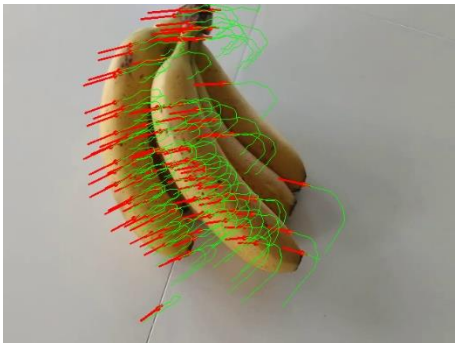
CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

MACHINE VISION.

Lab06: Feature tracking

BACKGROUND.



In Lecture 6 we looked at feature tracking. In this lab you will write a program to capture a video from the camera and track feature points in the video stream in real-time. If you do not have a camera, you can also do this exercise with the video **bananas.mp4** available on Canvas.

Task 1.

Write a Python program for capturing a video stream from the camera. Convert each frame into grayscale and extract a list of feature points from the first frame using *cv2.goodFeaturesToTrack()*. Visualise the feature points in the image.

Task 2.

Calculate the optical flow for the extracted feature points using *cv2.calcOpticalFlowPyrLK()*. Update the feature points according to the optical flow and iterate over the video sequence. Discard features for which no optical flow could be calculated. Visualise the flow direction for the remaining features.

Task 3.

Regularly check how many features are still being tracked. If the number of tracked features falls below a threshold, use *cv2.goodFeaturesToTrack()* again to calculate new feature points. Fill up the features being tracked, but make sure that none of the replacement features is too close to an existing feature still being tracked.

Task 4.

Keep track of the history of all features being tracked and visualise the tracking paths of all currently visible features.