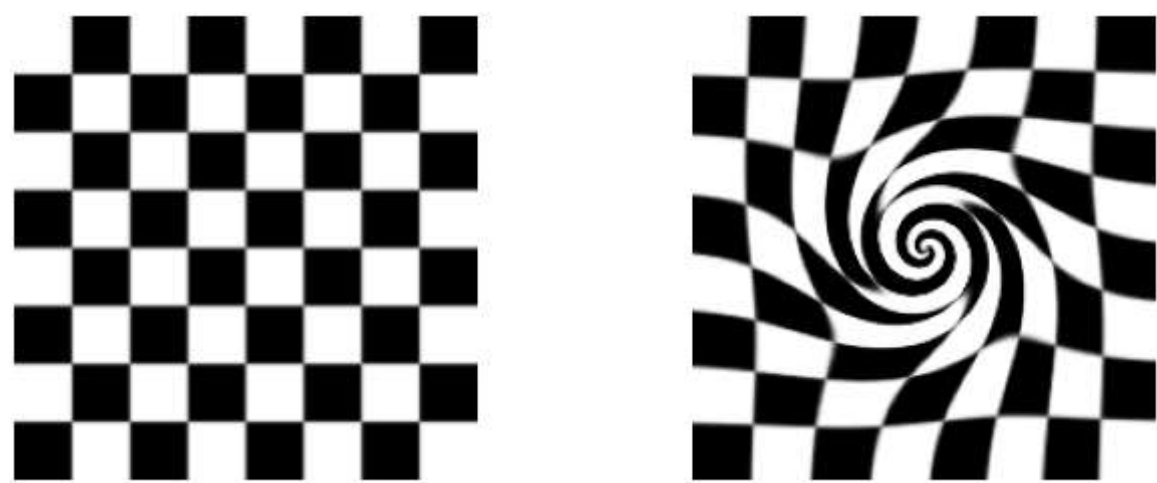


Rahma Fairuz Rania J0303201065 TPL 57 A2

```
In [1]: import matplotlib.pyplot as plt
from skimage import data
from skimage.transform import swirl

# import gambar checkerboard dari library skimage
image = data.checkerboard()

# tambahkan efek swirl pada gambar
# rotation : sudut rotasi
# strength : banyaknya putaran
# radius : tingkat putaran dalam pixel
swirled = swirl(image, rotation=0, strength=10, radius=120)
fig, (ax0, ax1) = plt.subplots(nrows=1, ncols=2, figsize=(8, 3), sharex=True, sharey=True)
ax0.imshow(image, cmap=plt.cm.gray)
ax0.axis('off')
ax1.imshow(swirled, cmap=plt.cm.gray)
ax1.axis('off')
plt.show()
```

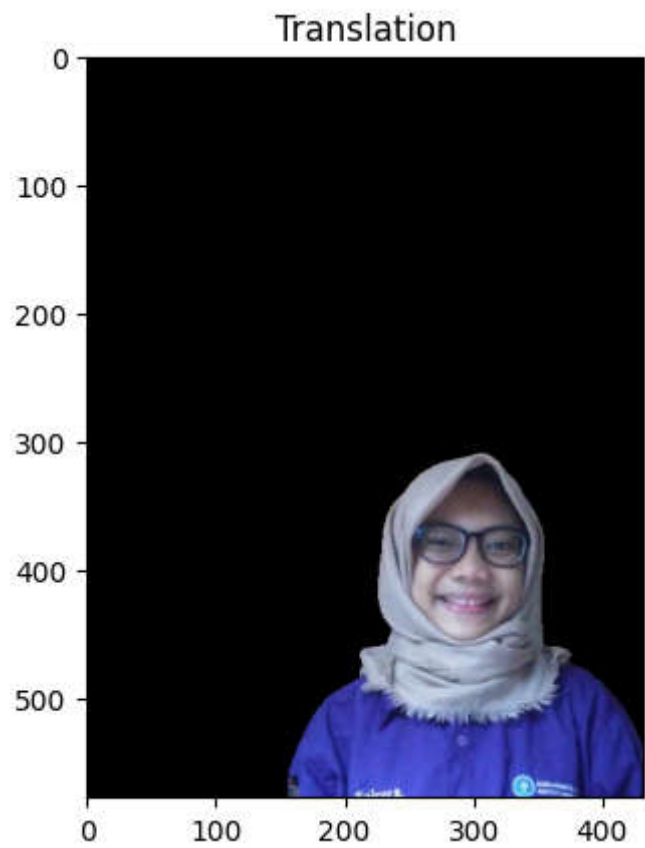


```
In [3]: import cv2 as cv
import numpy as np
import matplotlib.pyplot as plt

# translasi, penambahan sisi, pergeseran img
image = cv.imread("dt/rahma.png")
h, w = image.shape[:2]
half_height, half_width = h//4, w//8

# meambahkan setengah dari lebar dan tinggi pada gambar
transition_matrix = np.float32([[1, 0, half_width], [0, 1, half_height]])
img_transition = cv.warpAffine(image, transition_matrix, (w, h))

plt.imshow(cv.cvtColor(img_transition, cv.COLOR_BGR2RGB))
plt.title("Translation")
plt.show()
```

