Michaela Walker

Completed   Original


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#Michaela Walker 10/20/2021
def collage():
  setMediaPath()
  original = makePicture(getMediaPath("New_Orleans.jpg"))
  mod1 = makePicture(getMediaPath("New_Orleans.jpg"))
  mod2 = makePicture(getMediaPath("New_Orleans.jpg"))
  mod3 = makePicture(getMediaPath("New_Orleans.jpg"))
  mod4 = makePicture(getMediaPath("New_Orleans.jpg"))
  mod5 = makePicture(getMediaPath("New_Orleans.jpg"))
  canvas = makeEmptyPicture(getWidth(original) * 2, getHeight(original) * 3)
  sig = makePicture(getMediaPath("sig.jpg"))
  sig = scaleDown(sig, 5)


  lighten(mod1)
  darken(mod2)
  Grayscale(mod3)
  edge(mod4)


  copy(mod1, canvas, 0, 0)
  copyReverse(mod2, canvas, getWidth(canvas) -1, 0)
  copy(mod3, canvas, 0, getHeight(mod3))
  copyReverse(mod4, canvas, getWidth(canvas) - 1, getHeight(mod4))
  copy(mod5, canvas, 0, getHeight(mod5) * 2)
  copyReverse(original, canvas, getWidth(canvas) - 1, getHeight(original) * 2)
  chromaSig(sig, canvas, 0, 0)
  show(canvas)
  writePictureTo(canvas, "MichaelaWalker_project3.jpg")


def copy(pic, target, targX, targY):
  targetX = targX
  for x in range(getWidth(pic)):
    targetY = targY
    for y in range(getHeight(pic)):
      pixel = getPixel(pic, x, y)
      tx = getPixel(target, targetX, targetY)
      setColor(tx, getColor(pixel))
      targetY = targetY + 1
    targetX = targetX + 1
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def copyReverse(pic, target, targX, targY):
    targetX = targX
    for x in range(getWidth(pic)):
        targetY = targY
        for y in range(getHeight(pic)):
            pixel = getPixel(pic, x, y)
            tx = getPixel(target, targetX, targetY)
            setColor(tx, getColor(pixel))
            targetY = targetY + 1
        targetX = targetX - 1


def lighten(pic):
    for each_pixel in getPixels(pic):
        color = getColor(each_pixel)
        color = makeLighter(color)
        setColor(each_pixel, color)

def darken(pic):
    for each_pixel in getPixels(pic):
        color = getColor(each_pixel)
        color = makeDarker(color)
        setColor(each_pixel, color)

def Grayscale(pic):
    for pixel in getPixels(pic):
        intensity = (getRed(pixel) + getGreen(pixel) + getBlue(pixel)) / 3
        setColor(pixel, makeColor(intensity, intensity, intensity))

def edge(pic):
    for px in getPixels(pic):
        x = getX(px)
        y = getY(px)
        if y < getHeight(pic) - 1 and x < getWidth(pic) - 1:
            sum = getRed(px) + getGreen(px) + getBlue(px)
            botrt = getPixel(pic, x + 1, y + 1)
            sum2 = getRed(botrt) + getGreen(botrt) + getBlue(botrt)
            diff = abs(sum2- sum)
            newcolor = makeColor(diff, diff, diff)
            setColor(px, newcolor)

def chromaSig(source, target, targetX, targetY):
    for x in range(0, getWidth(source)):
        for y in range(0, getHeight(source)):
            px = getPixel(source, x, y)
            color = getColor(px)
            targ = getPixel(target, x + targetX, y + targetY)
            if distance (black, color) < 200:
                setColor(targ, white)

def scaleDown(pic, factor):
    canvas = makeEmptyPicture(int(getWidth(pic) / factor), int(getHeight(pic)/factor))
    scale( pic, canvas, 1.0 / factor)
    return canvas

def scale(src, canvas, factor):
    sourceX = 0
    for targetX in range(0, int(getWidth(src) * factor)):
        sourceY = 0
        for targetY in range(0, int(getHeight(src) * factor)):
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            color = getColor(getPixel (src, int(sourceX), int(sourceY)))
            setColor(getPixel(canvas, targetX, targetY), color)
            sourceY = sourceY + 1.0 / factor
        sourceX = sourceX + 1.0 / factor

collage()
```