Image Processing with OpenCV And Generative New Image

In [40]:
```
pip install opencv-python
```

```
Requirement already satisfied: opencv-python in c:\users\gopi reddy\anaconda3\lib
\site-packages (4.11.0.86)
Requirement already satisfied: numpy>=1.21.2 in c:\users\gopi reddy\anaconda3\lib
\site-packages (from opencv-python) (1.26.4)
Note: you may need to restart the kernel to use updated packages.
```

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

In [4]:
```
import matplotlib.pyplot as plt
```

In [5]:
```
%matplotlib inline
```

In [6]:
```
import cv2
```

In [7]:
```
img = cv2.imread(r'D:\veda\Elephant image.jpg')
```

In [8]:
```
img
```

Out[8]:
```
array([[[214, 210, 205],
        [215, 211, 206],
        [215, 211, 206],
        ...,
        [209, 205, 204],
        [207, 203, 202],
        [206, 202, 201]],

       [[214, 210, 205],
        [214, 210, 205],
        [214, 210, 205],
        ...,
        [207, 205, 204],
        [205, 203, 202],
        [204, 202, 201]],

       [[213, 209, 204],
        [213, 209, 204],
        [214, 210, 205],
        ...,
        [208, 209, 207],
        [206, 207, 205],
        [206, 207, 205]],

       ...,

       [[ 82, 149, 144],
        [ 62, 137, 129],
        [ 39, 122, 113],
        ...,
        [ 31, 107,  89],
        [ 39, 109,  92],
        [ 55, 118, 102]],

       [[ 60, 128, 121],
        [ 49, 128, 119],
        [ 36, 126, 113],
        ...,
        [ 54, 104,  92],
        [ 49, 102,  89],
        [ 54, 108,  95]],

       [[ 73, 143, 136],
        [ 39, 122, 113],
        [ 30, 125, 111],
        ...,
        [ 13,  95,  77],
        [ 14,  92,  75],
        [ 21,  94,  78]]], dtype=uint8)
```

