NUMPY IMAGE PROJECT

In [3]:
```
import numpy as np
```

In [5]:
```
import matplotlib.pyplot as plt
```

In [6]:
```
from PIL import Image
```

In [19]:
```
nani_img = Image.open(r'C:\Users\krishna\OneDrive\Desktop\nani_img.jpg')
nani_img
```

Out[19]:

In [23]:
```
type(nani_img)
```

Out[23]:
```
PIL.JpegImagePlugin.JpegImageFile
```

In [27]:
```
nani_arr =np.asarray(nani_img)
nani_arr
```

Out[27]:
```
array([[[ 20,  20,  20],
        [ 20,  20,  20],
        [ 20,  20,  20],
        ...,
        [249, 249, 249],
        [250, 250, 250],
        [250, 250, 250]],

       [[ 20,  20,  20],
        [ 20,  20,  20],
        [ 20,  20,  20],
        ...,
        [249, 249, 249],
        [250, 250, 250],
        [250, 250, 250]],

       [[ 20,  20,  20],
        [ 20,  20,  20],
        [ 20,  20,  20],
        ...,
        [249, 249, 249],
        [250, 250, 250],
        [250, 250, 250]],

       ...,

       [[121, 121, 121],
        [120, 120, 120],
        [118, 118, 118],
        ...,
        [181, 181, 181],
        [182, 182, 182],
        [183, 183, 183]],

       [[122, 122, 122],
        [121, 121, 121],
        [120, 120, 120],
        ...,
        [182, 182, 182],
        [183, 183, 183],
        [183, 183, 183]],

       [[123, 123, 123],
        [122, 122, 122],
        [121, 121, 121],
        ...,
        [182, 182, 182],
        [183, 183, 183],
        [184, 184, 184]]], dtype=uint8)
```

