

MM19B012_Question7

Counting the objects in an image is of enormous importance these days. Metallurgists want to count the number of precipitates in a microstructure and correlate it with the strength and toughness of the material. Doctors want to count the number of parasites in a blood sample under microscope to comment on the possibility of infection. Parking lot managers want to count the numbers of cars in the parking lot to decide redirection signs on the drive ways. Computer vision folk want to count the number of persons crossing a location automatically using the camera feed. Ecologists want to count the number of animals drinking from a lake every day. And so on. Using gimp, prepare four or five sample images that contain different number of blobs of black regions in a white background. Write a program that counts the number of blobs correctly and automatically. The script takes the file name of the image and gives the number of objects as output.

Answer:

Blob detection can be done using Gaussian or Hessian Operations

Hessian :-It detects blobs by finding maximas in the matrix of the Determinant of Hessian of the image.

Now using opencv, using these three algorithms we can find blobs

- **Thresholding** : Convert the source images to *several* binary images
- **Grouping** :In obtained binary image, connected black blob pixels are grouped together.
- **Merging**: The centers(keypoints) of the blobs in the binary images are found, and blobs located closer than “minDistance” computed from “minArea” are merged.

To remove noise we filter by area by setting “minArea”= 80 removes blobs that have area less than 80 pixels

Choice of programs used:-

Python is used as it has multiple features:-

- has imread and imshow
- opencv package handles messy Gaussian and Hessian Operations
- keypoints are efficiently found
- ease of programming