q5

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1 2 D Convolution and edge detection

Let assume the below 3x3 matrix

```
In [22]: M = [1,2,1;0,0,0;-1,-2,-1]
```

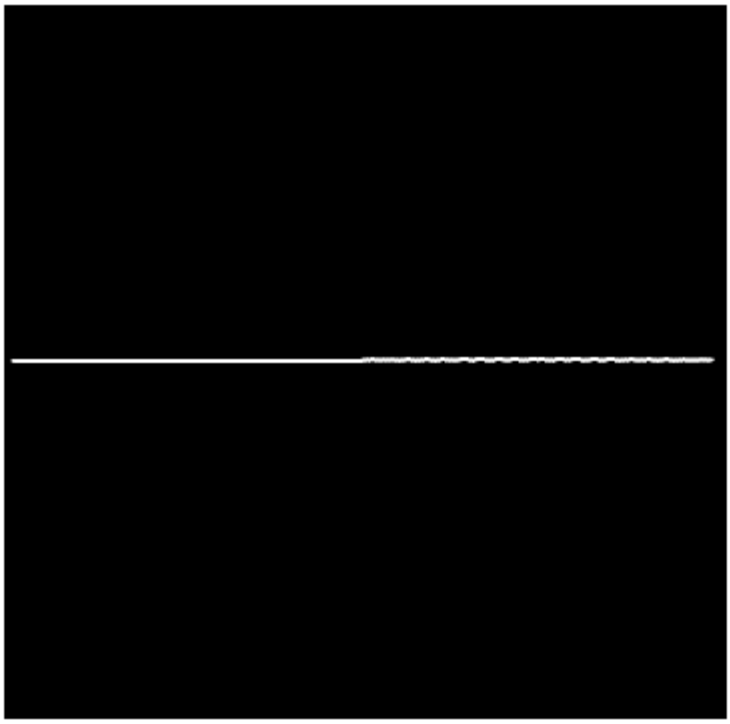
```
M =

     1     2     1
     0     0     0
    -1    -2    -1
```

We can see after convolution, we get a red line.

```
In [10]: img = imread('./sample_inp.png');
         new_img = myconv(M,img);
```

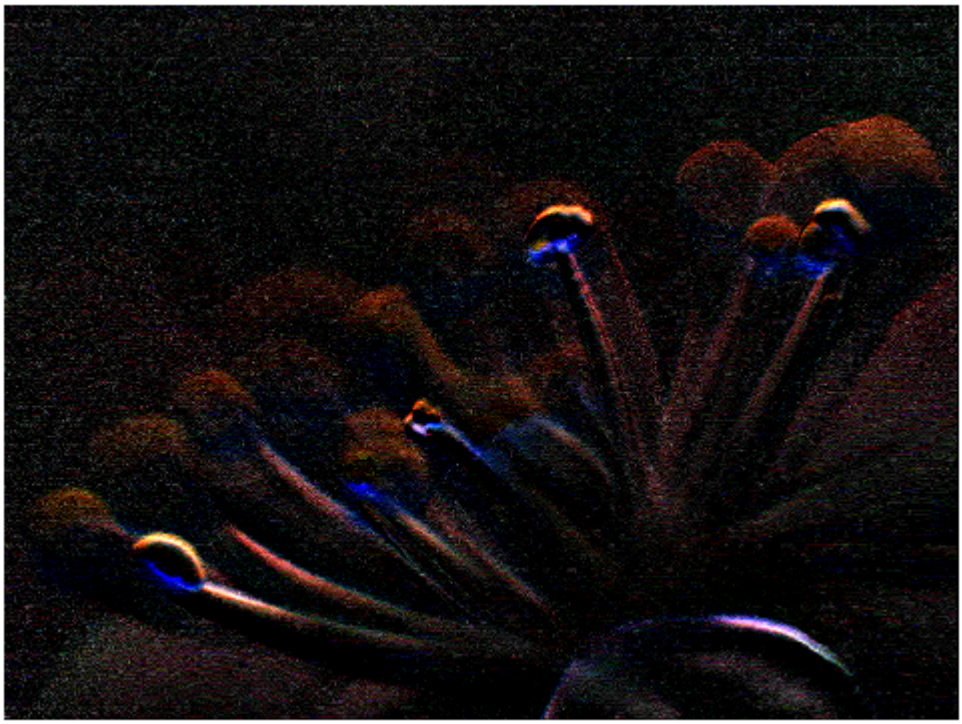
```
In [11]: imshow(new_img);
```



1.0.1 Using the M we first detect many vertical edges

```
In [24]: blur = imread('./blur.jpg');
         ver_blur = myconv(M,blur);
         imshow(ver_blur*5)
```

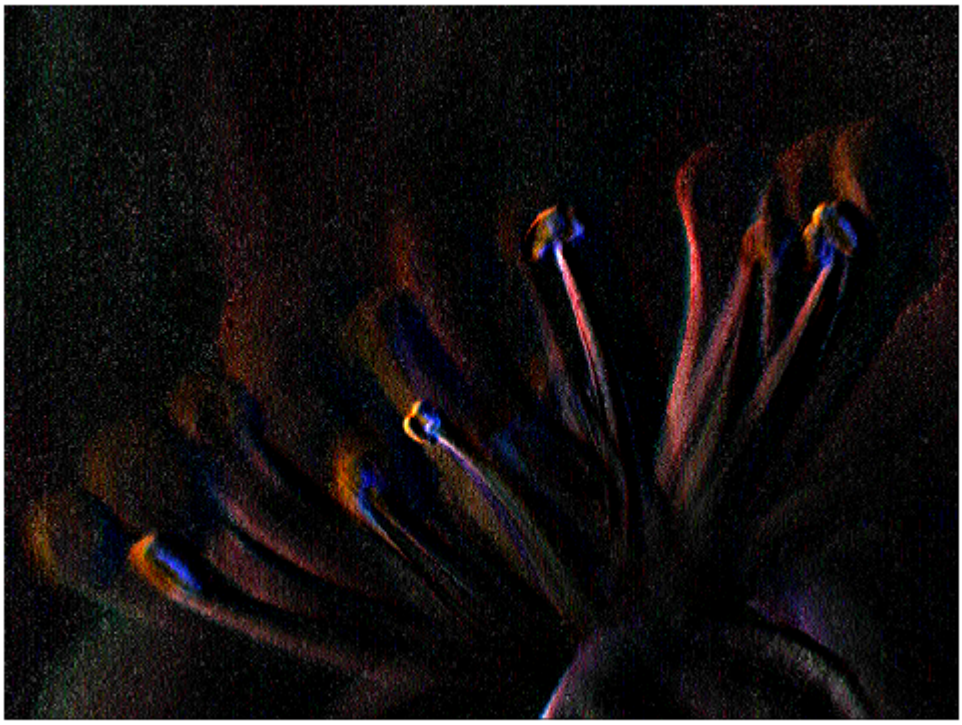
```
Warning: Image is too big to fit on screen; displaying at 67%
> In images.internal.initSize (line 71)
  In imshow (line 328)
```



1.0.2 Using the M' we detect many horizontal edges

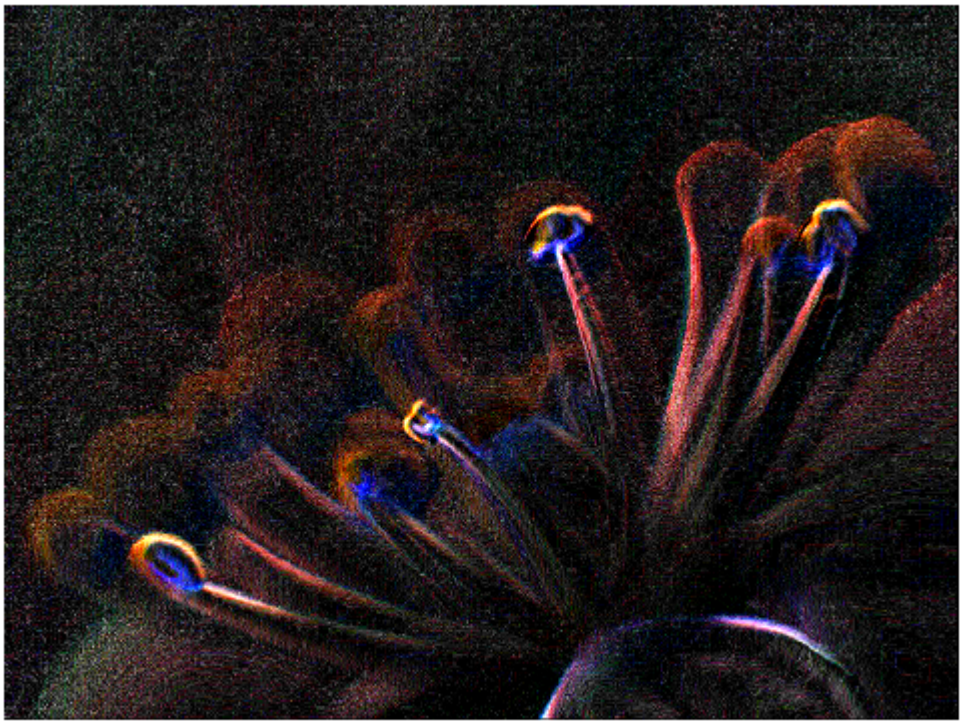
```
In [25]: hor_blur = myconv(M',blur);
         imshow(hor_blur*5)
```

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



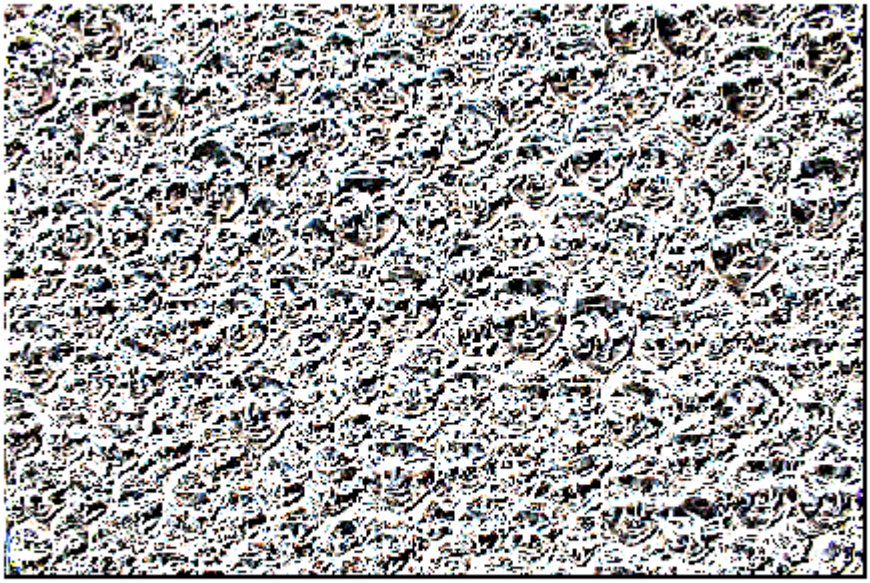
```
In [30]: fin_blur = ver_blur + hor_blur;
         imshow(fin_blur.*5)
```

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



Hence we can even do this on other images‘

```
In [33]: img = imread('./Faces.jpg');
         ver_img = myconv(M,img);
         hor_img = myconv(M',img);
         fin_img = ver_img + hor_img;
         imshow(fin_img.*5)
```



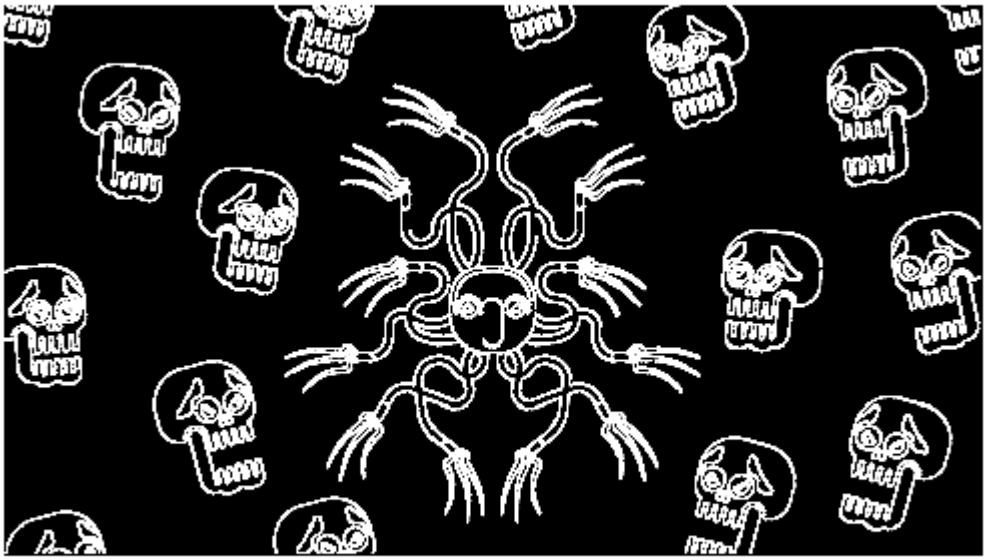
```
In [34]: img = imread('./War_on_drugs.png');
         ver_img = myconv(M,img);
         hor_img = myconv(M',img);
         fin_img = ver_img + hor_img;
         imshow(fin_img.*5)
```

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

1.0.3 We get better edge detection after using some kind of blur

```
In [36]: fin_img = conv2([1,1,1;1,1,1;1,1,1]./9,fin_img);
         imshow(fin_img)
```

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



In [ ]: