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**TASK # 01**

import cv2

# Load the image

img = cv2.imread('face.jpg', cv2.IMREAD\_GRAYSCALE)

# Rotate the image

rows, cols = img.shape

M = cv2.getRotationMatrix2D((cols/2, rows/2), 45, 1) # Rotate by 45 degrees

rotated\_img = cv2.warpAffine(img, M, (cols, rows))

# ORB feature detection

orb = cv2.ORB\_create()

keypoints1, descriptors1 = orb.detectAndCompute(img, None)

keypoints2, descriptors2 = orb.detectAndCompute(rotated\_img, None)

# Draw keypoints

img\_with\_keypoints = cv2.drawKeypoints(img, keypoints1, None, color=(0, 255, 0))

rotated\_with\_keypoints = cv2.drawKeypoints(rotated\_img, keypoints2, None, color=(255, 0, 0))

# Save results

cv2.imwrite('keypoints\_original.jpg', img\_with\_keypoints)

cv2.imwrite('keypoints\_rotated.jpg', rotated\_with\_keypoints)

**TASK # 02**

# Load the handwritten text image

img = cv2.imread('handwriting.jpg', cv2.IMREAD\_GRAYSCALE)

# Apply FAST detector

fast = cv2.FastFeatureDetector\_create()

keypoints = fast.detect(img, None)

# Draw keypoints

img\_with\_keypoints = cv2.drawKeypoints(img, keypoints, None, color=(255, 0, 0))

# Save the result

cv2.imwrite('handwriting\_keypoints.jpg', img\_with\_keypoints)