

Josh Copp

Completed



Original



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from mediaComp import *
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# CS120 Project 2 - "Art Show!"
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# Date: October 22, 2025
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def blur(pic):
    for i in range (2):
        blur_picture = duplicatePicture(pic)
        for x in range(1, getWidth(pic) - 1):
            for y in range(1, getHeight(pic) - 1):
                center = getPixelAt(blur_picture, x, y)
                left = getPixelAt(pic, x - 1, y)
                right = getPixelAt(pic, x + 1, y)
                top = getPixelAt(pic, x, y - 1)
                bottom = getPixelAt(pic, x, y + 1)

                new_red = (getRed(center)+getRed(left)+getRed(right)+getRed(top)+getRed(bottom)) // 5
                new_green = (getGreen(center)+getGreen(left)+getGreen(right)+getGreen(top)+getGreen(bottom)) // 5
                new_blue = (getBlue(center)+getBlue(left)+getBlue(right)+getBlue(top)+getBlue(bottom)) // 5

                setColor(center, makeColor(new_red, new_green, new_blue))
            pic = duplicatePicture(blur_picture)
        return blur_picture

def doubleLighten(pic):
    for x in range(getWidth(pic)):
        for y in range(getHeight(pic)):
            p = getPixelAt(pic, x, y)
            c = makeLighter(makeLighter(getColor(p)))
            setColor(p, c)
    return pic
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def mirrorLeftQuarter(pic):
    w = getWidth(pic)
    h = getHeight(pic)
    q = w // 4
    for x in range(q):
        for y in range(h):
            left = getPixelAt(pic, x, y)
            right = getPixelAt(pic, w - 1 - x, y)
            setColor(right, getColor(left))
    return pic

def wafflePic(source, dest, start=0):
    width = min(getWidth(source), getWidth(dest))
    height = min(getHeight(source), getHeight(dest))
    for x in range(width):
        for y in range(height):
            p_dest = getPixelAt(dest, x, y)
            if (x + y) % 2 == 0:
                setColor(p_dest, makeColor(255, 255, 255))
            else:
                color = getColor(getPixelAt(source, x, y))
                setColor(p_dest, color)
    return dest

def spacedBars(pic):
    width = getWidth(pic)
    height = getHeight(pic)
    barWidth = width // 5
    gap = barWidth
    newWidth = 5 * barWidth + 4 * gap
    bar = makeEmptyPicture(newWidth, height)

    def copyBar(src, dest, origStart, origEnd, newStart):
        for x in range(origStart, origEnd):
            for y in range(getHeight(src)):
                setColor(getPixelAt(dest, newStart + x - origStart, y),
                        getColor(getPixelAt(src, x, y)))

    for i in range(5):
        origStart = i * barWidth
        origEnd = (i + 1) * barWidth
        newStart = i * (barWidth + gap)
        copyBar(pic, bar, origStart, origEnd, newStart)

    return bar

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def reverseChromaKey(basePic, signPic, startX, startY):
    for x in range(getWidth(signPic)):
        for y in range(getHeight(signPic)):
            baseX = startX + x
            baseY = startY + y
            if baseX < getWidth(basePic) and baseY < getHeight(basePic):
                p = getPixelAt(signPic, x, y)
                r, g, b = getRed(p), getGreen(p), getBlue(p)
                if r < 240 or g < 240 or b < 240:
                    setColor(getPixelAt(basePic, baseX, baseY), makeColor(r, g, b))
    return basePic

def pasteImage(srcPic, destPic, startX, startY):
    for x in range(getWidth(srcPic)):
        for y in range(getHeight(srcPic)):
            if startX + x < getWidth(destPic) and startY + y < getHeight(destPic):
                srcPixel = getPixelAt(srcPic, x, y)
                destPixel = getPixelAt(destPic, startX + x, startY + y)
                setColor(destPixel, getColor(srcPixel))

def scalePicture(pic, newWidth, newHeight):
    scaled = makeEmptyPicture(newWidth, newHeight)
    for x in range(newWidth):
        for y in range(newHeight):
            origX = x * getWidth(pic) // newWidth
            origY = y * getHeight(pic) // newHeight
            setColor(getPixelAt(scaled, x, y), getColor(getPixelAt(pic, origX, origY)))
    return scaled

def scaleDown(source_picture):
    new_width = getWidth(source_picture) // 2
    new_height = getHeight(source_picture) // 2
    new_picture = makeEmptyPicture(new_width, new_height)
    source_x = 0
    for new_x in range(0, getWidth(new_picture)):
        source_y = 0
        for new_y in range(0, getHeight(new_picture)):
            color = getColor(getPixelAt(source_picture, source_x, source_y))
            setColor(getPixelAt(new_picture, new_x, new_y), color)
            source_y = source_y + 2
        source_x = source_x + 2
    return new_picture

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def collage():
    print("Select collage image")
    base_pic = makePicture(pickAFile())
    canvas_width = 1000
    canvas_height = 736
    img_width = canvas_width // 3
    img_height = canvas_height // 2
    canvas = makeEmptyPicture(canvas_width, canvas_height)
    img_original = scalePicture(base_pic, img_width, img_height)
    img_blur = blur(scalePicture(base_pic, img_width, img_height))
    img_lighten = doubleLighten(scalePicture(base_pic, img_width, img_height))
    img_mirror = mirrorLeftQuarter(scalePicture(base_pic, img_width, img_height))
    img_spaced = scalePicture(spacedBars(scalePicture(base_pic, img_width, img_height)), img_width, img_height)
    img_waffle = scalePicture(base_pic, img_width, img_height)
    wafflePic(img_waffle, img_waffle)
    pasteImage(img_original, canvas, 0, 0)
    pasteImage(img_blur, canvas, img_width, 0)
    pasteImage(img_lighten, canvas, img_width * 2, 0)
    pasteImage(img_mirror, canvas, 0, img_height)
    pasteImage(img_spaced, canvas, img_width, img_height)
    pasteImage(img_waffle, canvas, img_width * 2, img_height)
    print("Select signature image")
    sig = makePicture(pickAFile())
    reverseChromaKey(canvas, sig, 50, 650)
    show(canvas)
```