

Logan Parker

Completed



Originals



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#Name: Logan Parker
#Date: October 14th, 2021 (10/14/21)
#Project: CS 120 Project 2 Art Show
def collage():
    setMediaPath()
    mainPic=makePicture("MainPicture.jpg") #Main picture
    prestarePic=makePicture("StarePic.jpg") #Stare picture
    starePic=scaleDown(prestarePic,5) #Scaled down Stare Picture
    sigPic=makePicture("SigPic.png") #Signature Picture
    width=getWidth(mainPic)
    height=getHeight(mainPic)
    halfWidth=getWidth(mainPic)/2
    halfHeight=getHeight(mainPic)/2
    collage=makeEmptyPicture(halfWidth,halfHeight)
    filterPic=mainPicFilter(mainPic)
    copyInto(filterPic,collage,0,0)#Top-left collage picture
    copyInto(filterPic,collage,halfWidth/2,0)#Top-right collage picture
    mirrorCollage=mirrorHorizontal(collage,0,halfWidth,0,halfHeight)#Bottom-half collage picture
    finalCollage=collageFilter(mirrorCollage,starePic,sigPic)
    show(finalCollage)
    writePictureTo(finalCollage,r"C:\Users\michaelmk\Documents\cs120\project2\Logan Parker\Logan ParkerP2.jpg")

def collageFilter(collage,pic,sigPic):
    cWidth=getWidth(collage)
    cHeight=getHeight(collage)
    negative(collage,202,335,282,456)
    negative(collage,202,335,302,436)
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chromaKey(pic, collage, 202, 302)
sepiaTint(collage, 0, 66, 0, cHeight)
sepiaTint(collage, 470, cWidth, 0, cHeight)
sepiaTint(collage, 0, 66, 0, cHeight)
sepiaTint(collage, 470, cWidth, 0, cHeight)
changeYellow(collage, 85, 182, 0, 67)
changeYellow(collage, 354, 450, 0, 67)
changeYellow(collage, 85, 182, 672, cHeight)
changeYellow(collage, 354, 450, 672, cHeight)
changeYellow(collage, 85, 182, 0, 67)
changeYellow(collage, 354, 450, 0, 67)
changeYellow(collage, 85, 182, 672, cHeight)
changeYellow(collage, 354, 450, 672, cHeight)
changeRed(collage, 85, 182, 302, 436, 5)
changeBlue(collage, 354, 450, 302, 436, 8)
grayScale(collage, 202, 269, 0, 281)
grayScale(collage, 269, 335, 455, cHeight)
changeRed(collage, 269, 335, 0, 281, 0.65)
changeGreen(collage, 269, 335, 0, 281, 2.3)
changeBlue(collage, 269, 335, 0, 281, 0.55)
changeRed(collage, 202, 269, 455, cHeight, 0.65)
changeGreen(collage, 202, 269, 455, cHeight, 2.3)
changeBlue(collage, 202, 269, 455, cHeight, 0.55)
chromakeySig(sigPic, collage, 470, 714)
return collage

def mainPicFilter(pic):
    scaledPic=scaleDown(pic,4)#Reduces the pixel count and size of picture by 4.
    width=getWidth(scaledPic)
    height=getHeight(scaledPic)
    halfWidth=width/2
    halfHeight=height/2
    negative(scaledPic, halfWidth-68, halfWidth+68, halfHeight-118, halfHeight+118)
    negative(scaledPic, halfWidth-48, halfWidth+48, halfHeight-98, halfHeight+98)#Creates negative square around person.
    negative(scaledPic, halfWidth-68, halfWidth-48, 0, halfHeight-118)
    negative(scaledPic, halfWidth-68, halfWidth-48, halfHeight+118, height)
    negative(scaledPic, halfWidth+48, halfWidth+68, 0, halfHeight-118)
    #Creates negative lines going from square to top and bottom of picture
    negative(scaledPic, halfWidth+48, halfWidth+68, halfHeight+118, height)
    return scaledPic

def negative(pic, startX, endX, startY, endY):
    for x in range(startX, endX):
        for y in range(startY, endY):
            pixels=getPixel(pic, int(x), int(y))

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        negColor=makeColor(255-getRed(pixels),255-getGreen(pixels),255-getBlue(pixels))
        setColor(pixels,negColor)
    return pic

def changeRed(pic, startX, endX, startY, endY, rVal):
    for x in range(startX, endX):
        for y in range(startY, endY):
            pixels=getPixel(pic, int(x), int(y))
            setRed(pixels, getRed(pixels)*rVal)
    return pic

def changeGreen(pic, startX, endX, startY, endY, gVal):
    for x in range(startX, endX):
        for y in range(startY, endY):
            pixels=getPixel(pic, int(x), int(y))
            setGreen(pixels, getGreen(pixels)*gVal)
    return pic

def changeBlue(pic, startX, endX, startY, endY, bVal):
    for x in range(startX, endX):
        for y in range(startY, endY):
            pixels=getPixel(pic, int(x), int(y))
            setBlue(pixels, getBlue(pixels)*bVal)
    return pic

def changeYellow(pic, startX, endX, startY, endY):
    for x in range(startX, endX):
        for y in range(startY, endY):
            pixels=getPixel(pic, int(x), int(y))
            setRed(pixels, getRed(pixels)*1.4)
            setGreen(pixels, getGreen(pixels)*1.4)
            setBlue(pixels, getBlue(pixels)*0.3)
    return pic

def mirrorHorizontal(pic, startX, endX, startY, endY):
    for x in range(startX, endX):
        for y in range(startY, (endY/2)):
            topPixel = getPixelAt(pic, x, y)
            bottomPixel = getPixelAt(pic, x, endY-y -1)
            color = getColor(topPixel)
            setColor(bottomPixel, color)
    return pic

def grayScale(pic, startX, endX, startY, endY):
    for x in range(startX, endX):

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    for y in range(startY,endY):
        pixels=getPixel(pic,int(x),int(y))
        grayColor=makeColor(getRed(pixels)+getGreen(pixels)+getBlue(pixels)/3)
        setColor(pixels,grayColor)
    return pic

def sepiaTint(pic,startX,endX,startY,endY):
    for x in range(startX,endX):
        for y in range(startY,endY):
            pixels=getPixel(pic,int(x),int(y))
            redValue=getRed(pixels)
            blueValue=getBlue(pixels)
            if(redValue<63):
                redValue=redValue*1.1
                blueValue=blueValue*0.9
                setRed(pixels,redValue)
                setBlue(pixels,blueValue)
            elif(62<redValue<192):
                redValue=redValue*1.2
                blueValue=blueValue*0.8
                setRed(pixels,redValue)
                setBlue(pixels,blueValue)
            elif(redValue>191):
                redValue=redValue*1.08
                setRed(pixels,redValue)
            elif(redValue>255):
                redValue=255
                blueValue=blueValue*0.93
                setRed(pixels,redValue)
                setBlue(pixels,blueValue)
    return pic

def chromakeySig(sigPic,canvas,targetX,targetY):
    for x in range(0,getWidth(sigPic)):
        for y in range(0,getHeight(sigPic)):
            sigPixels=getPixel(sigPic,int(x),int(y))
            sigColor=getColor(sigPixels)
            targetPixels=getPixel(canvas,x+targetX,y+targetY)
            if distance(black,sigColor)<180:
                setColor(targetPixels,white)

def chromaKey(pic,canvas,targetX,targetY):
    for x in range(0,getWidth(pic)):
        for y in range(0,getHeight(pic)):
            pixels=getPixel(pic,int(x),int(y))

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    chromaColor=getColor(pixels)
    targetPixels=getPixel(canvas,x+targetX,y+targetY)
    if distance(green,chromaColor)>160:
        setColor(targetPixels,chromaColor)

def scaleDown(source,factor):
    width=getWidth(source)/factor
    height=getHeight(source)/factor
    targetPic=makeEmptyPicture(width,height,white)
    sourceX=0
    for targetX in range(0,int(width)):
        sourceY=0
        for targetY in range(0,int(height)):
            sourcePixels=getPixel(source,int(sourceX),int(sourceY))
            sourceColor=getColor(sourcePixels)
            targetPixels=getPixel(targetPic,targetX,targetY)
            setColor(targetPixels,sourceColor)
            sourceY=sourceY+factor
        sourceX=sourceX+factor
    return targetPic
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