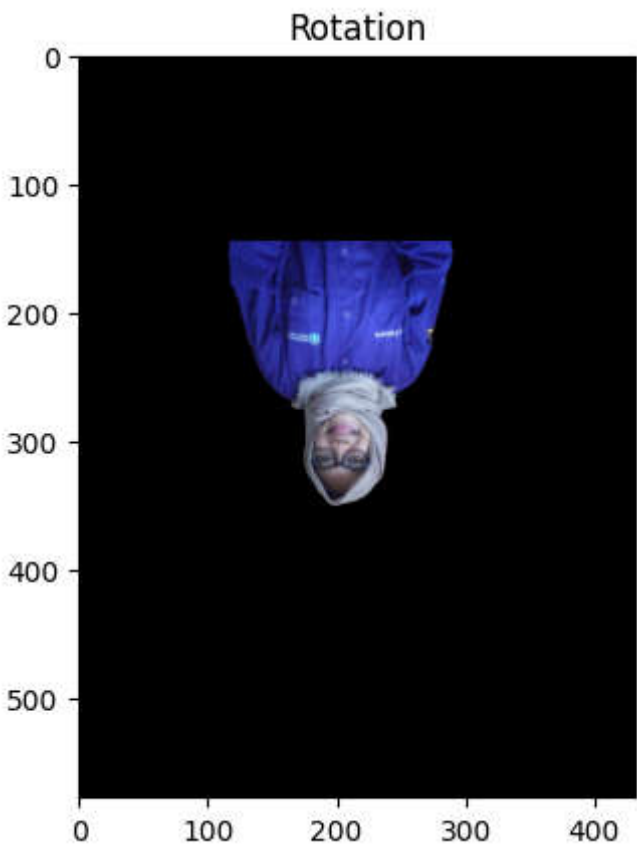


```
In [4]: import cv2 as cv
import numpy as np
import matplotlib.pyplot as plt

# transformasi img yang menyertakan rescaling dan rotation
image = cv.imread("dt/rahma.png")
h, w = image.shape[:2]

# getRotationMatrix2D(center, angle, scale)
rotation_matrix = cv.getRotationMatrix2D((w/2,h/2), -180, 0.5)
rotated_image = cv.warpAffine(image, rotation_matrix, (w, h))

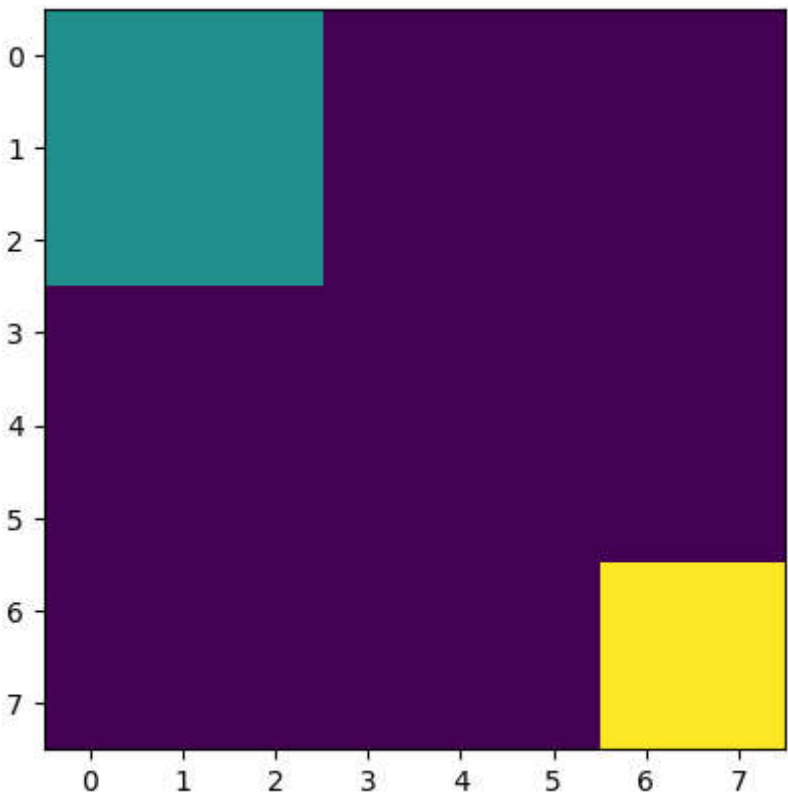
plt.imshow(cv.cvtColor(rotated_image, cv.COLOR_BGR2RGB))
plt.title("Rotation")
plt.show()
```



```
In [5]: import mahotas as mh
import numpy as np
from pylab import imshow, show

# interpolasi dengan numpy array 8 bilangan dengan tipe booleans
# estimate unknown data points between two known data points
regions = np.zeros((8,8), bool)
regions[:3,:3] = 1 # wilayah pojok kiri atas (wilayah 1)
regions[6:,6:] = 1 # wilayah pojok kanan atas (wilayah 2)

# interpolasi nearest
labeled, nr_objects = mh.label(regions)
imshow(labeled, interpolation='nearest')
show()
```



```
In [7]: # 4 ketetanggaan pada wilayah
labeled,nr_objects = mh.label(regions, np.ones((3,3), bool))

# mengukur masing-masing wilayah
sizes = mh.labeled.labeled_size(labeled)
print('Background size', sizes[0])
print('Size of first region: {}'.format(sizes[1]))
```

Background size 51  
Size of first region: 9

```
In [8]: # ukuran pixel di wilayah 1
array = np.random.random_sample(regions.shape)
sums = mh.labeled_sum(array, labeled)
print('Sum of first region: {}'.format(sums[1]))
```

Sum of first region: 5.214987125979112

```
In [9]: import cv2 as cv
import numpy as np
import matplotlib.pyplot as plt

image = cv.imread("dt/rahma.png")
fig, ax = plt.subplots(1, 3, figsize=(16, 8))

# image size being 0.15 times of it's original size
# Linear, efek bergerigi pada gambar karena ukurannya diperbesar
image_scaled = cv.resize(image, None, fx=0.15, fy=0.15)
ax[0].imshow(cv.cvtColor(image_scaled, cv.COLOR_BGR2RGB))
ax[0].set_title("Linear Interpolation Scale")

# image size being 2 times of it's original size
# INTER_CUBIC, resolusi baik
image_scaled_2 = cv.resize(image, None, fx=2, fy=2, interpolation=cv.INTER_CUBIC)
ax[1].imshow(cv.cvtColor(image_scaled_2, cv.COLOR_BGR2RGB))
ax[1].set_title("Cubic Interpolation Scale")

# image size being 0.15 times of it's original size
# ubah ukuran dengan tinggi 400px
# INTER_AREA, skrink atau menyusutkan gambar
image_scaled_3 = cv.resize(image, (200, 400), interpolation=cv.INTER_AREA)
ax[2].imshow(cv.cvtColor(image_scaled_3, cv.COLOR_BGR2RGB))
ax[2].set_title("Skewed Interpolation Scale")
Text(0.5, 1.0, 'Skewed Interpolation Scale')
```

```
-----
NameError                                Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_10080\1298266820.py in <module>
    20 ax[2].imshow(cv.cvtColor(image_scaled_3, cv.COLOR_BGR2RGB))
    21 ax[2].set_title("Skewed Interpolation Scale")
--> 22 Text(0.5, 1.0, 'Skewed Interpolation Scale')
```

NameError: name 'Text' is not defined

