q1

January 20, 2018

1 Resizing image Using Interpolation

1.1 Importing images

```
In [5]: img1 = imread('./blur.jpg');
```

```
In [21]: img2 = imread('./cameraman.png');
```

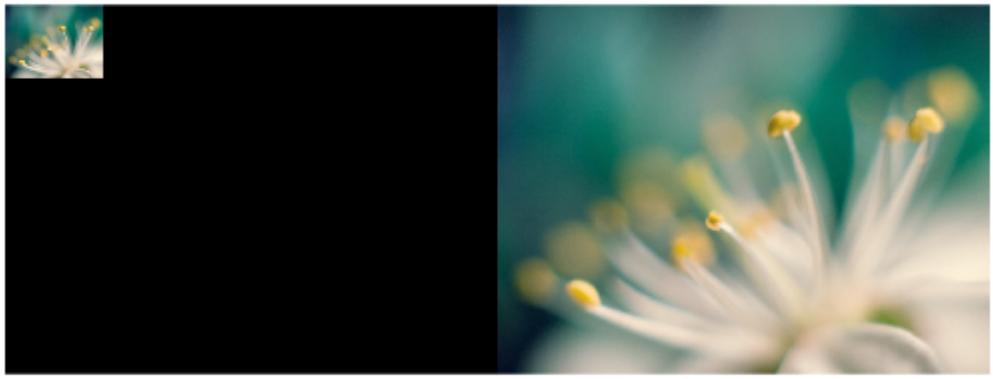
```
In [8]: img3 = imread('./shapes.gif');
```

1.2 Using Neighrest Neighbours

In nearest neighbour the closest pixel values is copied to the pixel which results in a more pixelated image which can be used accordingly in particular types of art

```
In [12]: new_img1 = RESIZENN(img1,5);
         imshowpair(img1,new_img1,'montage');
```

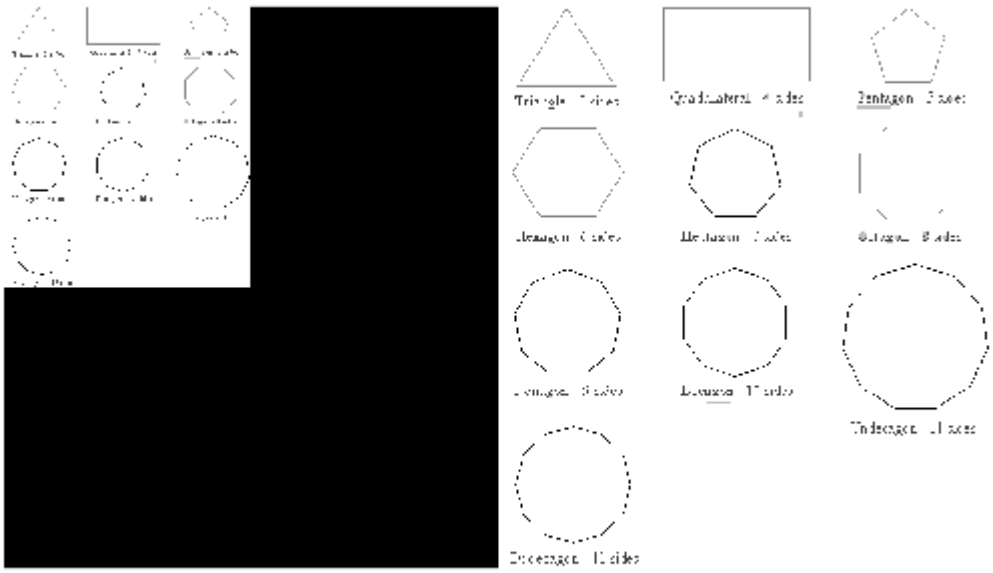
```
Warning: Image is too big to fit on screen; displaying at 8%
> In images.internal.initSize (line 71)
  In imshow (line 328)
  In imshowpair (line 126)
```



```
In [23]: new_img2= RESIZENN(img2,2);
         imshowpair(img2,new_img2,'montage');
```

```
In [22]: new_img3= RESIZENN(img3,2);
         imshowpair(img3,new_img3,'montage');
```

