image-processing

January 20, 2024

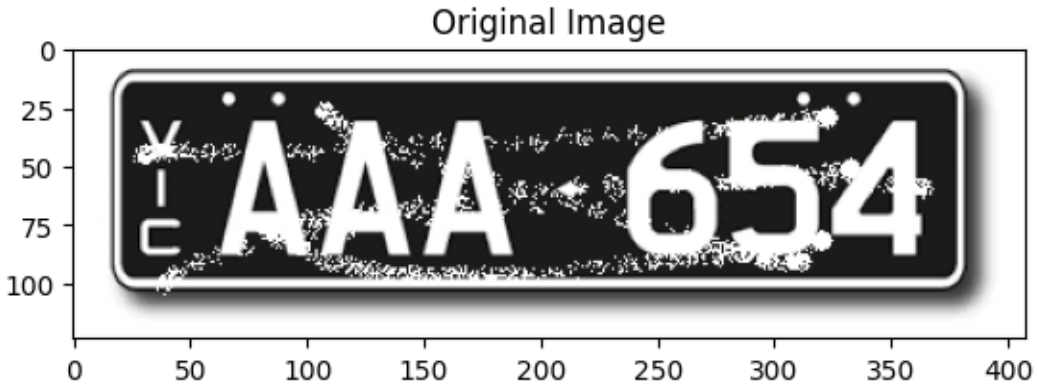
[1]:
```
import numpy as np
import cv2
import matplotlib as mpl
import matplotlib.pyplot as plt
```

[3]:
```
img=plt.imread("/kaggle/input/images/image.png")
```

[4]:
```
print(img.shape) # printing shape of image. It is colour so 124 x 408 pixel␣
↪having 3 channel - RGB
```

```
(124, 408, 4)
```

[5]:
```
plt.imshow(img)
plt.title("Original Image")
plt.show()
```



0.1 CV2 - Image Processing

Removing noice from images

Morphological analysis

Image rotation and flipping

1 Morphological Analysis

Erosion: loss of pixles from the edges

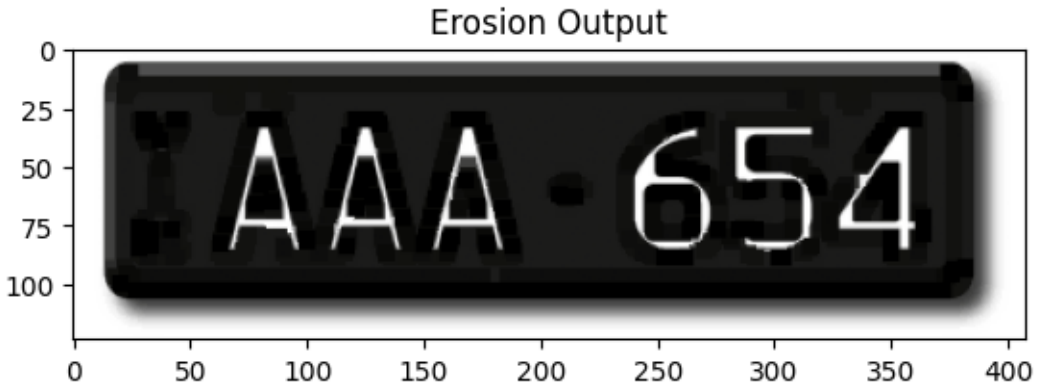
Dilation: gain of pixles on the edges

1.0.1 Erosion

[6]:
```
kernel = np.ones((7,7))
img2=cv2.erode(img,kernel)

print(img.shape)
plt.imshow(img2)
plt.title("Erosion Output")
plt.show()
```

```
(124, 408, 4)
```