In [9]:
```
type(img)
```

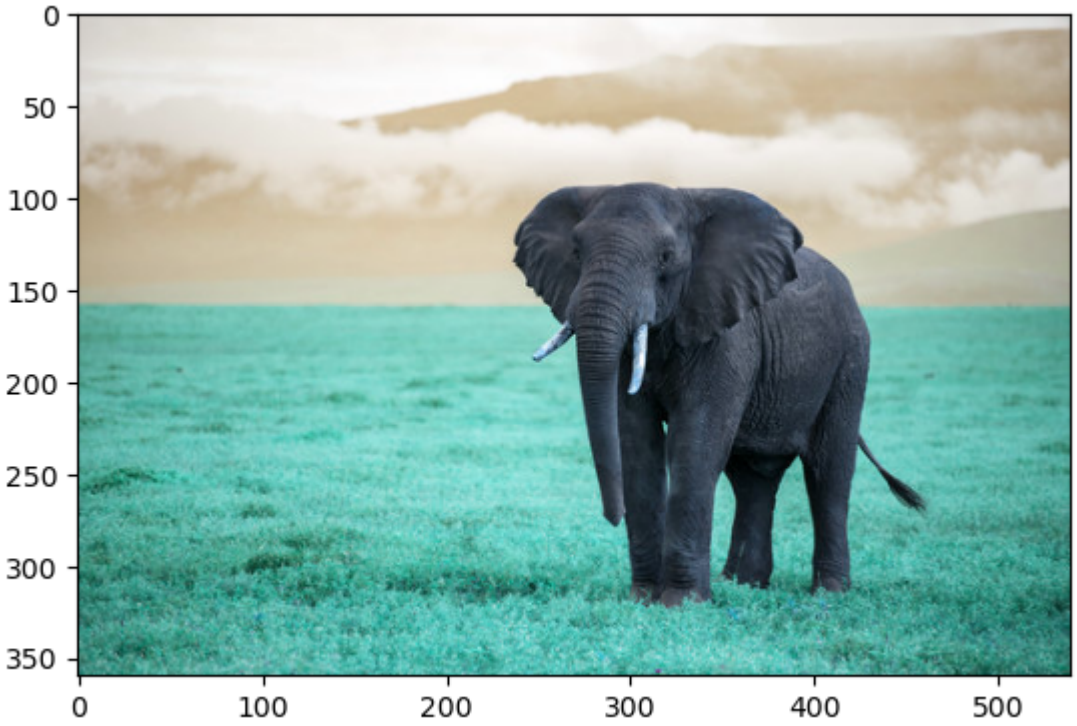
Out[9]:
```
numpy.ndarray
```

In [10]:
```
img.shape
```

Out[10]:
```
(360, 540, 3)
```

In [11]:
```
plt.imshow(img)
```

Out[11]: <matplotlib.image.AxesImage at 0x271869b1a60>

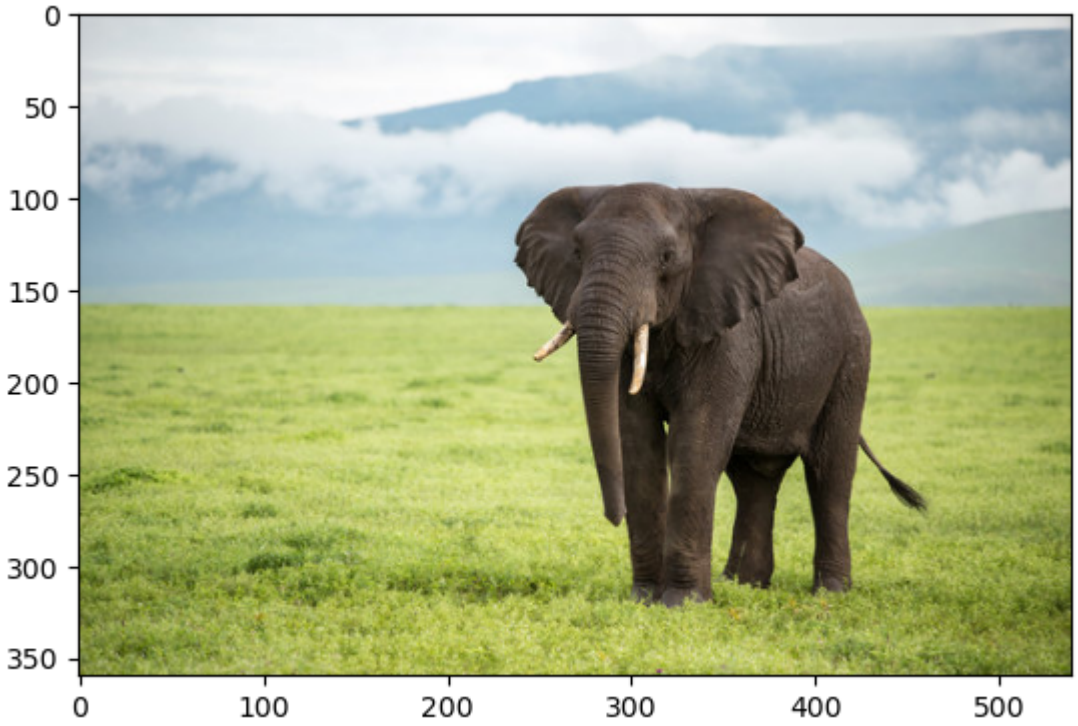


In [12]:
```
img
```

Out[12]:
```
array([[[214, 210, 205],
        [215, 211, 206],
        [215, 211, 206],
        ...,
        [209, 205, 204],
        [207, 203, 202],
        [206, 202, 201]],

       [[214, 210, 205],
        [214, 210, 205],
        [214, 210, 205],
        ...,
        [207, 205, 204],
        [205, 203, 202],
        [204, 202, 201]],

       [[213, 209, 204],
        [213, 209, 204],
        [214, 210, 205],
        ...,
        [208, 209, 207],
        [206, 207, 205],
        [206, 207, 205]],

       ...,

       [[ 82, 149, 144],
        [ 62, 137, 129],
        [ 39, 122, 113],
        ...,
        [ 31, 107,  89],
        [ 39, 109,  92],
        [ 55, 118, 102]],

       [[ 60, 128, 121],
        [ 49, 128, 119],
        [ 36, 126, 113],
        ...,
        [ 54, 104,  92],
        [ 49, 102,  89],
        [ 54, 108,  95]],

       [[ 73, 143, 136],
        [ 39, 122, 113],
        [ 30, 125, 111],
        ...,
        [ 13,  95,  77],
        [ 14,  92,  75],
        [ 21,  94,  78]]], dtype=uint8)
```

In [13]:
```
fix_img = cv2.cvtColor(img,cv2.COLOR_BGR2RGB)
```

In [14]:
```
plt.imshow(fix_img)
plt.show()
```



In [15]:
```
img_gray = cv2.imread(r'D:\veda\Elephant image.jpg',cv2.IMREAD_GRAYSCALE)
```

In [16]:
```
img_gray.shape
```

Out[16]:
```
(360, 540)
```

In [17]:
```
img_gray
```

Out[17]:
```
array([[209, 210, 210, ..., 205, 203, 202],
       [209, 209, 209, ..., 205, 203, 202],
       [208, 208, 209, ..., 208, 206, 206],
       ...,
       [140, 126, 110, ...,  93,  96, 106],
       [118, 116, 112, ...,  95,  92,  98],
       [133, 110, 110, ...,  80,  78,  81]], dtype=uint8)
```