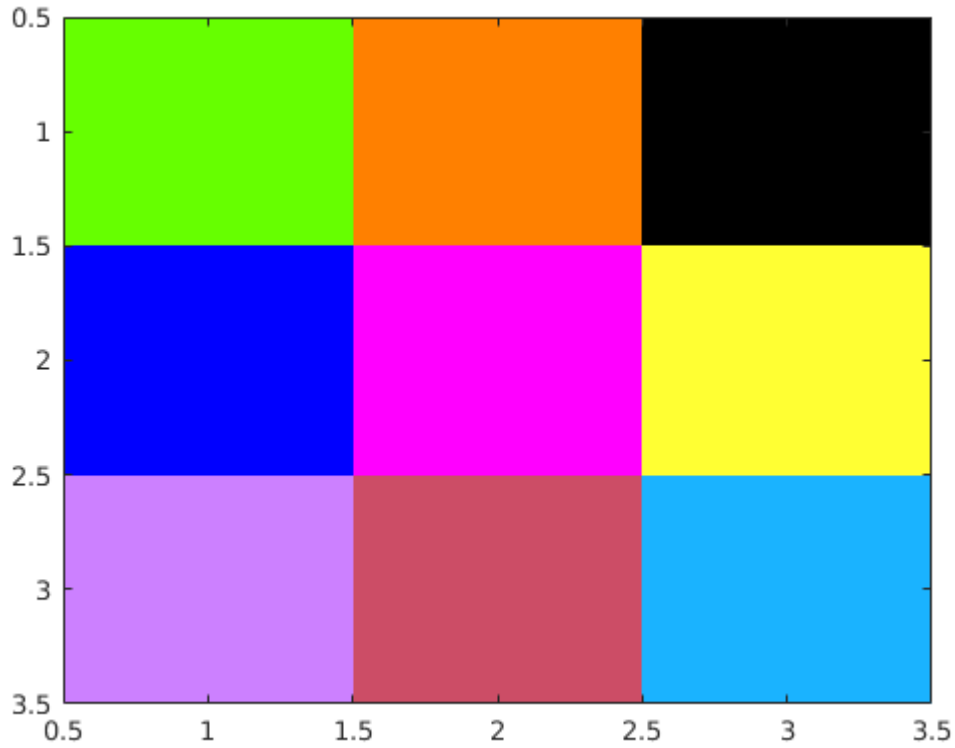
```
Warning: Image is too big to fit on screen; displaying at 67%
> In images.internal.initSize (line 71)
  In imshow (line 328)
  In imshowpair (line 126)
```



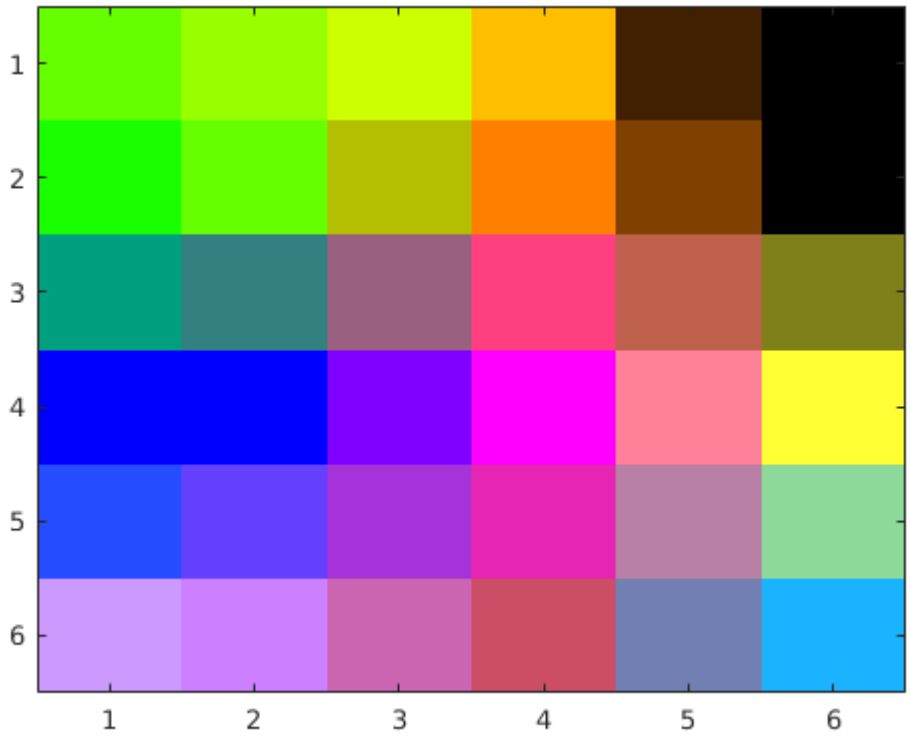
2 Using Bilinear Interpolation

Bilinear interpolation results in a smoother image due to rowise linear interpolation i.e the contribution of the closer pixel is more than the farther one but still both contribute this results in a smoother picture.

