

Lab 5

Integrantes:

- Francis Aguilar,
- César López,
- Jose Marchena, 22398

Repo: <https://github.com/Czar272/Lab5VxC.git>

```
In [22]: import cv2
import numpy as np
import matplotlib.pyplot as plt
```

```
In [23]: def show_image(img, title="Image"):
    img_rgb = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
    plt.figure(figsize=(10,6))
    plt.imshow(img_rgb)
    plt.title(title)
    plt.axis("off")
```

```
In [24]: # === SET DE CONTROL (Rotación pura) ===
img_left_control = cv2.imread("db/control_left.jpg")
img_right_control = cv2.imread("db/control_right.jpg")

# === SET EXPERIMENTAL (Con traslación) ===
img_left_exp = cv2.imread("db/exp_left.jpg")
img_right_exp = cv2.imread("db/exp_right.jpg")
```

```
In [25]: def stitch_images(img_left, img_right):

    gray_left = cv2.cvtColor(img_left, cv2.COLOR_BGR2GRAY)
    gray_right = cv2.cvtColor(img_right, cv2.COLOR_BGR2GRAY)

    orb = cv2.ORB_create(2000)
    kp1, des1 = orb.detectAndCompute(gray_left, None)
    kp2, des2 = orb.detectAndCompute(gray_right, None)

    bf = cv2.BFMatcher(cv2.NORM_HAMMING, crossCheck=True)
    matches = bf.match(des2, des1)
    matches = sorted(matches, key=lambda x: x.distance)

    pts_right = np.float32([kp2[m.queryIdx].pt for m in matches]).reshape(-1,1,2)
    pts_left = np.float32([kp1[m.trainIdx].pt for m in matches]).reshape(-1,1,2)

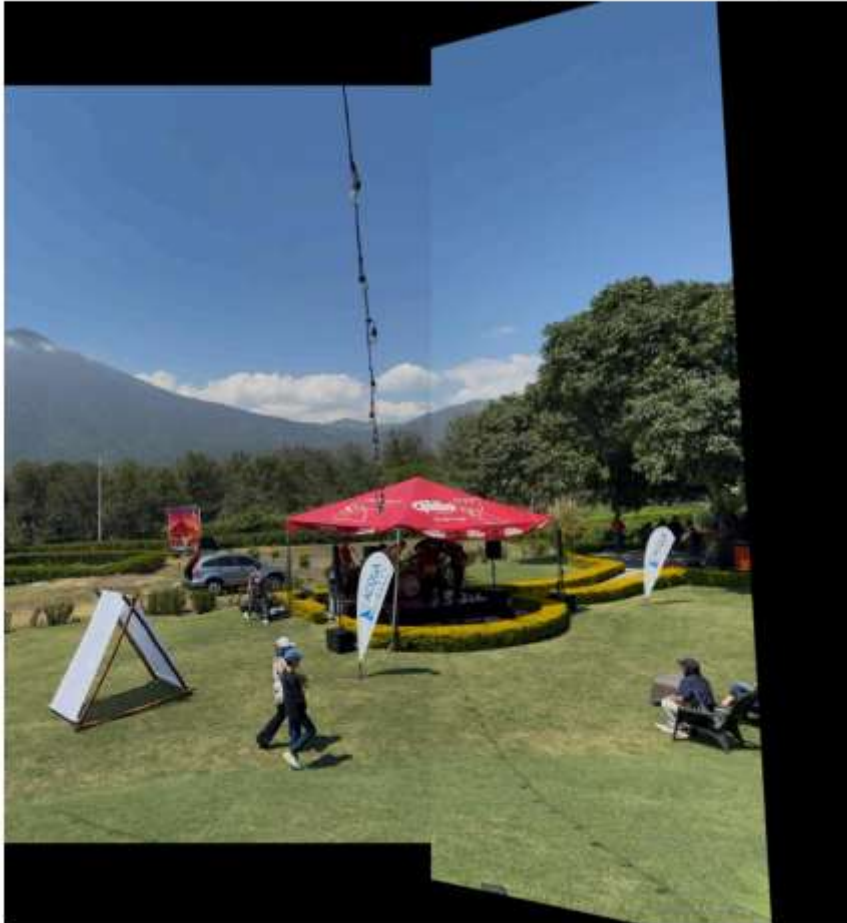
    H, mask = cv2.findHomography(pts_right, pts_left, cv2.RANSAC, 5.0)

    height, width = img_left.shape[:2]
    panorama = cv2.warpPerspective(img_right, H, (width*2, height))
    panorama[0:height, 0:width] = img_left
```

```
return panorama
```