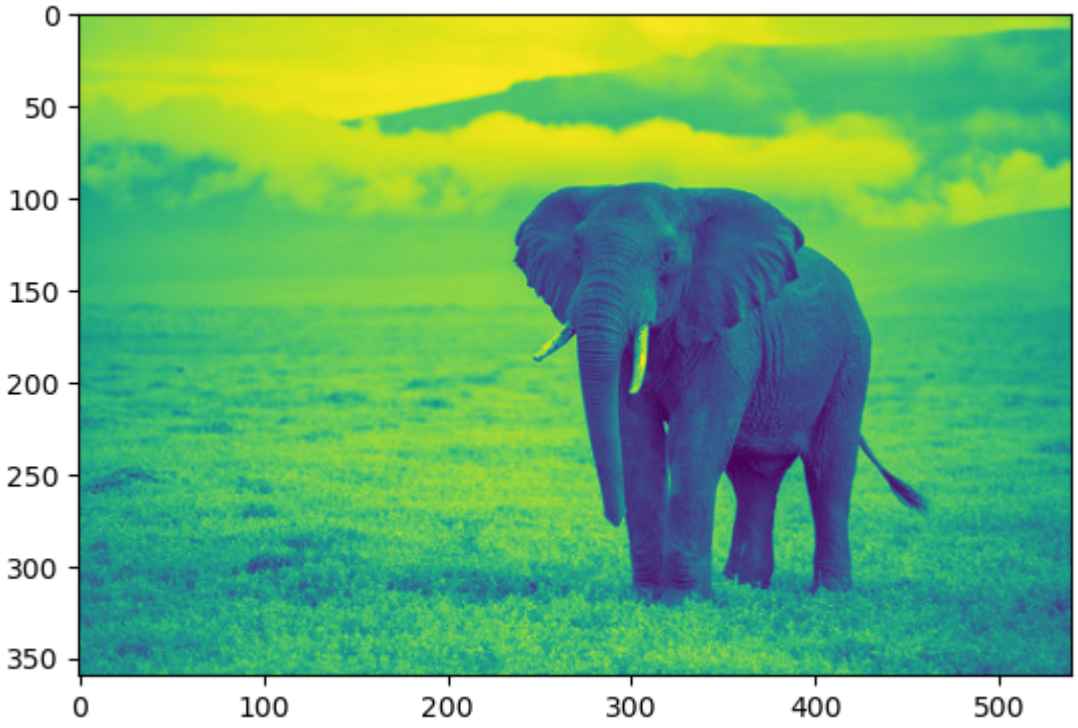
In [18]:
```
img_gray.min()
```

Out[18]:
```
0
```

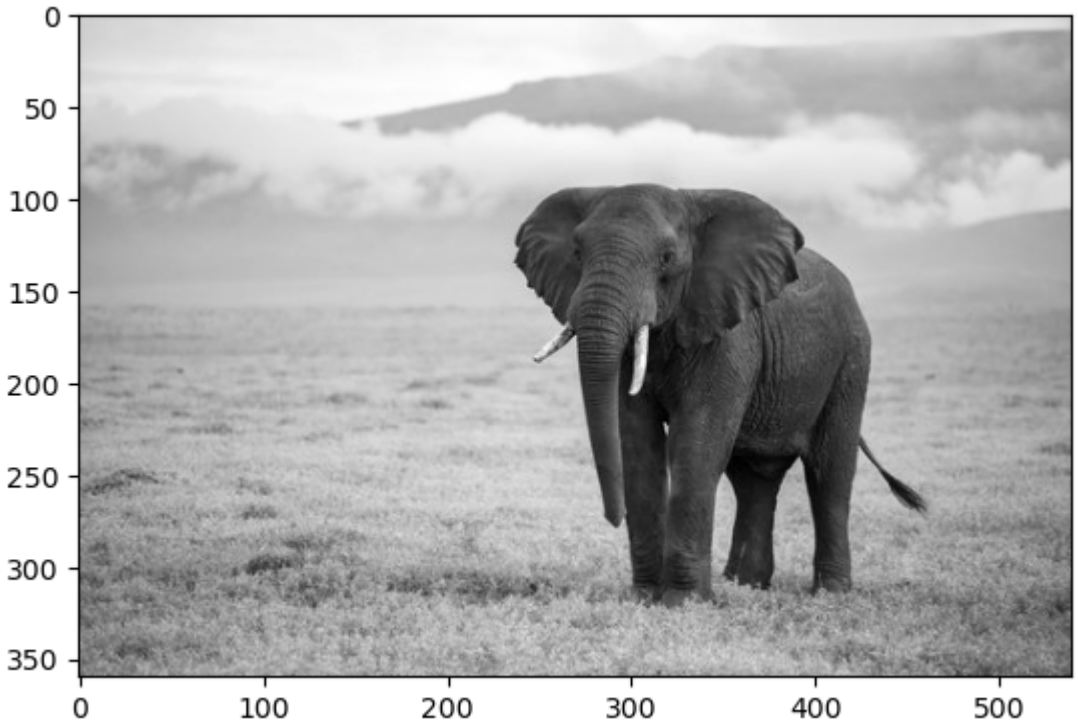
In [19]:
```
img_gray.max()
```

Out[19]:
```
255
```