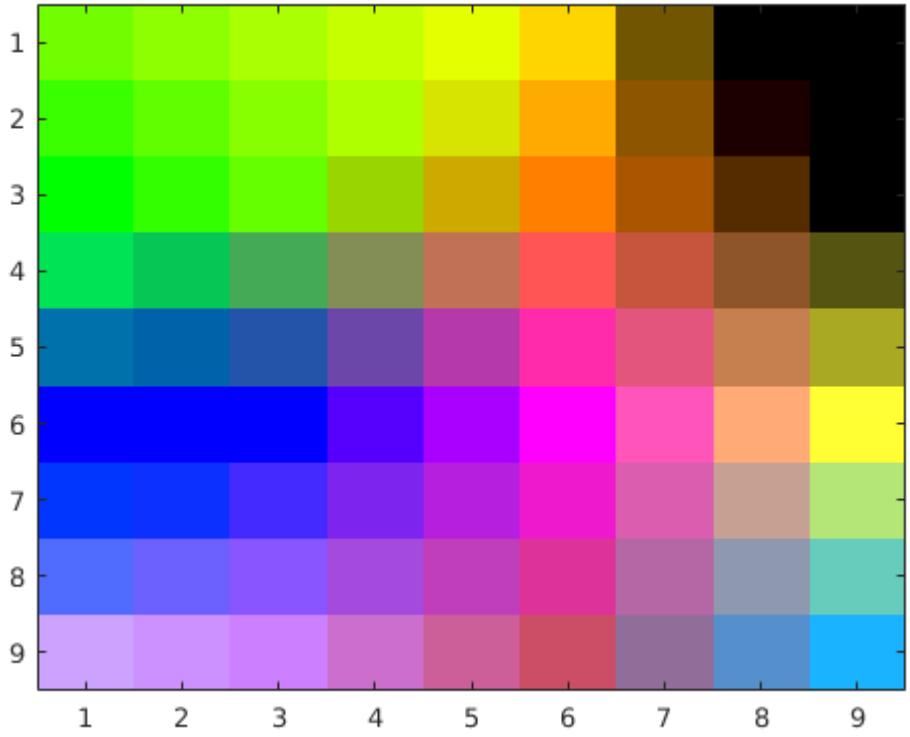
```
In [25]: red = [0.4 1 0; 0 1 1; 0.8 0.8 0.1 ];
         green = [1 0.5 0; 0 0 1; 0.5 0.3 0.7];
         blue = [0.0 0.0 0; 1.0 1.0 0.2; 1.0 0.4 1];
         img = cat(3, red, green, blue);
         image(img);
```




```
In [32]: new_img = RESIZEBL(img,2);
         image(new_img)
```

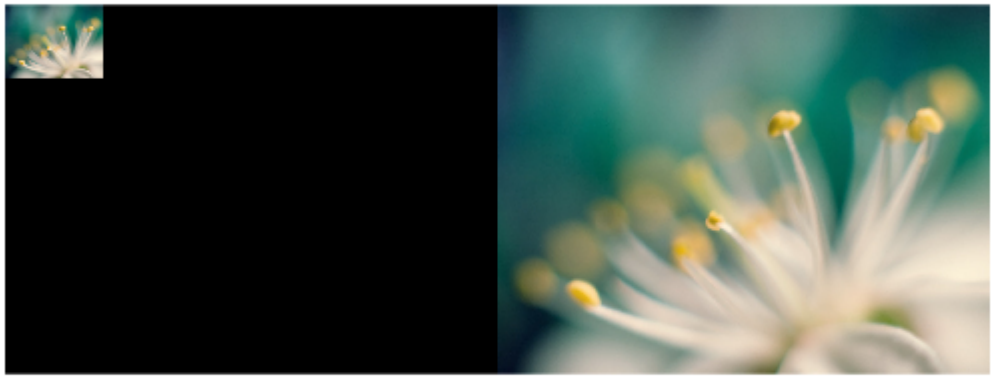



```
In [33]: new_img = RESIZEBL(img,3);
         image(new_img)
```




```
In [34]: new_img1 = RESIZEBL(img1,5);
         imshowpair(img1,new_img1,'montage');
```

```
Warning: Image is too big to fit on screen; displaying at 8%
> In images.internal.initSize (line 71)
  In imshow (line 328)
  In imshowpair (line 126)
```



```
In [35]: new_img2= RESIZEBL(img2,2);
         imshowpair(img2,new_img2,'montage');
```

2.0.1 The Difference between the two types of interpolations

The major difference between the two is that the images resized be nearest neighbpur are more pixelated and those done by bilear are not. Nearest neighbour fairs equal or even better with images with higher number of straight edges

We have a lot of other alternatives for image resizing like bicubic interpolation which uses the cubic equations for finding the pixel values.

In [ ]: