



BURSA TEKNİK ÜNİVERSİTESİ
MÜHENDİSLİK VE DOĞA BİLİMLERİ FAKÜLTESİ
ELEKTRİK-ELEKTRONİK MÜHENDİSLİĞİ BÖLÜMÜ

EEM0458-GÖRÜNTÜ İŞLEME
2020-2021 Bahar Dönemi

Adı-Soyadı: Hüseyin EREN
Numarası:
Son Teslim Tarihi : 21.05.21
Teslim Tarihi : 20.05.21
Dersin Sorumlusu : Dr.Öğr.Üyesi Mustafa ÖZDEN

PHYTON KODUM :

```
import cv2
import math
import matplotlib.pyplot as plt
goruntu = cv2.imread("fr1.png")
referans = cv2.imread("fr.png", 0)
w, h = referans.shape
goruntu2 = cv2.imread("fr2.png")
imgGray1 = cv2.cvtColor(goruntu, cv2.COLOR_BGR2GRAY)
imgGray2 = cv2.cvtColor(goruntu2, cv2.COLOR_BGR2GRAY)
determination = cv2.matchTemplate(imgGray1, referans, cv2.TM_CCOEFF_NORMED)
determination2 = cv2.matchTemplate(imgGray2, referans, cv2.TM_CCOEFF_NORMED)
min_val, max_val, min_loc, max_loc = cv2.minMaxLoc(determination)
min_val2, max_val2, min_loc2, max_loc2 = cv2.minMaxLoc(determination2)
left_top = max_loc
left_top2 = max_loc2
right_bottom = (left_top[0] + w, left_top[1] + h)
right_bottom2 = (left_top2[0] + w, left_top2[1] + h)
cv2.rectangle(goruntu, left_top, right_bottom, 255, 2)
cv2.rectangle(goruntu2, left_top2, right_bottom2, 255, 2)
pixel = (left_top[0] + (right_bottom[0] - left_top[0]) / 2, left_top[1] + (right_bottom[1] -
left_top[1]) / 2)
pixel2 = (left_top2[0] + (right_bottom2[0] - left_top2[0]) / 2, left_top2[1] + (right_bottom2[1] -
left_top2[1]) / 2)
if pixel2[1] > pixel[1] and pixel2[0] > pixel[0]: # 4. bölge

s = pixel2[1]
p2 = (pixel2[0], s * (-1))
y = (p2[1] + pixel[1])
x = (pixel2[0] - pixel[0])
a = math.atan(y / x)
ac1 = a * (180 / math.pi)
x1 = pixel[0] - pixel2[0]
y1 = pixel[1] - pixel2[1]
s = math.sqrt(x1 ** 2 + y1 ** 2)

if pixel2[0] < pixel[0] and pixel2[1] < pixel[1]: # 2. bölge
y = (pixel2[1] - pixel[1])
x = (pixel2[0] - pixel[0])
a = math.atan(y / x)
ac = a * (180 / math.pi)
ac1 = 180 - ac
x1 = pixel[0] - pixel2[0]
y1 = pixel[1] - pixel2[1]
s = math.sqrt(x1 ** 2 + y1 ** 2)

if pixel2[0] < pixel[0] and pixel2[1] > pixel[1]: # 3.bölge

y = (pixel2[1] - pixel[1])
```

```

x = (pixel2[0] + pixel[0])
a = math.atan(y / x)
ac = a * (180 / math.pi)
ac1 = 180 + ac
x1 = pixel[0] - pixel2[0]
y1 = pixel[1] - pixel2[1]
s = math.sqrt(x1 ** 2 + y1 ** 2)

```

```

if pixel2[1] < pixel[1] and pixel2[0] > pixel[0]: # 1. bölge

```

```

s = pixel2[1]
p2 = (s * (-1), pixel2[1])
y = (pixel2[1] + pixel[1])
x = (pixel2[0] - pixel[0])
a = math.atan(y / x)
ac1 = a * (180 / math.pi)
x1 = pixel[0] - pixel2[0]
y1 = pixel[1] - pixel2[1]
s = math.sqrt(x1 ** 2 + y1 ** 2)