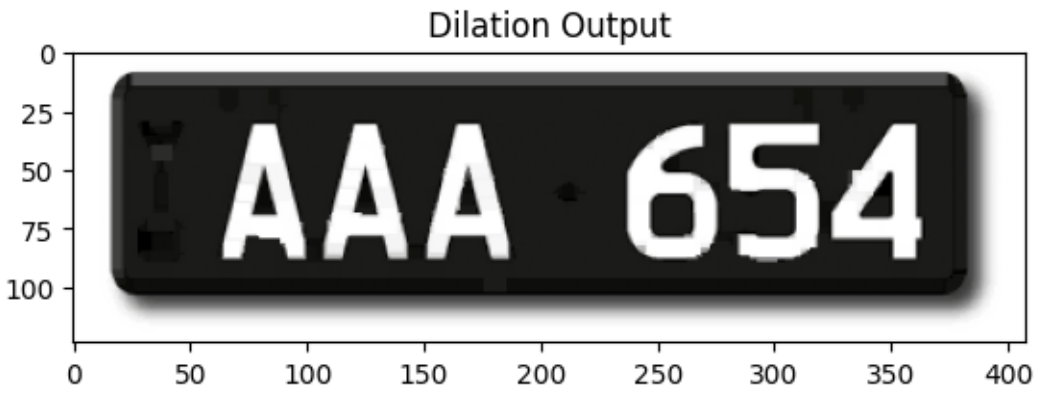
1.0.2 Dilation

[7]:
```
kernel = np.ones((7,7))

img3=cv2.dilate(img2,kernel) # we are using the image on which we already␣
 ↪applied Erosion

print(img.shape)
plt.imshow(img3)
plt.title("Dilation Output")
plt.show()
```

```
(124, 408, 4)
```



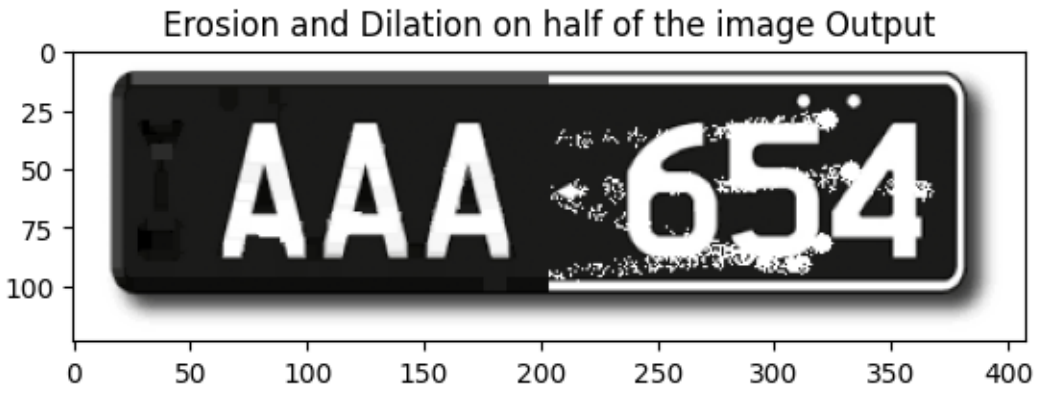
1.0.3 Erosion and Dilation Both

[8]:
```
# Apply Erosion and Dilation on half of the image

img4=img.copy()
img4[:,:204]=cv2.dilate(cv2.erode(img4[:,:204],kernel),kernel)

print(img.shape)
plt.imshow(img4)
plt.title("Erosion and Dilation on half of the image Output")
plt.show()
```

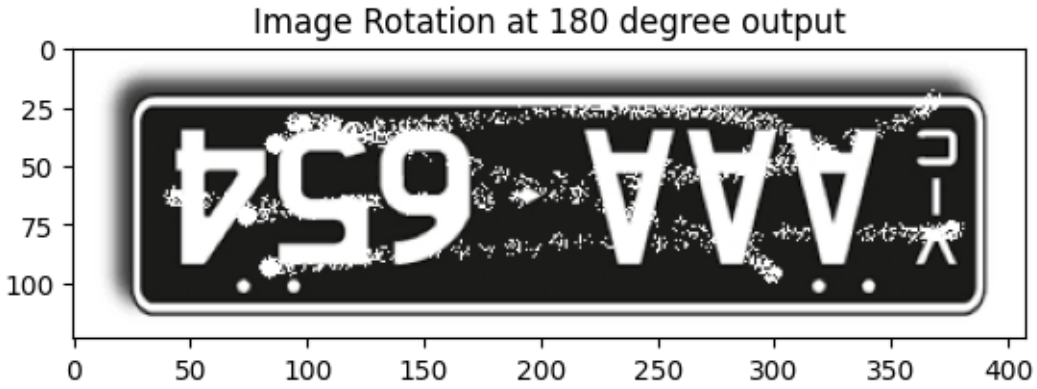
```
(124, 408, 4)
```



1.0.4 image Rotation

[10]:
```
img6=cv2.rotate(img,cv2.ROTATE_180) # Other options: ROTATE_90_CLOCKWISE and␣
↪ROTATE_90_ANTICLOSKWISE
print(img6.shape)
plt.imshow(img6)
plt.title("Image Rotation at 180 degree output")
plt.show()
```

