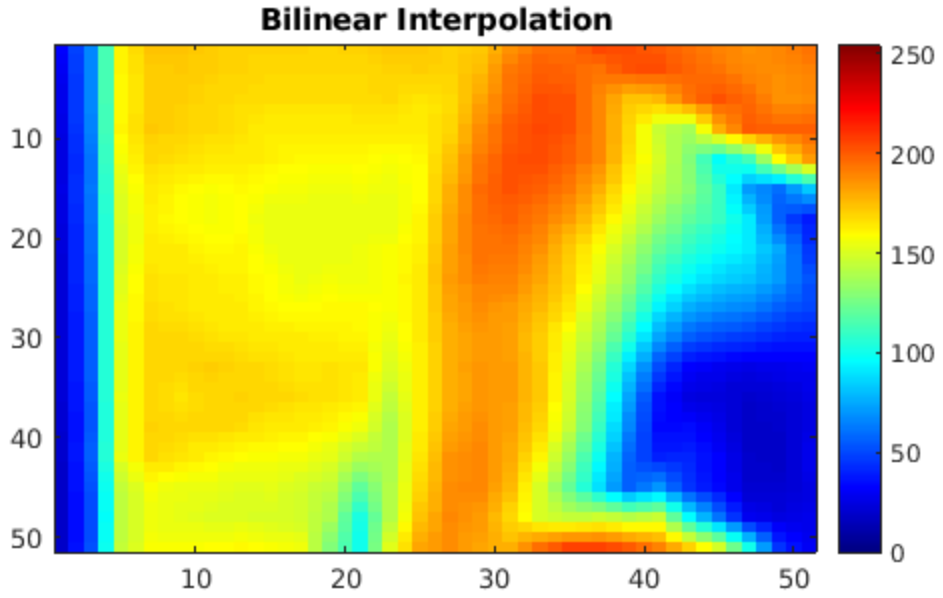
Colormap for a section of Nearest Neighbour Interpolation

```
imagesc(i1(125:175,75:125),[0,255]), title('Nearest
 Neighbour'),colormap('jet'),daspect ([2 3 1]); axis tight; colorbar;
```



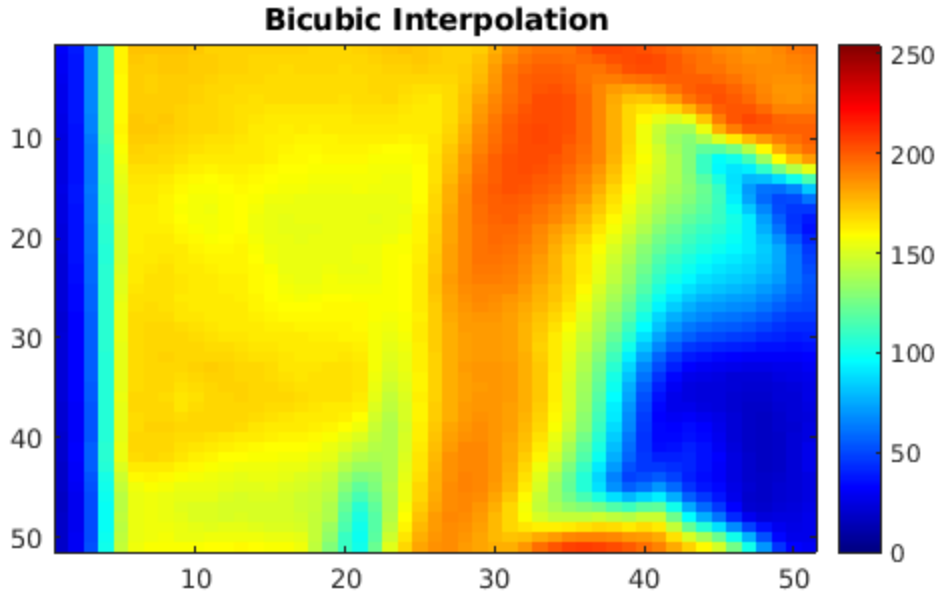
Colormap for a section of Bilinear Interpolation

```
imagesc(i2(125:175,75:125),[0,255]), title('Bilinear
 Interpolation'),colormap('jet'),daspect ([2 3 1]); axis tight;
 colorbar;
```



Colormap for a section of Bicubic Interpolation

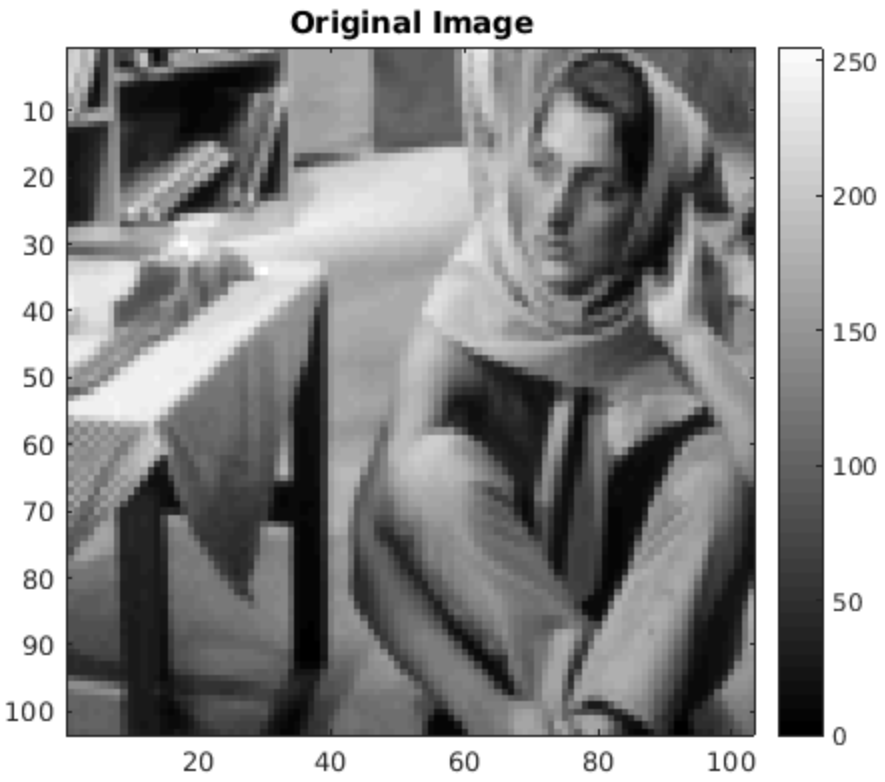
```
imagesc(i3(125:175,75:125),[0,255]), title('Bicubic
 Interpolation'),colormap('jet'),daspect ([2 3 1]); axis tight;
 colorbar;
```



We can see that Nearest Neighbour is the most blocky of the three whereas Bicubic is the least. T This is because Nearest Neighbour gives all the weight to one pixel "Nearest pixel", Bilinear fits a planar surface, and Bicubic allows for smoother curves hence it is better than the rest

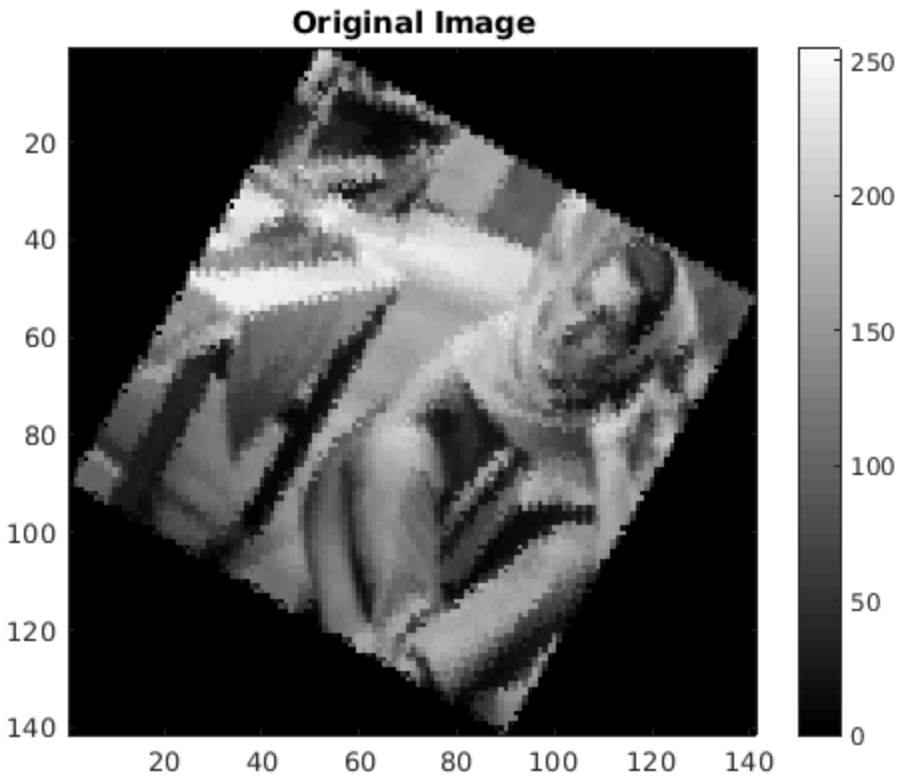
```
i4 = myImageRotation();
imagesc(ib,[0,255]), title('Original
 Image'),colormap(myColorScale),daspect ([1 1 1]); axis tight;
 colorbar;

% colorbar;
```




```
imagesc(i4,[0,255]), title('Original
 Image'),colormap(myColorScale),daspect ([1 1 1]); axis tight;
 colorbar;

% colorbar;
```



myImageRotation uses simple coordinate geometry of rotation of axes and translation of origin to rotate the image. toc;

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