In [29]:
```
type(nani_arr)
```

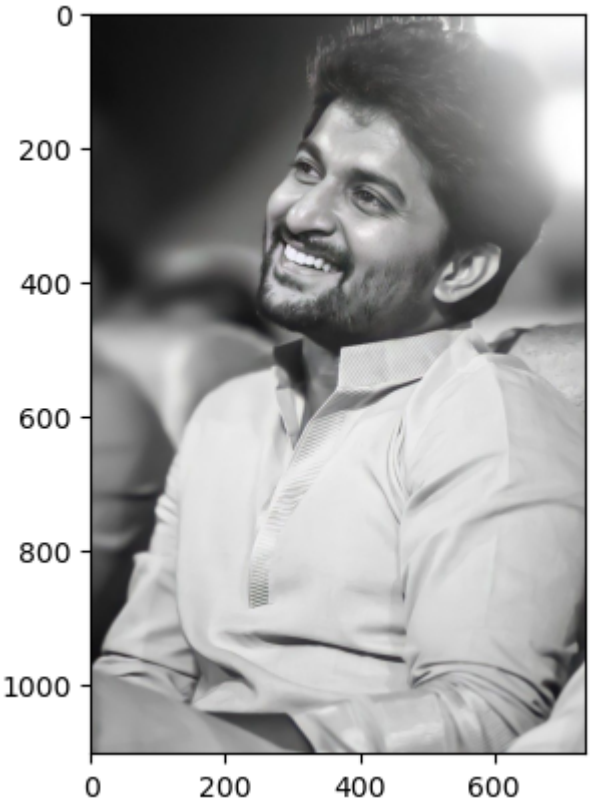
Out[29]:
```
numpy.ndarray
```

In [31]:
```
nani_arr.shape
```

Out[31]:
```
(1102, 736, 3)
```

In [33]:
```
plt.imshow(nani_arr)
```

Out[33]: <matplotlib.image.AxesImage at 0x296b25c6cc0>



In [35]:
```
nani_red = nani_arr.copy()
```

In [37]:
```
nani_red
```

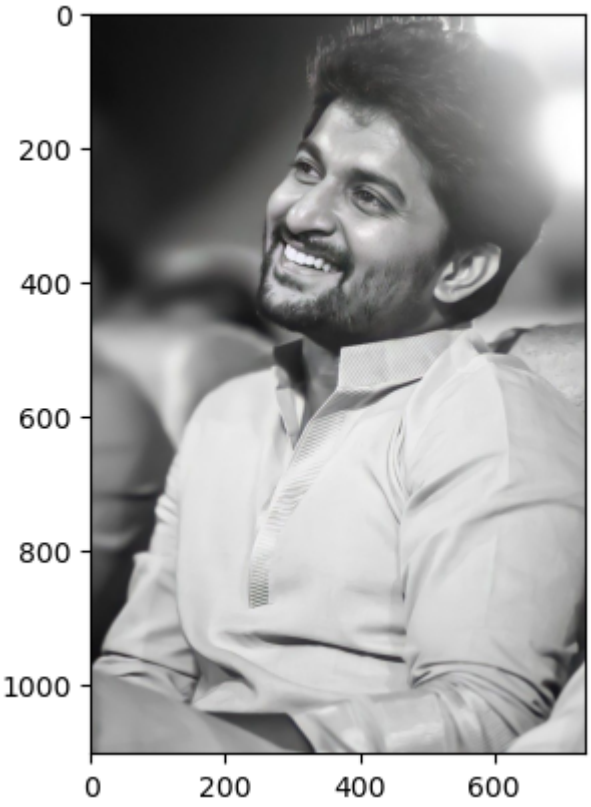
Out[37]:
```
array([[[ 20,  20,  20],
        [ 20,  20,  20],
        [ 20,  20,  20],
        ...,
        [249, 249, 249],
        [250, 250, 250],
        [250, 250, 250]],

       [[ 20,  20,  20],
        [ 20,  20,  20],
        [ 20,  20,  20],
        ...,
        [249, 249, 249],
        [250, 250, 250],
        [250, 250, 250]],

       [[ 20,  20,  20],
        [ 20,  20,  20],
        [ 20,  20,  20],
        ...,
        [249, 249, 249],
        [250, 250, 250],
        [250, 250, 250]],

       ...,

       [[121, 121, 121],
        [120, 120, 120],
        [118, 118, 118],
        ...,
        [181, 181, 181],
        [182, 182, 182],
        [183, 183, 183]],

       [[122, 122, 122],
        [121, 121, 121],
        [120, 120, 120],
        ...,
        [182, 182, 182],
        [183, 183, 183],
        [183, 183, 183]],

       [[123, 123, 123],
        [122, 122, 122],
        [121, 121, 121],
        ...,
        [182, 182, 182],
        [183, 183, 183],
        [184, 184, 184]]], dtype=uint8)
```

In [39]:
```
nani_arr==nani_red
```

Out[39]:
```
array([[[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       [[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       [[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       ...,

       [[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       [[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       [[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]]])
```

In [41]:
```
plt.imshow(nani_red)
```

Out[41]:
```
<matplotlib.image.AxesImage at 0x296b258a810>
```

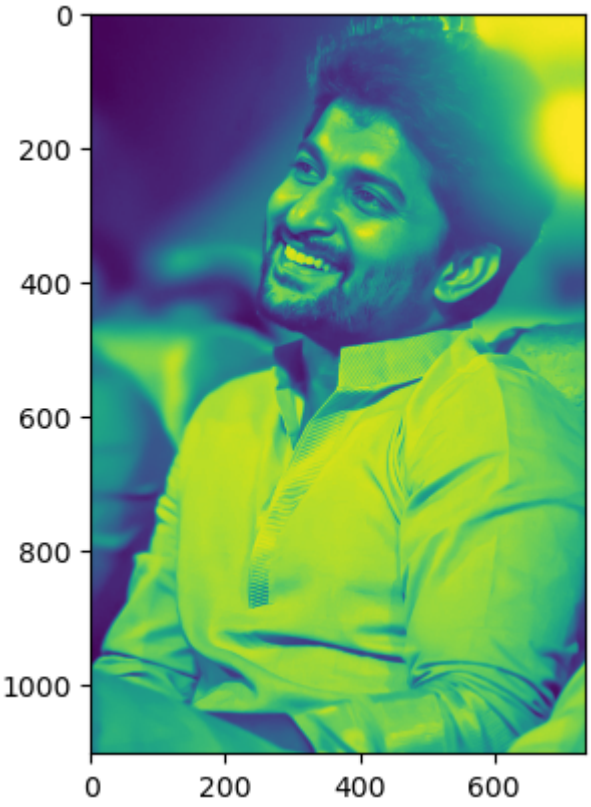


In [45]:
```
nani_red.shape
```

Out[45]:
```
(1102, 736, 3)
```

In [49]:
```
# R G B
plt.imshow(nani_red[:,:,0])
```

Out[49]:
```
<matplotlib.image.AxesImage at 0x296b2b18c50>
```



In [51]:
```
nani_red[:,:,0]
```

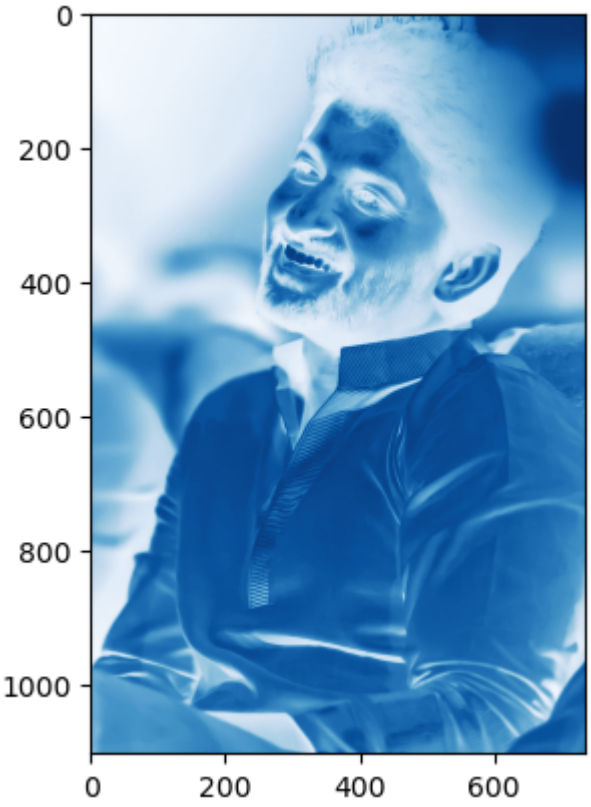
Out[51]:
```
array([[ 20,  20,  20, ..., 249, 250, 250],
       [ 20,  20,  20, ..., 249, 250, 250],
       [ 20,  20,  20, ..., 249, 250, 250],
       ...,
       [121, 120, 118, ..., 181, 182, 183],
       [122, 121, 120, ..., 182, 183, 183],
       [123, 122, 121, ..., 182, 183, 184]], dtype=uint8)
```

In [55]:
```
plt.imshow(nani_red[:,:,0],cmap='gray')
```

Out[55]:
```
<matplotlib.image.AxesImage at 0x296b2ab6f30>
```

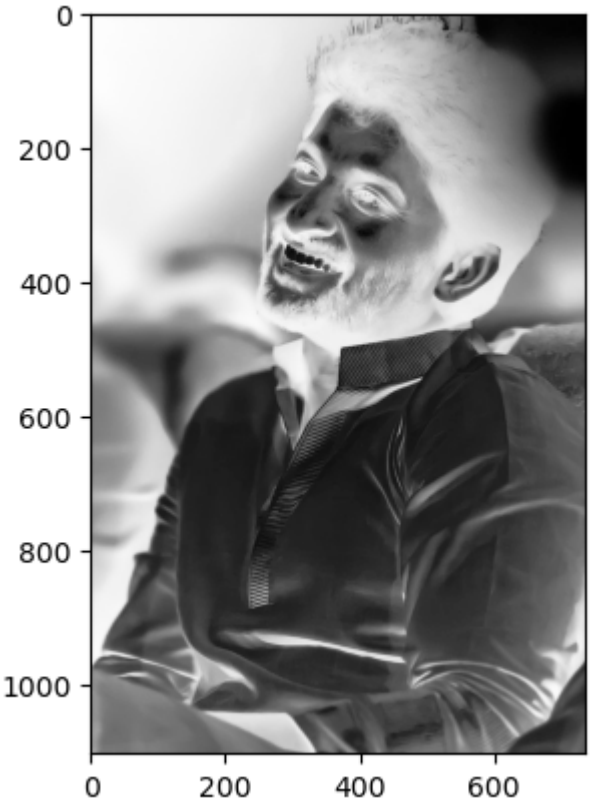
In [147…
```
plt.imshow(nani_red[:,:,0],cmap='Blues')
```

Out[147…
```
<matplotlib.image.AxesImage at 0x296bb770cb0>
```



In [65]:
```
plt.imshow(nani_red[:,:,0],cmap='Greys')
```

Out[65]:
```
<matplotlib.image.AxesImage at 0x296b8b9cce0>
```



In [69]:
```
plt.imshow(nani_red[:,:,1],cmap='grey')
```

Out[69]:
```
<matplotlib.image.AxesImage at 0x296b89ce210>
```

In [75]:
```
nani_red[:,:,0]
```

Out[75]:
```
array([[ 20,  20,  20, ..., 249, 250, 250],
       [ 20,  20,  20, ..., 249, 250, 250],
       [ 20,  20,  20, ..., 249, 250, 250],
       ...,
       [121, 120, 118, ..., 181, 182, 183],
       [122, 121, 120, ..., 182, 183, 183],
       [123, 122, 121, ..., 182, 183, 184]], dtype=uint8)
```

In [73]:
```
nani_red[:,:,1]
```

Out[73]:
```
array([[ 20,  20,  20, ..., 249, 250, 250],
       [ 20,  20,  20, ..., 249, 250, 250],
       [ 20,  20,  20, ..., 249, 250, 250],
       ...,
       [121, 120, 118, ..., 181, 182, 183],
       [122, 121, 120, ..., 182, 183, 183],
       [123, 122, 121, ..., 182, 183, 184]], dtype=uint8)
```

In [71]:
```
nani_red[:,:,2]
```

Out[71]:
```
array([[ 20,  20,  20, ..., 249, 250, 250],
       [ 20,  20,  20, ..., 249, 250, 250],
       [ 20,  20,  20, ..., 249, 250, 250],
       ...,
       [121, 120, 118, ..., 181, 182, 183],
       [122, 121, 120, ..., 182, 183, 183],
       [123, 122, 121, ..., 182, 183, 184]], dtype=uint8)
```

In [77]:
```
nani_red[:,:,1] = 0
```

In [79]:
```
nani_red[:,:,1]
```

Out[79]:
```
array([[0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       ...,
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

In [81]:
```
plt.imshow(nani_red)
```

Out[81]:
```
<matplotlib.image.AxesImage at 0x296b89b0650>
```

In [83]:
```
nani_red[:,:,2]
```

Out[83]:
```
array([[ 20,  20,  20, ..., 249, 250, 250],
       [ 20,  20,  20, ..., 249, 250, 250],
       [ 20,  20,  20, ..., 249, 250, 250],
       ...,
       [121, 120, 118, ..., 181, 182, 183],
       [122, 121, 120, ..., 182, 183, 183],
       [123, 122, 121, ..., 182, 183, 184]], dtype=uint8)
```

In [85]:
```
nani_red[:,:,2]=0
```

In [87]:
```
nani_red[:,:,2]
```

Out[87]:
```
array([[0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       ...,
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

In [89]:
```
plt.imshow(nani_red)
```

Out[89]:
```
<matplotlib.image.AxesImage at 0x296b9e06ff0>
```

In [91]:
```
nani_arr
```

Out[91]:
```
array([[[ 20,  20,  20],
        [ 20,  20,  20],
        [ 20,  20,  20],
        ...,
        [249, 249, 249],
        [250, 250, 250],
        [250, 250, 250]],

       [[ 20,  20,  20],
        [ 20,  20,  20],
        [ 20,  20,  20],
        ...,
        [249, 249, 249],
        [250, 250, 250],
        [250, 250, 250]],

       [[ 20,  20,  20],
        [ 20,  20,  20],
        [ 20,  20,  20],
        ...,
        [249, 249, 249],
        [250, 250, 250],
        [250, 250, 250]],

       ...,

       [[121, 121, 121],
        [120, 120, 120],
        [118, 118, 118],
        ...,
        [181, 181, 181],
        [182, 182, 182],
        [183, 183, 183]],

       [[122, 122, 122],
        [121, 121, 121],
        [120, 120, 120],
        ...,
        [182, 182, 182],
        [183, 183, 183],
        [183, 183, 183]],

       [[123, 123, 123],
        [122, 122, 122],
        [121, 121, 121],
        ...,
        [182, 182, 182],
        [183, 183, 183],
        [184, 184, 184]]], dtype=uint8)
```

In [93]:
```
nani_red
```

Out[93]:
```
array([[[ 20,   0,   0],
        [ 20,   0,   0],
        [ 20,   0,   0],
        ...,
        [249,   0,   0],
        [250,   0,   0],
        [250,   0,   0]],

       [[ 20,   0,   0],
        [ 20,   0,   0],
        [ 20,   0,   0],
        ...,
        [249,   0,   0],
        [250,   0,   0],
        [250,   0,   0]],

       [[ 20,   0,   0],
        [ 20,   0,   0],
        [ 20,   0,   0],
        ...,
        [249,   0,   0],
        [250,   0,   0],
        [250,   0,   0]],

       ...,

       [[121,   0,   0],
        [120,   0,   0],
        [118,   0,   0],
        ...,
        [181,   0,   0],
        [182,   0,   0],
        [183,   0,   0]],

       [[122,   0,   0],
        [121,   0,   0],
        [120,   0,   0],
        ...,
        [182,   0,   0],
        [183,   0,   0],
        [183,   0,   0]],

       [[123,   0,   0],
        [122,   0,   0],
        [121,   0,   0],
        ...,
        [182,   0,   0],
        [183,   0,   0],
        [184,   0,   0]]], dtype=uint8)
```

In [95]:
```
nani_img
```

Out[95]:

In [97]:
```
arr1=np.asarray(nani_img)
```

In [101…
```
type(arr1)
```

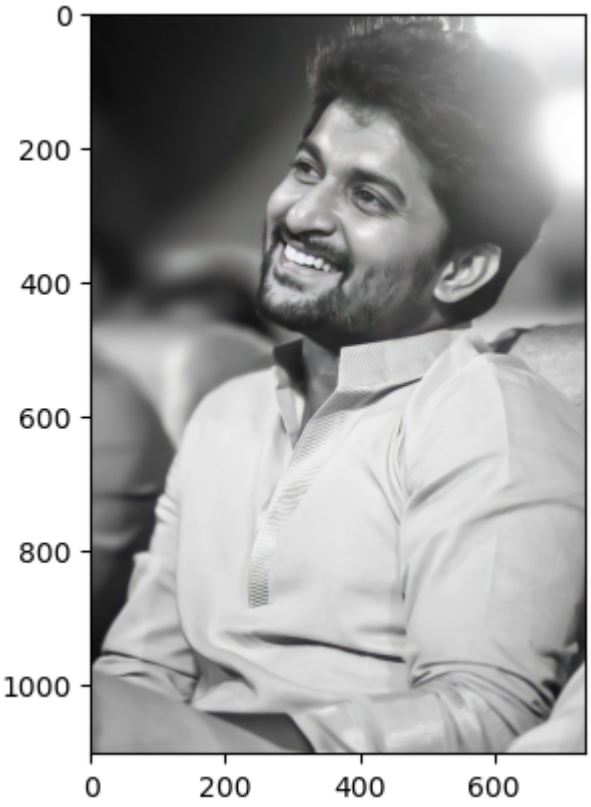
Out[101… numpy.ndarray

In [103…
```
arr1.shape
```

Out[103… (1102, 736, 3)

In [105…
```
plt.imshow(arr1)
```

Out[105… <matplotlib.image.AxesImage at 0x296b9e6d0d0>



In [107…
```
nani_img1 = arr1.copy()
```

In [109…
```
nani_img1[:,:,0] = 0
```

In [111…
```
plt.imshow(nani_img1)
```

Out[111… <matplotlib.image.AxesImage at 0x296b9e6dfa0>

In [115…
```
nani_img1[::,1]
```

Out[115…
```
array([[  0,  20,  20],
       [  0,  20,  20],
       [  0,  20,  20],
       ...,
       [  0, 120, 120],
       [  0, 121, 121],
       [  0, 122, 122]], dtype=uint8)
```

In [123…
```
nani_img1[::,1]= 0
```

In [125…
```
nani_img1
```

Out[125…

```
array([[[  0,  20,  20],
        [  0,   0,   0],
        [  0,  20,  20],
        ...,
        [  0, 249, 249],
        [  0, 250, 250],
        [  0, 250, 250]],

       [[  0,  20,  20],
        [  0,   0,   0],
        [  0,  20,  20],
        ...,
        [  0, 249, 249],
        [  0, 250, 250],
        [  0, 250, 250]],

       [[  0,  20,  20],
        [  0,   0,   0],
        [  0,  20,  20],
        ...,
        [  0, 249, 249],
        [  0, 250, 250],
        [  0, 250, 250]],

       ...,

       [[  0, 121, 121],
        [  0,   0,   0],
        [  0, 118, 118],
        ...,
        [  0, 181, 181],
        [  0, 182, 182],
        [  0, 183, 183]],

       [[  0, 122, 122],
        [  0,   0,   0],
        [  0, 120, 120],
        ...,
        [  0, 182, 182],
        [  0, 183, 183],
        [  0, 183, 183]],

       [[  0, 123, 123],
        [  0,   0,   0],
        [  0, 121, 121],
        ...,
        [  0, 182, 182],
        [  0, 183, 183],
        [  0, 184, 184]]], dtype=uint8)
```

In [127…

```
nani_img1[::,1]= 0
```

In [129…

```
plt.imshow(nani_img1)
```

Out[129…

```
<matplotlib.image.AxesImage at 0x296b9e06990>
```

In [ ]: