from jes import *

def collage():
    # picture files
    file1 = "jimi.jpg"
    file2 = "tieDye.jpg"
    sig = "sign.jpg"

    # signature
    sign = makePicture(sig)
    small_sig = scaleDown(sign, 35)

    # pictures
    picture = makePicture(file1)
    background = makePicture(file2)
    picWidth = getWidth(picture)
    picHeight = getHeight(picture)

    canvas = makeEmptyPicture(picWidth * 3, picHeight * 3)

    # collage
    copy(background, canvas, 0, 0)
copy(picture, canvas, picWidth, picHeight)

grayScale(picture)
copy(picture, canvas, picWidth * 2, 0)

makeRed(picture)
copy(picture, canvas, 0, picHeight * 2)
oRed(picture)

makeBlue(picture)
copy(picture, canvas, 0, 0)
noBlue(picture)

makeGreen(picture)
copy(picture, canvas, picWidth * 2, picHeight * 2)

chromaSig(small_sig, canvas, 825, 0)

writePictureTo(canvas, "tsaparikos_collage.jpg")

show(canvas)

# functions
def copy(source, target, targX, targY):
    targetX = targX
    for sourceX in range(0, getWidth(source)):
        targetY = targY
        for sourceY in range(0, getHeight(source)):
            px = getPixel(source, sourceX, sourceY)
            tx = getPixel(target, targetX, targetY)
            setColor(tx, getColor(px))
            targetY = targetY + 1
        targetX = targetX + 1

def grayScale(picture):
    for p in getPixels(picture):
        intensity = (getRed(p) + getGreen(p) + getBlue(p)) / 3
        setColor(p, makeColor(intensity, intensity, intensity))

def noBlue(pic):
    for p in getPixels(pic):
        value = getRed(p)
def noRed(pic):
    for p in getPixels(pic):
        value = getRed(p)
        setRed(p, value // 4)

def makeBlue(pic):
    for p in getPixels(pic):
        value = getRed(p)
        setBlue(p, value * 4)

def makeRed(pic):
    for p in getPixels(pic):
        value = getRed(p)
        setRed(p, value * 4)

def makeGreen(pic):
    for p in getPixels(pic):
        value = getRed(p)
        setGreen(p, value * 4)

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, red)

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)):
            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()