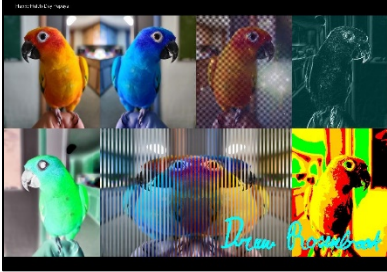# Andrew Rosenbrock

Completed

Originals


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#Andrew Rosenbrock: 15 March 2021

def collage():
  mainPic = makePicture(getMediaPath("Birb1.jpeg"))
  sidePic = makePicture(getMediaPath("NASA_space.jpeg"))
  sig = makePicture(getMediaPath("Signature.jpg"))
  canvas = makeEmptyPicture(1000, 700)

  mainPic2 = randomGen(mainPic)
  copy(mainPic2, canvas, 0, 0)

  colorPic = colorSwap(mainPic)
  colorPic = randomGen(colorPic)
  copy(colorPic, canvas, getWidth(mainPic), 0)

  mainPic = makePicture(getMediaPath("Birb1.jpeg"))
  newSidePic = downUp(sidePic, .75)
  blendedPic = blend(mainPic, newSidePic)
  blendedPic = randomGen(blendedPic)
  copy(blendedPic, canvas, getWidth(mainPic) *2, 0)

  flipPic = flip(mainPic)
  mainPic = makePicture(getMediaPath("Birb1.jpeg"))
  splicePic = splice(colorSwap(mainPic), flipPic)
  copy(splicePic, canvas, getWidth(mainPic), getHeight(mainPic))

  mainPic = makePicture(getMediaPath("Birb1.jpeg"))
  posterPic = posterize(mainPic)
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  posterPic = randomGen(posterPic)
  copy(posterPic, canvas, getWidth(mainPic) * 3, getHeight(mainPic))

  mainPic = makePicture(getMediaPath("Birb1.jpeg"))
  negativePic = negative(mainPic)
  negativePic = randomGen(negativePic)
  copy(negativePic, canvas, 0, getHeight(mainPic))

  mainPic = makePicture(getMediaPath("Birb1.jpeg"))
  edgePic = edge(mainPic)
  edgePic = randomGen(edgePic)
  copy(edgePic, canvas, getWidth(mainPic) * 3, 0)

  addBox(canvas, 0, 0)
  addBox(canvas, 0, 666)
  addText(canvas, 30, 20, "Happy Hatch-Day Papaya!", white)

  reSig = reColor(sig)
  canvas = chromakey(sig, canvas)

  explore(canvas)

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

#adds black bar to top and bottom
def addBox(target, startX, startY):
  addRectFilled(target, startX, startY, getWidth(target), 40)
  return(target)

#Blends bird and space background
def blend(pic1, pic2):
  canvas = makeEmptyPicture(getWidth(pic1),getHeight(pic1))
  for start in range(2):
    for x in range(start, getWidth(pic1), 2):
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      for y in range(start, getHeight(pic1)):
        pixel = getPixel(canvas, x, y)
        sourcePx = getPixel(pic1, x, y)
        setColor(pixel, getColor(sourcePx))
  for start in range(2):
    for x in range(start, getWidth(pic1), 2):
      for y in range(start+1, getHeight(pic1), 2):
        pixel = getPixel(canvas, x, y)
        sourcePx = getPixel(pic2, x, y)
        setColor(pixel, getColor(sourcePx))
  return canvas

#Makes the negative color values
def negative(pic):
  for pixel in getPixels(pic):
    newRed = 255 - getRed(pixel)
    newBlue = 255 - getBlue(pixel)
    newGreen = 255 - getGreen(pixel)
    newColor = makeColor(newRed, newBlue, newGreen)
    setColor(pixel, newColor)
  return(pic)

#Scaling funtion
def downUp(picture,scale):
  canvas = makeEmptyPicture(int(getWidth(picture)*scale),int(getHeight(picture)*scale))
  picX = 0
  for targetX in range(0,int(getWidth(picture)*scale)):
    picY = 0
    for targetY in range(0,int(getHeight(picture)*scale)):
      srcpx = getPixel(picture,int(picX),int(picY))
      color = getColor(srcpx)
      setColor(getPixel(canvas,targetX,targetY),color)
      picY = picY + 1.0/scale
    picX = picX + 1.0/scale
  return canvas

