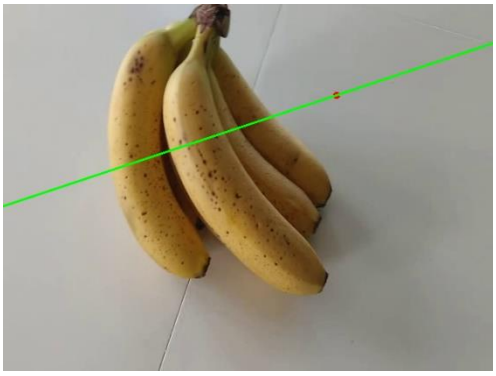
CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

MACHINE VISION.

Lab08: Epipolar geometry

BACKGROUND.



In Lecture 8 we looked at estimating the fundamental matrix between images. In this lab you will write a program to process a video sequence, track the features, and calculate the epipolar geometry for selected frames. You will need to adapt and extend the KLT feature tracking of Lab06 to process the video **bananas.mp4** available on Canvas.

Task 1.

Adapt your KLT tracking implementation from the previous Lab06 to track features across the whole image sequence of the file **bananas.mp4**. Make sure that there is sufficient feature overlap between the 50th and the 100th frame of the sequence.

Task 2.

Use the extracted feature tracks to estimate the fundamental matrix between the 50th and the 100th frame using the Direct Linear Transformation (DLT) algorithm.

Task 3.

Use the fundamental matrix calculated in task 2 to determine the epipoles in both images. Extract the 50th and 100th frame from the image sequence and draw the epipoles into these images.

Task 4.

Calculate the epipolar line for the pixel in the centre of the 50th frame. Draw this epipolar line into the 100th frame.