|  |  |  |
| --- | --- | --- |
|  | **Lembar Kerja Mahasiswa**  **Mata Kuliah Pengolahan Citra Digital Praktik (203311-20)**  **Program Studi Informatika**  **Fakultas Sains & Teknologi – Universitas Teknologi Yogyakarta** | |
|  | **Identitas Mahasiswa** | |
| **Nama** | **Arieska Restu Harpian Dwika** |
| **NPM** | **5200411488** |
| **Kelompok Prak** | **Kel. I** |
|  | | |
| **Soal 1.** | | |
| Berdasarkan demo di kelas, buatlah GUI untuk fungsi *convert to grayscale* dan *convert to binary* sehingga pengguna dapat menggunakan fungsi dengan lebih mudah. Adapun layout GUI seperti pada gambar di bawah! | | |
| **Hasil Script** | | |
| **//tuliskan script python Anda di sini**  # 5200411488 - Arieska Restu Harpian Dwika  import cv2  import numpy as np  import matplotlib.pyplot as plt  import matplotlib.image as mpimg  from tkinter import \*  from tkinter import filedialog  import os  import tkinter as tk  from PIL import Image, ImageTk    def browseImage():      global fln      fln = filedialog.askopenfilename(*initialdir*=os.getcwd(), *title*="Select Image File",  *filetypes*=(                                          ("JPG File", "\*.jpg"),                                          ("PNG File", "\*.png"),                                          ("All Files", "\*.\*"))                                      )      img = Image.open(fln)      imgTk = ImageTk.PhotoImage(img)      lblImg.configure(*image*=imgTk)      lblImg.image = imgTk  def rgb2Gray():      global fln      img = Image.open(fln)      for x in range(img.size[0]):          for y in range(img.size[1]):              r,g,b = img.getpixel((x,y))              r = (r \* .299)              g = (g \* .587)              b = (b \* .114)              sum = int((r+g+b))              img.putpixel((x,y), (sum, sum, sum))      imgTk = ImageTk.PhotoImage(img)      lblImg.configure(*image*=imgTk)      lblImg.image = imgTk  def rgb2BinaryBtn():      global fln        imgBinary = Image.open(fln).convert('L')      pxBinary = imgBinary.load()      horizontal = imgBinary.size[0]      vertical = imgBinary.size[1]        for x in range(horizontal):          for y in range(vertical):              if pxBinary[x, y] < int(thresh.get()):                  pxBinary[x, y] = 0              else:                  pxBinary[x, y] = 255      imgTk = ImageTk.PhotoImage(imgBinary)      lblImg.configure(*image*=imgTk)      lblImg.image = imgTk      sliderBinary.set(thresh.get())      thresh.delete(0, END)  def rgb2BinarySlider(*e*):      global fln        img = cv2.imread(fln, cv2.IMREAD\_GRAYSCALE)      thresh = int(sliderBinary.get())      ret, imgBinary = cv2.threshold(img, thresh, 255, cv2.THRESH\_BINARY)      imgTk = opencv2Tkinter(imgBinary)      lblImg.configure(*image*=imgTk)      lblImg.image = imgTk  def opencv2Tkinter(*img*):      imgPill = Image.fromarray(*img*)      imgTkinter = ImageTk.PhotoImage(imgPill)      return imgTkinter  if \_\_name\_\_ == '\_\_main\_\_':      root = Tk()      fln = None      frmBtn = Frame(root)      frmBtn.pack(*side*=BOTTOM, *padx*=15, *pady*=15)      lblImg = Label(root)      lblImg.pack()      btn = Button(frmBtn, *text*="Browser Image", *background*="lightblue", *activebackground*='#0275D8', *padx*=2, *pady*=2, *font*="Normal 10",*cursor*="hand2", *command*=browseImage)      btn.grid(*row*=0, *column*=0)      btnGray = Button(frmBtn, *text*="Convert to Grayscale", *background*="lightblue", *activebackground*='#0275D8', *padx*=2, *pady*=2, *font*="Normal 10",*cursor*="hand2", *command*=rgb2Gray)      btnGray.grid(*row*=0, *column*=1)      btnExit = Button(frmBtn, *text*="Exit", *background*="#F47174", *activebackground*='red', *padx*=4, *pady*=2, *font*="Normal 10",*cursor*="hand2", *command*=lambda: exit())      btnExit.grid(*row*=0, *column*=2)      txtBinary = Label(frmBtn, *text*="Threshold", *font*="Normal 10")      txtBinary.grid(*row*=1, *column*=0)      thresh = Entry(frmBtn, *font*="Normal 10", *bd*=3)      thresh.grid(*row*=1, *column*=1)        btnBinary = Button(frmBtn, *text*="Convert to Binary", *background*="lightblue", *activebackground*='#0275D8', *padx*=2, *pady*=2, *font*="Normal 10",*cursor*="hand2", *command*=rgb2BinaryBtn)      btnBinary.grid(*row*=1, *column*=2)        sliderBinary = Scale(frmBtn, *from\_*=0, *to*=255, *orient*=HORIZONTAL, *length*=255, *cursor*="hand2", *command*=rgb2BinarySlider)      sliderBinary.grid(*row*=2, *column*=0, *columnspan*=5)        root.title("Image Browser App - 5200411488")      root.geometry("1280x720")      root.mainloop() | | |
| **Hasil Running – setelah button Convert To Grayscale di-klik** | | |
| **//paste-kan tampilan aplikasi Anda di sini** | | |
| **Hasil Running – setelah button Convert To Binary di-klik** | | |
| **//paste-kan tampilan aplikasi Anda di sini** | | |