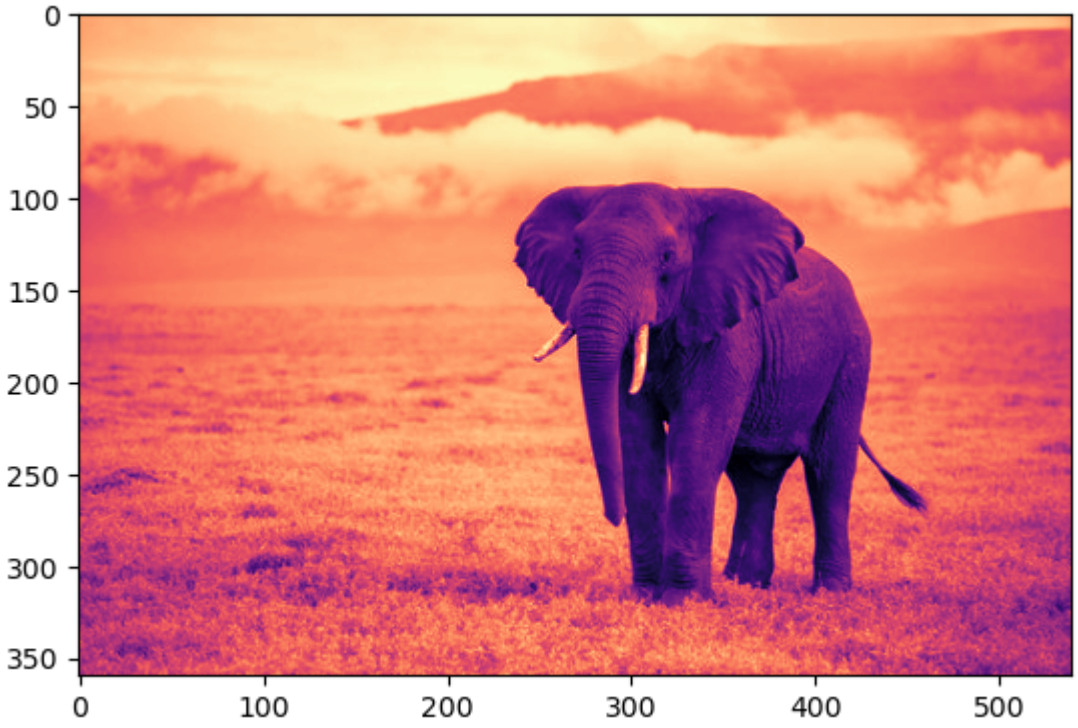
In [20]:
```
plt.imshow(img_gray)
plt.show()
```



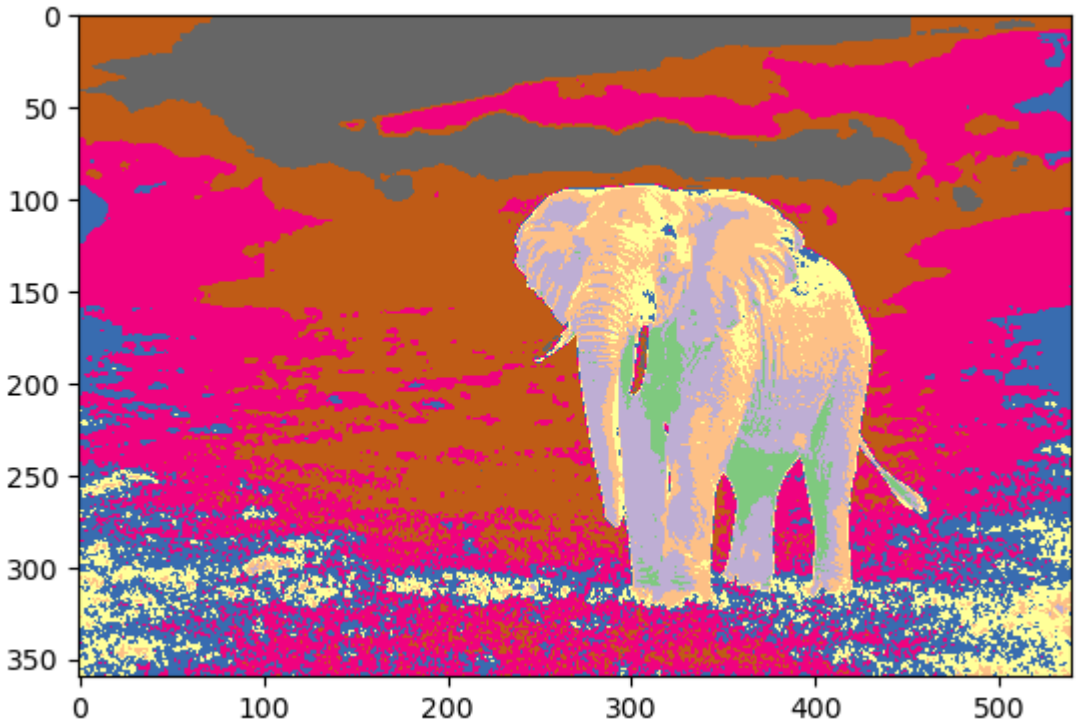
In [21]:
```
plt.imshow(img_gray, cmap = 'gray')
plt.show()
```



