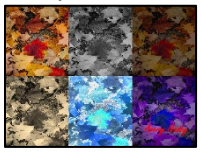
Avery Nasby

Completed



Original



```
from mediaComp import *


def main_canvas(source, canvas, target_x, target_y):
    target_w = 333
    target_h = 368
    canvas_w = getWidth(canvas)
    canvas_h = getHeight(canvas)

    source_w = getWidth(source)
    source_h = getHeight(source)

    for local_y in range(target_h):
        for local_x in range(target_w):
            dest_x = target_x + local_x
            dest_y = target_y + local_y

            if 0 <= dest_x < canvas_w and 0 <= dest_y < canvas_h:
                source_x = int((local_x / target_w) * source_w)
                source_y = int((local_y / target_h) * source_h)

                if source_x >= source_w: source_x = source_w - 1
                if source_y >= source_h: source_y = source_h - 1

                source_pixel = getPixelAt(source, source_x, source_y)
                canvas_pixel = getPixelAt(canvas, dest_x, dest_y)
                setColor(canvas_pixel, getColor(source_pixel))


def custom_mod(picture):
    new_pic = duplicatePicture(picture)
    w = getWidth(new_pic)
    h = getHeight(new_pic)
    cx, cy = w // 2, h // 2
    max_dist = (cx**2 + cy**2) ** 0.5

    for p in getPixels(new_pic):
        x = getX(p)
        y = getY(p)

        r = getRed(p)
        g = getGreen(p)
        b = getBlue(p)

        dist = ((x - cx)**2 + (y - cy)**2) ** 0.5
        vignette_factor = 1.0 - (dist / max_dist) * 0.45

        setRed(p, int(g * vignette_factor))
```

```
        setGreen(p, int(b * vignette_factor))
        setBlue(p, int(r * vignette_factor))

    return new_pic


def grayscale(picture):
    new_pic = duplicatePicture(picture)
    for p in getPixels(new_pic):
        intensity = (getRed(p) + getGreen(p) + getBlue(p)) // 3
        setRed(p, intensity)
        setGreen(p, intensity)
        setBlue(p, intensity)
    return new_pic


def darken(picture):
    new_pic = duplicatePicture(picture)
    for p in getPixels(new_pic):
        setRed(p, int(getRed(p) * 0.5))
        setGreen(p, int(getGreen(p) * 0.5))
        setBlue(p, int(getBlue(p) * 0.5))
    return new_pic


def sepia(picture):
    new_pic = duplicatePicture(picture)
    for p in getPixels(new_pic):
        r = getRed(p)
        g = getGreen(p)
        b = getBlue(p)

        new_r = int((r * 0.393) + (g * 0.769) + (b * 0.189))
        new_g = int((r * 0.349) + (g * 0.686) + (b * 0.168))
        new_b = int((r * 0.272) + (g * 0.534) + (b * 0.131))

        setRed(p, min(255, new_r))
        setGreen(p, min(255, new_g))
        setBlue(p, min(255, new_b))
    return new_pic


def negative(picture):
    new_pic = duplicatePicture(picture)
    for p in getPixels(new_pic):
        setRed(p, 255 - getRed(p))
        setGreen(p, 255 - getGreen(p))
        setBlue(p, 255 - getBlue(p))
    return new_pic


def sign_collage(canvas, signature_file, target_x, target_y):
    sig_pic = makePicture(signature_file)
    sig_w = getWidth(sig_pic)
    sig_h = getHeight(sig_pic)
    canvas_w = getWidth(canvas)
    canvas_h = getHeight(canvas)

    for y in range(sig_h):
        for x in range(sig_w):
```

```
            dest_x = target_x + x
            dest_y = target_y + y

            if 0 <= dest_x < canvas_w and 0 <= dest_y < canvas_h:
                sig_pixel = getPixelAt(sig_pic, x, y)
                r = getRed(sig_pixel)
                g = getGreen(sig_pixel)
                b = getBlue(sig_pixel)

                if not (r > 230 and g > 230 and b > 230):
                    canvas_pixel = getPixelAt(canvas, dest_x, dest_y)
                    setColor(canvas_pixel, makeColor(255, 0, 0))


def collage():
    media_folder = getMediaFolder()
    if not media_folder.endswith("/") and not media_folder.endswith("\\"):
        media_folder += "/"

    canvas_w = 1000
    canvas_h = 736
    canvas = makeEmptyPicture(canvas_w, canvas_h)

    base_image = makePicture(media_folder + "leaves.jpg")

    mod1_gray   = grayscale(base_image)
    mod2_dark   = darken(base_image)
    mod3_sepia  = sepia(base_image)
    mod4_neg    = negative(base_image)
    mod5_custom = custom_mod(base_image)

    main_canvas(base_image,  canvas, 0, 0)
    main_canvas(mod1_gray,   canvas, 333, 0)
    main_canvas(mod2_dark,   canvas, 666, 0)

    main_canvas(mod3_sepia,  canvas, 0, 368)
    main_canvas(mod4_neg,    canvas, 333, 368)
    main_canvas(mod5_custom, canvas, 666, 368)

    signature_path = media_folder + "signature.png"
    sign_collage(canvas, signature_path, 700, 600)

    show(canvas)
    return canvas
```