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BSCS-IS-4B

EXERCISE NO. 3

Advanced Feature Extraction and Image Processing

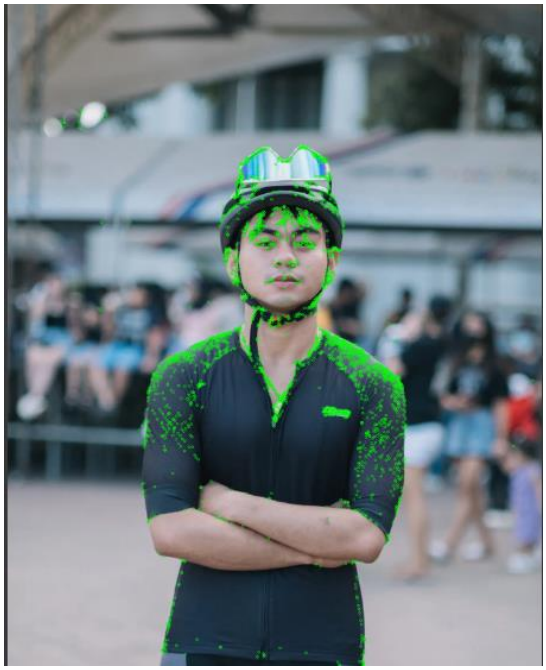
this code finds corners in an image, highlights them in red, and displays the final image resized so you can easily see the results.

Exercise 2: HOG (Histogram of Oriented Gradients) Feature Extraction

This code loads an image, converts it to grayscale, extracts its texture and edge features using HOG, and displays the original image alongside a visualization of these features. The HOG visualization helps to understand the image's structure and directional edges by emphasizing regions with significant gradient changes.

FAST (Features from Accelerated Segment Test) Keypoint Detection

This code loads an image, uses the FAST algorithm to detect keypoints (like corners), draws these points onto the original image in green, resizes it for display, and shows the result. The green marks on the image represent areas with distinctive features that could be useful for image analysis or computer vision tasks.



Feature Matching using ORB and FLANN

This code compares two images by identifying distinctive keypoints and matching them using ORB and FLANN. The visual output shows lines connecting matched features between the two images, demonstrating areas that look similar or are found to match in both images. This technique is widely used in image stitching, object recognition, and motion tracking.

Image Segmentation using Watershed Algorithm

This code segments distinct regions in an image using the Watershed algorithm, which can separate overlapping or closely positioned objects effectively. By marking the detected boundaries in red, the code clearly shows the segmentation, making it useful for applications in image analysis where object separation is needed.