```

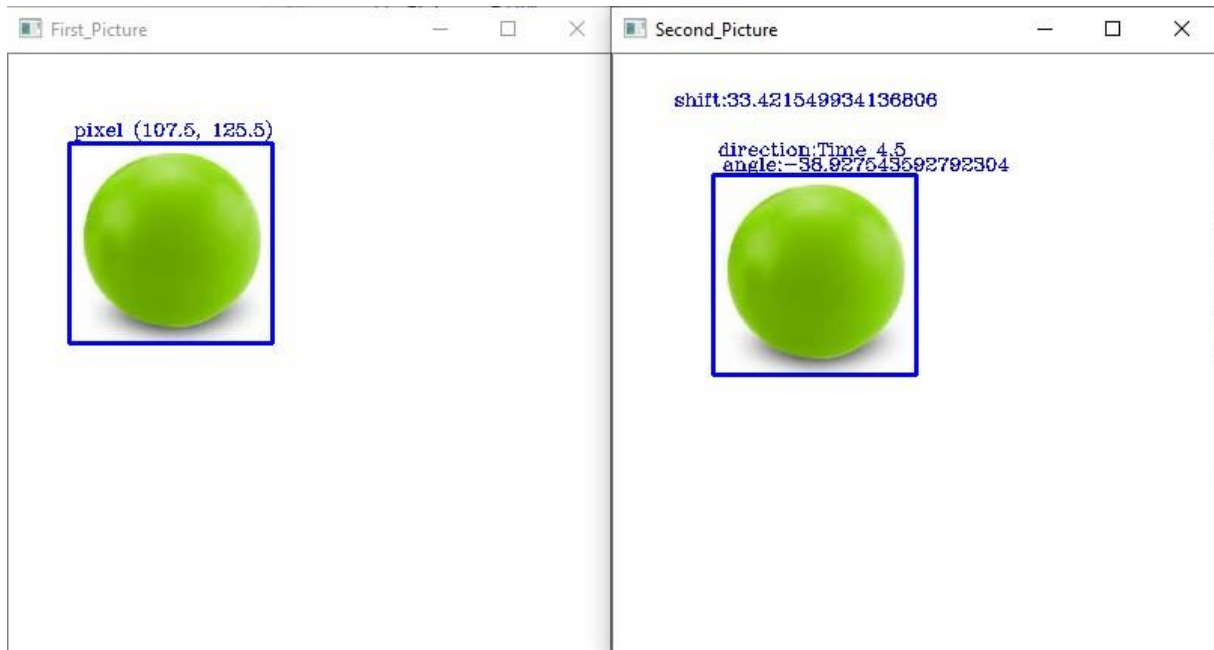
```

if pixel2[1] == pixel[1]:
    ac1 = 0
if ac1 == 0:
    yon = "Time 3"
if ac1 > 0 and ac1 < 90:
    yon = "Time 2"
if ac1 == 90:
    yon = "Time 12"
if ac1 < 0 and ac1 > -30:
    yon = "Time 4"
if ac1 < -30 and ac1 > -50:
    yon = "Time 4.5"
if ac1 < -50 and ac1 > -90:
    yon = "Time 5"
if ac1 == 270:
    yon = "Time 6"
if ac1 > 180 and ac1 < 270:
    yon = "Time 7"
if ac1 == -180:
    yon = "Time 9"
if ac1 < 180 and ac1 > 90:
    yon = "Time 10"
cv2.putText(goruntu, "pixel {} ".format(pixel), (left_top[0] + 3, left_top[1] -
5), cv2.FONT_HERSHEY_COMPLEX, 0.4, (255, 0, 0), 1)
cv2.putText(goruntu2, "shift:{} ".format(s), (left_top[0], left_top[1] -
25), cv2.FONT_HERSHEY_COMPLEX, 0.4, (255, 0, 0), 1)
cv2.putText(goruntu2, "direction:{} ".format(yon), (left_top2[0] + 3, left_top2[1] -
13), cv2.FONT_HERSHEY_COMPLEX, 0.4, (255, 0, 0), 1)
cv2.putText(goruntu2, "angle:{} ".format(ac1), (left_top2[0] + 6, left_top2[1] -
3), cv2.FONT_HERSHEY_COMPLEX, 0.4, (255, 0, 0), 1)

```

```
print(s)
print(yon)
cv2.imshow("First_Picture", goruntu)
plt.plot
cv2.imshow("Second_Picture", goruntu2)
cv2.waitKey()
cv2.destroyAllWindows()
```

Phyton Kod Çıktım :



Ödev Algoritmam :