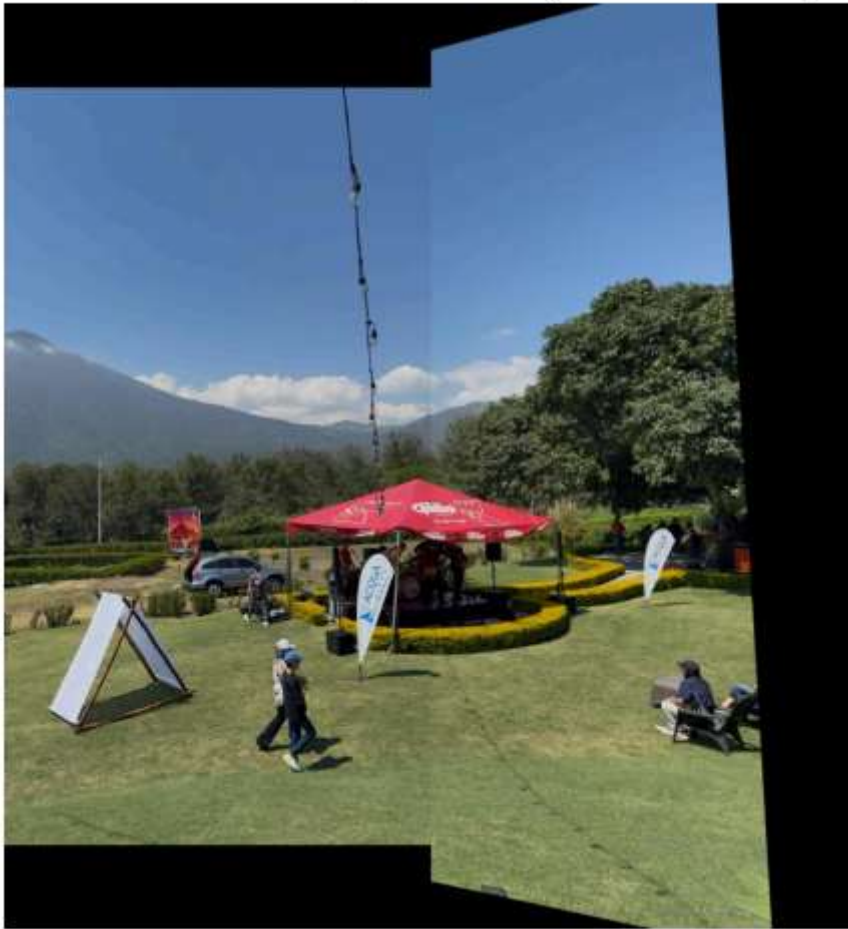
```
In [26]: panorama_control = stitch_images(img_left_control, img_right_control)  
show_image(panorama_control, "Panorama - Set de Control (Rotación Pura)")
```

Panorama - Set de Control (Rotación Pura)



```
In [27]: panorama_exp = stitch_images(img_left_exp, img_right_exp)  
show_image(panorama_exp, "Panorama - Set Experimental (Con Traslación)")
```

Panorama - Set Experimental (Con Traslación)



```
In [28]: cv2.imwrite("Results/resultado_control.jpg", panorama_control)
         cv2.imwrite("Results/resultado_experimental.jpg", panorama_exp)
```

Out[28]: True