#Posterizes into 5 colors
def posterize(pic):
  for px in getPixels(pic):
    r = getRed(px)
    g = getGreen(px)
    b = getBlue(px)
    lum = (r+b+g)/3
    if lum < 60:
      setColor(px, black)
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      elif 60 <= lum < 90:
        setColor(px, red)
      elif 90 <= lum < 135:
        setColor(px, orange)
      elif 135 <= lum < 173:
        setColor(px, yellow)
      elif lum >= 173:
        setColor(px, green)
  return(pic)

#Edge detector
def edge(source):
  for pixel in getPixels(source):
    x = getX(pixel)
    y = getY(pixel)
    if y < getHeight(source)-1 and x < getWidth(source)-1:
      sum = getRed(pixel) + getGreen(pixel) + getBlue(pixel)
      botrt = getPixel(source, x+1, y+1)
      sum2 = getRed(botrt) + getGreen(botrt) + getBlue(botrt)
      diff = abs(sum2-sum)
      newcolor = makeColor(diff,diff + 50,diff + 50)
      setColor(pixel, newcolor)
  return(source)

#Flips the image L to R
def flip(pic):
  width = getWidth(pic)
  height = getHeight(pic)
  for y in range (0, height):
    for x in range (0, width/2):
      left = getPixel(pic, x, y)
      right = getPixel(pic, width-x-1, y)
      color1 = getColor(left)
      color2 = getColor(right)
      setColor(right, color1)
      setColor(left, color2)
  return(pic)

def copy2(source,target,targX,targY,sliceNum,sliceWidth):
  targetX = targX
  for sourceX in range((sliceNum)*sliceWidth,(sliceNum+1)*sliceWidth):
    targetY = targY
    for sourceY in range(0,getHeight(source)):
      px = getPixel(source,sourceX,sourceY)
      tx = getPixel(target,targetX,targetY)
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        setColor(tx,getColor(px))
        targetY = targetY + 1
     targetX = targetX + 1


#Splices 2 pictures together
def splice(picture1, picture2):
  nos = 50

  canvas = makeEmptyPicture(getWidth(picture1) +getWidth(picture2), getHeight(picture1), black)
  slice1 = getWidth(picture1) /nos
  slice2 = getWidth(picture2) /nos

  startX = 0
  for x in range(nos):
    copy2(picture1, canvas, startX, 0, x, slice1)
    startX = startX + slice1
    copy2(picture2, canvas, startX, 0, x, slice2)
    startX = startX + slice2
  return(canvas)


#Swaps color values
def colorSwap(picture):
  for p in getPixels(picture):
    red=getRed(p)
    blue=getBlue(p)
    green=getGreen(p)
    newRed = blue
    newBlue = green
    newGreen = red
    setColor(p,makeColor(newRed,newBlue,newGreen))
  return(picture)


#Used for signature
def chromakey(source, bg):
  canvas = makeEmptyPicture(getWidth(bg), getHeight(bg), black)
  source2 = copy(source, canvas, getWidth(bg) - getWidth(source), getHeight(bg) - getHeight(source))
  for px in getPixels(source2):
    x = getX(px)
    y = getY(px)
    if (getRed(px) < 75 and getGreen(px) < 75 and getBlue(px) < 75):
      bgpx = getPixel(bg,x,y)
      bgcol = getColor(bgpx)
      setColor(px,bgcol)
  return(source2)
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#changes color of signature
def reColor(pic):
  for px in getPixels(pic):
    if (getRed(px) > 50 and getGreen(px) > 50 and getBlue(px) > 50):
      setColor(px, cyan)
  return(pic)

#Randomizer used to decide which birds are flipped
def randomGen(picture):
  import random
  number = random.randint(1, 4)
  if number %2 == 0:
    flip(picture)
    return(picture)
  elif number %2 != 0:
    return(picture)
```