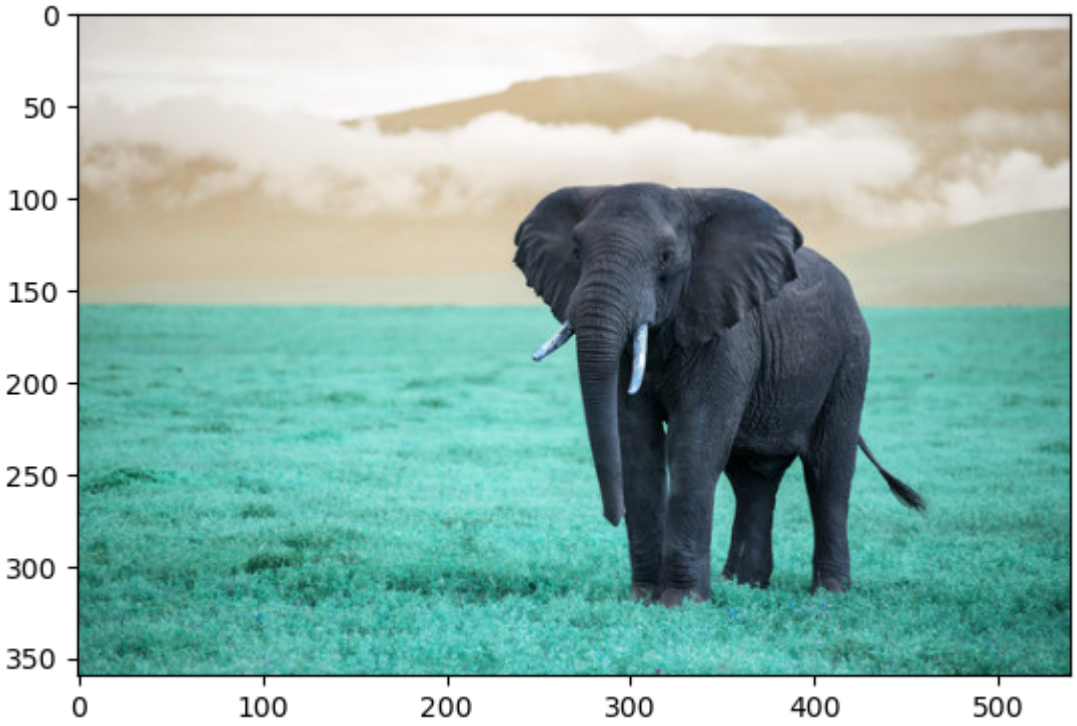
In [22]:
```
plt.imshow(img_gray, cmap = 'magma')
plt.show()
```



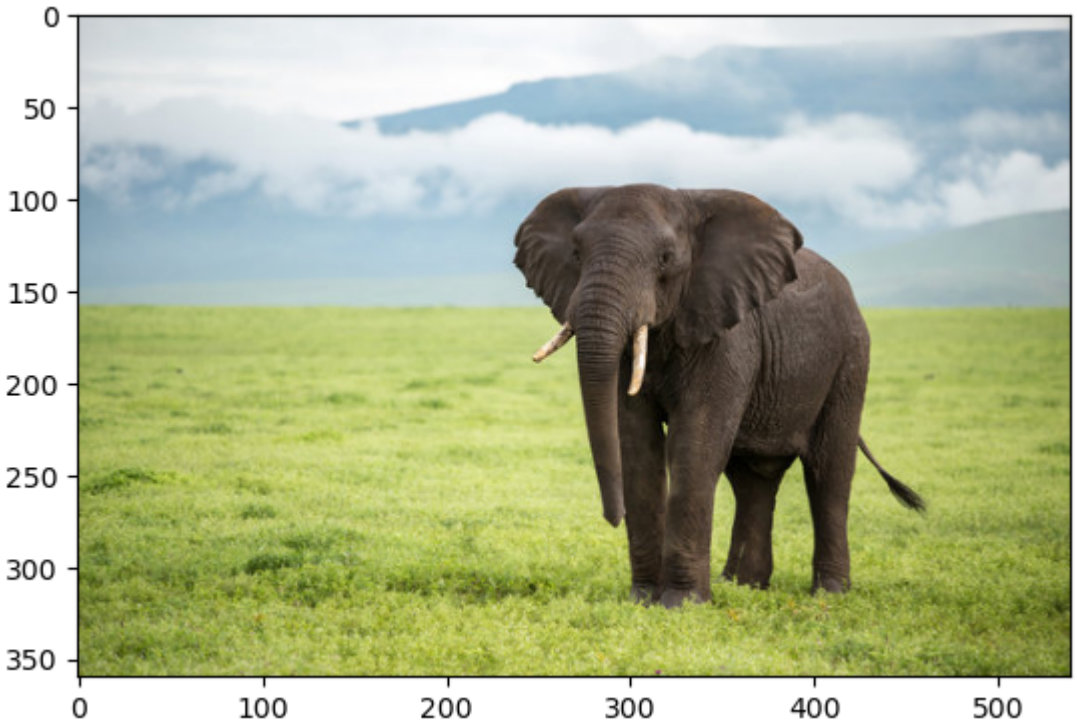
In [23]:
```
plt.imshow(img_gray, cmap = 'Accent')
plt.show()
```



In [24]:
```
plt.imshow(img)
plt.show()
```



In [25]:
```
plt.imshow(fix_img)
plt.show()
```



In [26]:
```
fix_img.shape
```

Out[26]: (360, 540, 3)

In [27]:
```
fix_img_1 = cv2.resize(fix_img,(180,270))
```

In [28]:
```
fix_img_1.shape
```

Out[28]: (270, 180, 3)

In [29]:
```
w_ratio = 0.5
h_ratio = 0.5
```

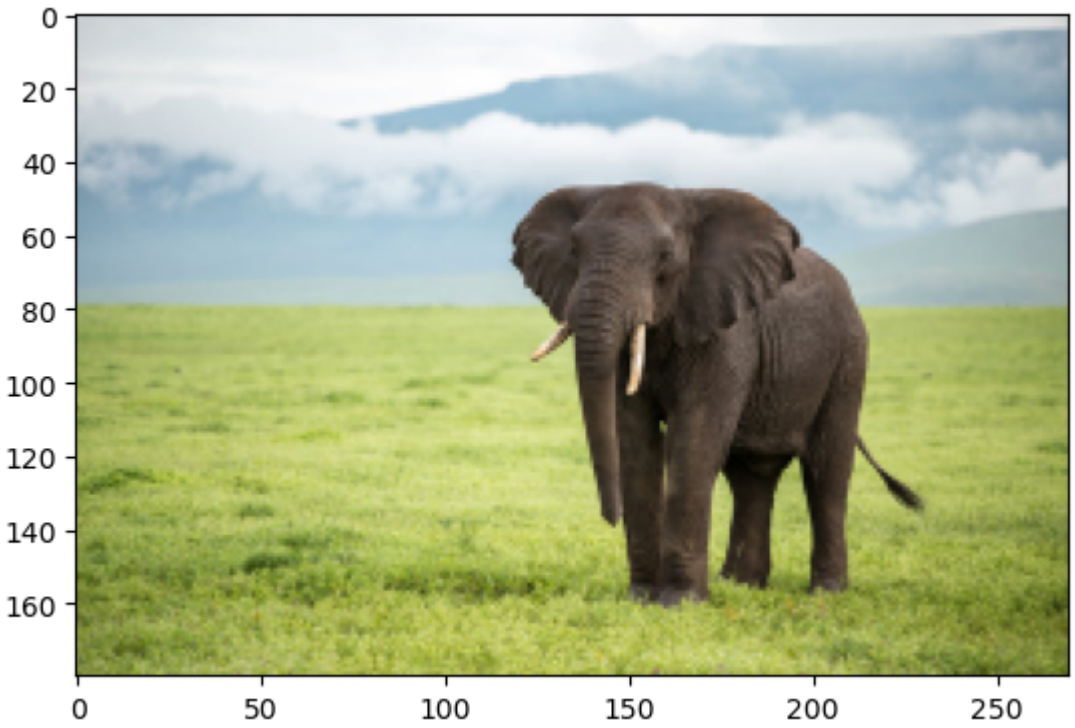
In [30]:
```
fix_img_2 = cv2.resize(fix_img,(0,0),fix_img,w_ratio,h_ratio)
```

In [31]:
```
fix_img_2
```

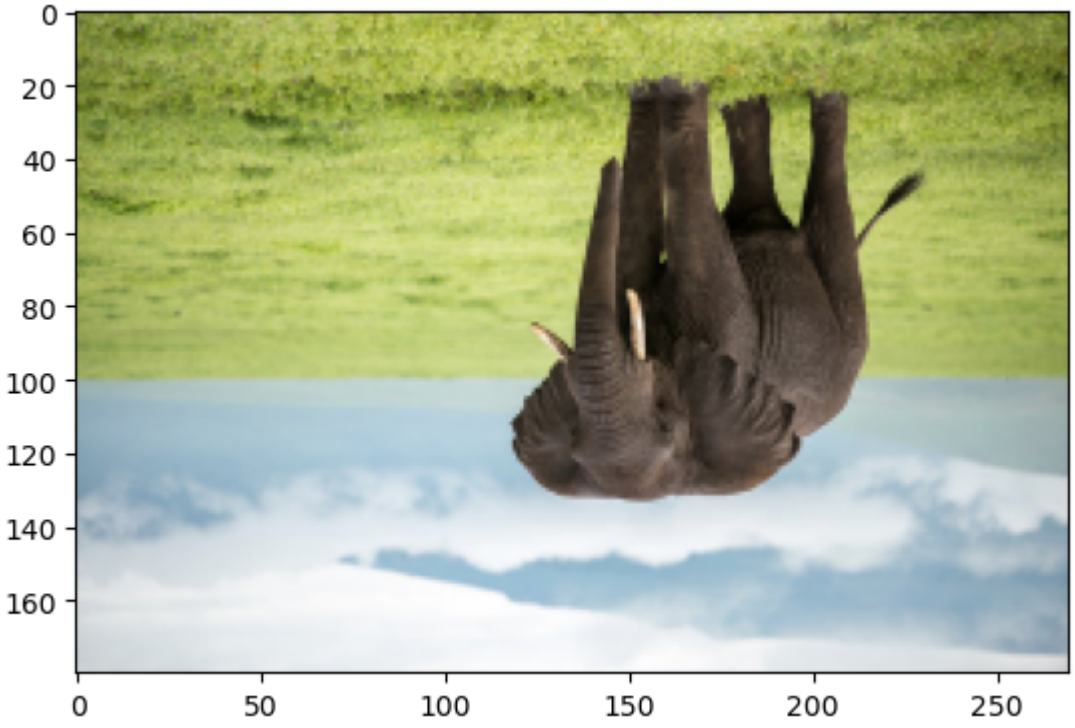
Out[31]:
```
array([[[205, 210, 214],
        [206, 211, 215],
        [206, 211, 215],
        ...,
        [208, 209, 211],
        [205, 206, 209],
        [202, 203, 206]],

       [[204, 209, 213],
        [205, 210, 214],
        [205, 210, 214],
        ...,
        [211, 212, 214],
        [209, 211, 209],
        [206, 208, 206]],

       [[202, 207, 211],
        [203, 208, 212],
        [204, 209, 213],
        ...,
        [214, 215, 217],
        [212, 214, 212],
        [208, 210, 208]],

       ...,

       [[125, 135,  62],
        [125, 136,  68],
        [133, 144,  69],
        ...,
        [127, 147,  43],
        [112, 128,  45],
        [102, 116,  45]],

       [[137, 144,  74],
        [140, 149,  70],
        [126, 137,  59],
        ...,
        [ 99, 117,  20],
        [ 89, 110,  18],
        [101, 119,  41]],

       [[122, 130,  55],
        [117, 130,  39],
        [140, 155,  77],
        ...,
        [114, 125,  54],
        [ 89, 104,  37],
        [ 84,  99,  35]]], dtype=uint8)
```

In [32]:
```
plt.imshow(fix_img_2)
```

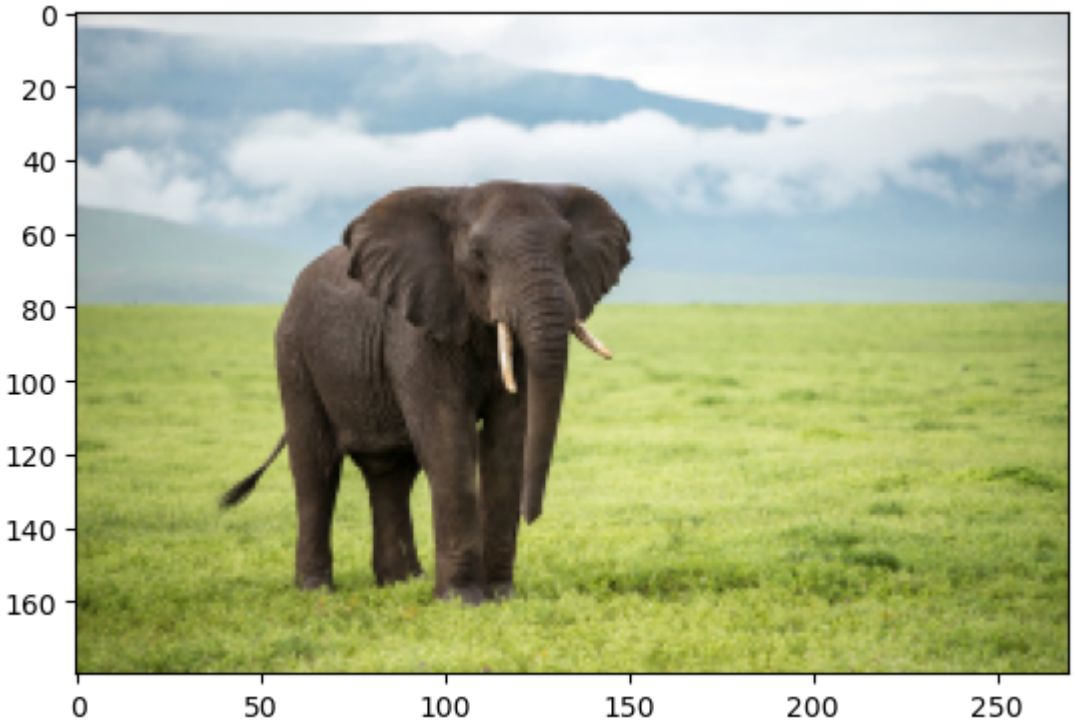
```
plt.show()
```



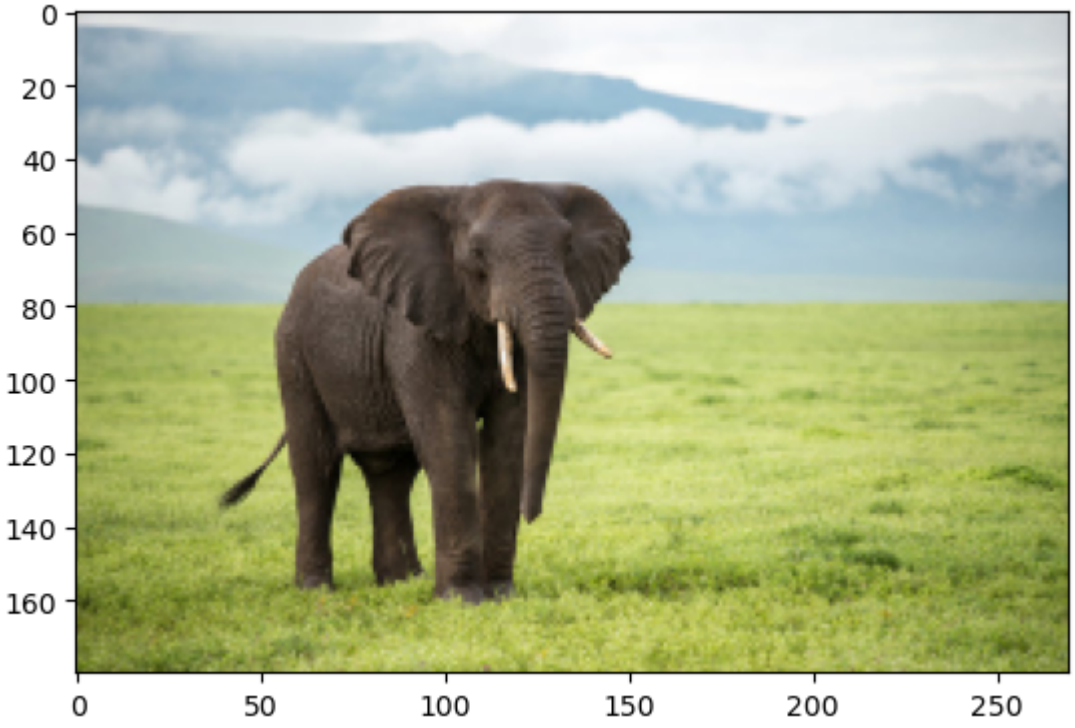
In [33]:
```
img3 = cv2.flip(fix_img_2,0)
plt.imshow(img3)
plt.show()
```



In [34]:
```
img3 = cv2.flip(fix_img_2,1)
plt.imshow(img3)
plt.show()
```



In [35]:
```
img3 = cv2.flip(fix_img_2,3)
plt.imshow(img3)
plt.show()
```



In [36]:
```
cv2.imwrite('new genai image.jpg',img3)
```

Out[36]: True

In [37]:
```
pwd
```

Out[37]: 'C:\\Users\\Gopi Reddy'