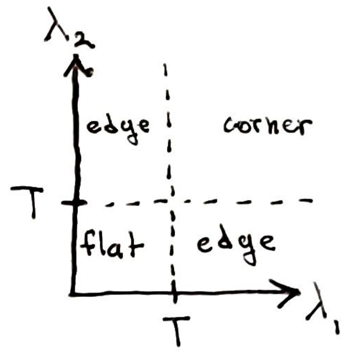
- Shi-Tomasi Corner.



$$\lambda_{min}(M) = \frac{trace(M)}{2} - \frac{1}{2}\sqrt{(trace(M))^2 - 4\det(M)}$$

* Smallest eigenvalue

if $\lambda_{min}(M) \geq T$: corner

- Difference of Gaussian (DoG)

  - The idea is very simple. Blur the same image using a gaussian blur, using 2 different variances σ_1 and σ_2, with $\sigma_2 > \sigma_1$. This way we get blurred image 1 with variance 1 and image 2 with variance 2. Then we subtract the image 1 and 2, from each other. This will increase the visibility of corners, edges and other details. Additionally, this can be extended to scale, and used in similar fashion as pyramids.

* My concern with gaussian is that due to blurring the sharp edges are not preserved. It might be interesting to try a median filter, as its edge preserving.

On the second note, we can use sigma of small values, to reduce the blurring effect. Small sigma is less blurring, and more detail. Larger sigma more blurring, less detail.

Lets say image is $I(x,y)$.

We have gaussian $g_1(x,y) = \frac{1}{\sqrt{2\pi\sigma_1^2}} e^{\left(-\frac{x^2+y^2}{2\sigma_1^2}\right)}$ similar one for g_2.

Taking a gaussian of an image will be $G_1(x,y) = g_1(x,y) * I(x,y)$.

Convolution

$$DoG = G_1(x,y) - G_2(x,y) = I * (g_1 - g_2)$$

DoG acts like a band pass filter. Gaussia is a low pass filter, but we are restricting our signal to be between two frequencies, images.

*I would recommend to look into Laplacian of Gaussian (LoG). We can look at the divergence of the gradient of the image. It can be used to find edges but also blobs.