# -\*- coding: utf-8 -\*-

"""pract\_9.ipynb

Automatically generated by Colaboratory.

Original file is located at

https://colab.research.google.com/drive/1oXf8g5mv5Ws-nU6XDtg4Y9rbQMvgHeOs

"""

from skimage.io import imread

import numpy as np

from skimage.color import rgb2gray

import matplotlib.pylab as pylab

from skimage.morphology import binary\_erosion,rectangle

def plot\_image (image,title=''):

pylab.title(title,size=20),pylab.imshow(image)

pylab.axis('off')

im=rgb2gray(imread('clock2.jpg'))

im[im<=0.5]=0

#createbinaryimagewithfixedthreshold0.5

im[im>0.5]=1

pylab.gray()

pylab.figure(figsize=(20,10))

pylab.subplot(1,3,1),plot\_image(im,'original')

im1=binary\_erosion(im,rectangle(1,5))

pylab.subplot(1,3,2),plot\_image(im1,'erosionwithrectanglesize(1,5)')

im1=binary\_erosion(im,rectangle(1,15))

pylab.subplot(1,3,3),plot\_image(im1,'erosionwithrectanglesize(1,15)')

pylab.show()

from skimage.morphology import binary\_dilation,disk

from skimage import img\_as\_float

im = img\_as\_float(imread('tagore.png'))

im=1-im[...,3]

im[im<=0.5]=0

im[im>0.5]=1

pylab.gray()

pylab.figure(figsize=(18,9))

pylab.subplot(131)

pylab.imshow(im)

pylab.title('original',size=20)

pylab.axis('off')

for d in range(1,3):

pylab.subplot(1,3,d+1)

im1=binary\_dilation(im,disk(2\*d))

pylab.imshow(im1)

pylab.title('dilationwithdisksize'+str(2\*d),size=20)

pylab.axis('off')

pylab.show()

from skimage.morphology import binary\_opening,binary\_closing,binary\_erosion,binary\_dilation,disk

im=rgb2gray(imread('circles.jpg'))

im[im<=0.5]=0

im[im>0.5]=1

pylab.gray()

pylab.figure(figsize=(20,10))

pylab.subplot(1,3,1),plot\_image(im,'original')

im1=binary\_opening(im,disk(12))

pylab.subplot(1,3,2),plot\_image(im1,'openingwithdisksize'+str(12))

im1=binary\_closing(im,disk(6))

pylab.subplot(1,3,3),plot\_image(im1,'closingwithdisksize'+str(6))

pylab.show()

#Skeletonizing

def plot\_images\_horizontally(original,filtered,filter\_name,sz=(18,7)):

pylab.gray()

pylab.figure(figsize=sz)

pylab.subplot(1,2,1),plot\_image(original,'original')

pylab.subplot(1,2,2),plot\_image(filtered,filter\_name)

pylab.show()

from skimage.morphology import skeletonize

im=img\_as\_float(imread('dynasaur.png')[...,3])

threshold=0.5

im[im<=threshold]=0

im[im>threshold]=1

skeleton=skeletonize(im)

plot\_images\_horizontally(im,skeleton,'skeleton',sz=(18,9))

from skimage.morphology import convex\_hull\_image

im=rgb2gray(imread('horse-dog.jpg'))

threshold=0.5

im[im<threshold]=0

#converttobinaryimage

im[im>=threshold]=1

chull=convex\_hull\_image(im)

plot\_images\_horizontally(im,chull,'convexhull',sz=(18,9))

#Removingsmallobjects

from skimage.morphology import remove\_small\_objects

im=rgb2gray(imread('circles.jpg'))

im[im>0.5]=1

#createbinaryimagebythresholdingwithfixedthreshold0.5

im[im<=0.5]=0

im=im.astype(np.bool)

pylab.figure(figsize=(15,15))

pylab.subplot(2,2,1),plot\_image(im,'original')

i=2

for osz in [50,200,500]:

im1=remove\_small\_objects(im,osz,connectivity=1)

pylab.subplot(2,2,i),plot\_image(im1,'removingsmallobjectsbelowsize'+str(osz))

i+=1

pylab.show()

pract\_9.py

Open