Color Conversion

AIM

To perform the color conversion between RGB, BGR, HSV, and YCbCr color models.

Software Required:

Anaconda - Python 3.7

Algorithm:

Step1:

Import cv2 library and upload the image or capture an image.

Step2:

Read the saved image using cv2.imread("filename.jpg").

Step3:

Convert the image into the given color transformation using cv2.cvtColor(image, cv2.BGR2YCrCb) and similarly for other color formats.

Step4:

Split and merge the image using cv2.split(hsv) and cv2.merge([h,s,v])

Step5:

Output the image using cv2.imshow("OUTPUT", image)

Program:

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i) Convert BGR and RGB to HSV and GRAY

```python
img = cv2.imread('Mikasa.jpeg')
cv2.imshow('original',img)

bgr2hsv = cv2.cvtColor(img,cv2.COLOR_BGR2HSV)
cv2.imshow('BGR To HSV',bgr2hsv)

bgr2gray = cv2.cvtColor(img,cv2.COLOR_BGR2GRAY)
cv2.imshow('BGR To GRAY',bgr2gray)

rgb2hsv = cv2.cvtColor(img_rgb,cv2.COLOR_RGB2HSV)
cv2.imshow('RGB2HSV',rgb2hsv)

rgb2gray = cv2.cvtColor(img_rgb,cv2.COLOR_RGB2GRAY)
cv2.imshow('RGB2GRAY',rgb2gray)

cv2.waitKey(0)
cv2.destroyAllWindows()
```

ii) Convert HSV to RGB and BGR

```python
cv2.imshow('HSV',bgr2hsv)

hsv2rgb = cv2.cvtColor(bgr2hsv,cv2.COLOR_HSV2RGB)
cv2.imshow('HSVtoRGB',hsv2rgb)

hsv2bgr = cv2.cvtColor(bgr2hsv,cv2.COLOR_HSV2BGR)
cv2.imshow('HSVtoBGR',hsv2bgr)

cv2.waitKey(0)
cv2.destroyAllWindows()
```

iii) Convert RGB and BGR to YCrCb

```python
cv2.imshow('RGB',img_rgb)

rgb2YcrCb = cv2.cvtColor(img_rgb,cv2.COLOR_RGB2YCrCb)
cv2.imshow('RGBtoYCrCb',rgb2YcrCb)

bgr2YcrCb = cv2.cvtColor(img,cv2.COLOR_HSV2BGR)
```

```python
cv2.imshow('BGRtoYCrCb',bgr2YcrCb)

cv2.waitKey(0)
cv2.destroyAllWindows()
```

iv)Split and Merge RGB Image

```python
b,g,r = cv2.split(img)
cv2.imshow("RED MODEL", r)
cv2.imshow("GREEN MODEL", g)
cv2.imshow("BLUE MODEL ", b)

merger = cv2.merge([b,g,r])
cv2.imshow("MERGED IMAGE", merger)

cv2.waitKey(0)
cv2.destroyAllWindows()
```

v) Split and merge HSV Image

```python
cv2.imshow("INITIAL_HSV ", bgr2hsv)

h,s,v = cv2.split(bgr2hsv)
cv2.imshow("RED MODEL", h)
cv2.imshow("GREEN MODEL", s)
cv2.imshow("BLUE MODEL ", v)

merger = cv2.merge([h,s,v])
cv2.imshow("MERGED IMAGE", merger)

cv2.waitKey(0)
cv2.destroyAllWindows()
```