import numpy as np

import cv2

import matplotlib.pyplot as plt

from PIL import Image

image\_path = '/content/pexels-chetanvlad-1595655.jpg'

image = Image.open(image\_path).convert("RGB")

image\_np = np.array(image)

src\_pts = np.array([

[100, 100],

[400, 100],

[100, 400],

[400, 400]

], dtype=np.float32)

dst\_pts = np.array([

[150, 150],

[450, 50],

[500, 400],

[100, 500]

], dtype=np.float32)

A = []

for i in range(4):

x, y = src\_pts[i]

u, v = dst\_pts[i]

A.append([-x, -y, -1, 0, 0, 0, x\*u, y\*u, u])

A.append([0, 0, 0, -x, -y, -1, x\*v, y\*v, v])

A = np.array(A)

U, S, Vt = np.linalg.svd(A)

h = Vt[-1] / Vt[-1, -1]

H = h.reshape(3, 3)

height, width = image\_np.shape[:2]

warped\_image = cv2.warpPerspective(image\_np, H, (width, height))

plt.figure(figsize=(10, 5))

plt.subplot(1, 2, 1)

plt.imshow(image\_np)

plt.title("Original Image")

plt.axis("off")

plt.subplot(1, 2, 2)

plt.imshow(warped\_image)

plt.title("Warped Image (DLT)")

plt.axis("off")

plt.show()