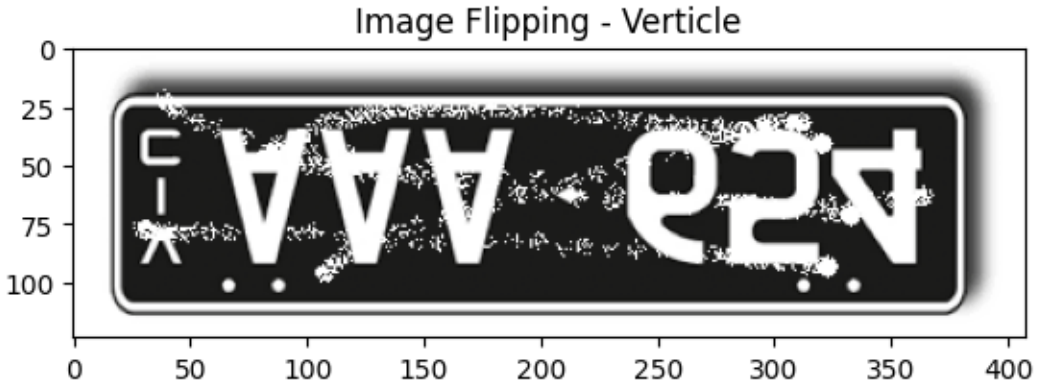
```
(124, 408, 4)
```



1.0.5 Image flipping - Verticle

[11]:
```
img7=cv2.flip(img,0) # 0 is for verticle flipping
print(img7.shape)
plt.imshow(img7)
plt.title("Image Flipping - Verticle")
plt.show()
```

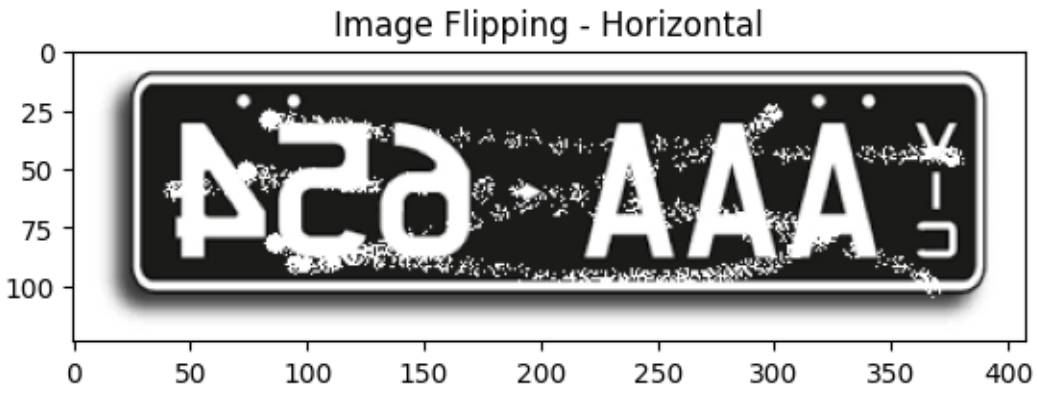
```
(124, 408, 4)
```



1.0.6 Image flippting - Horizontal

[12]:
```
img8=cv2.flip(img,1) # 1 is for horizontal flipping
print(img8.shape)
plt.imshow(img8)
plt.title("Image Flipping - Horizontal")
plt.show()
```

```
(124, 408, 4)
```



1.0.7 mage flipping - Both (horizontal and verticle)

[13]:
```
img9=cv2.flip(img,-1) # -1 is for verticle and horizontal both flipping
print(img9.shape)
plt.imshow(img9)
plt.title("Image Flipping - Verticle and Horizontal")
plt.show()
```

```
(124, 408, 4)
```

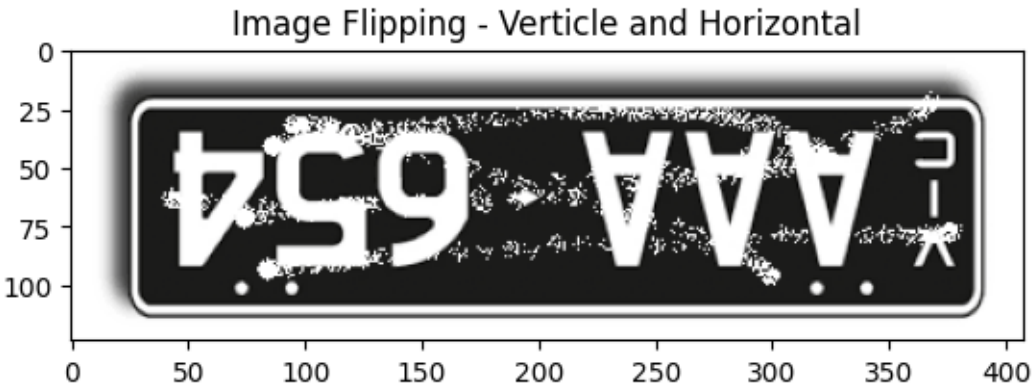


Image Flipping - Verticle and Horizontal
0
25
50
75
100
0
50
100
150
200
250
300
350
400