Edge Detection

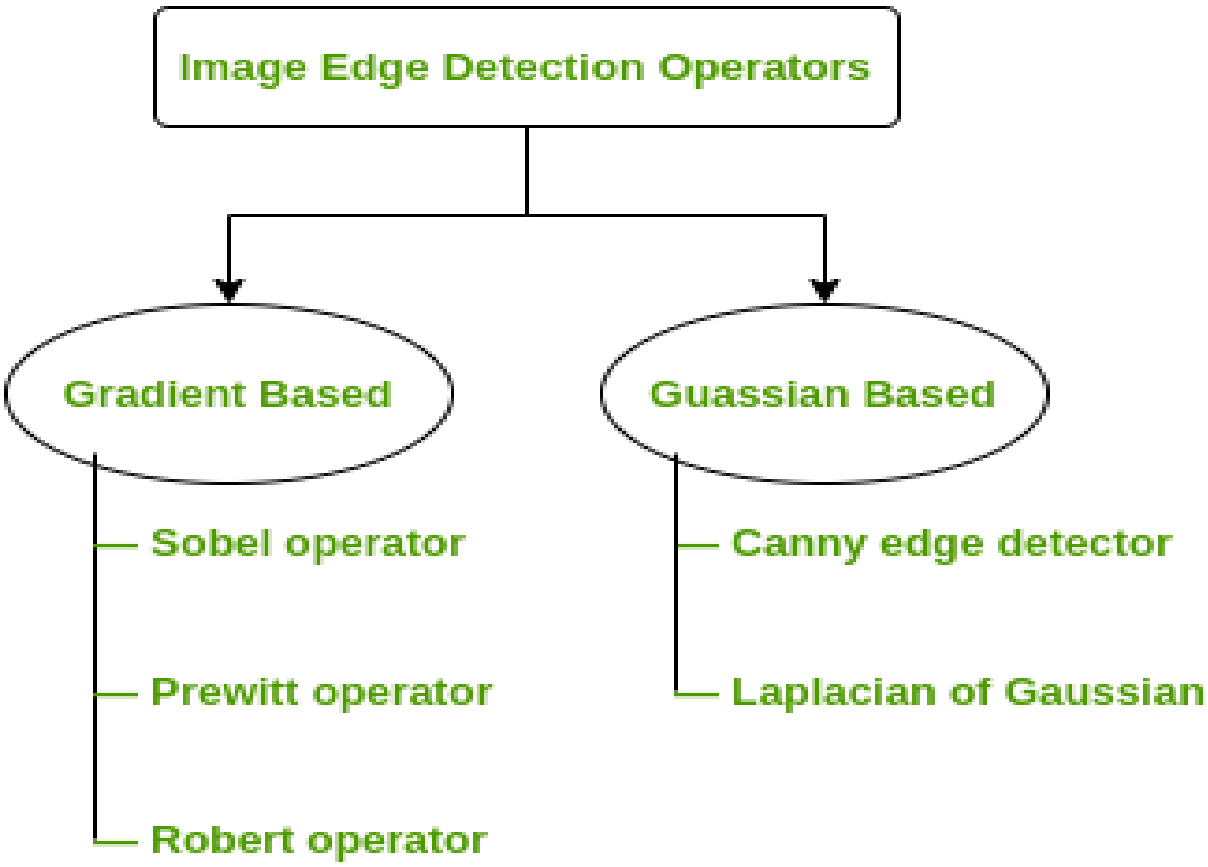

Image Segmentation

- Partitioning an image into meaningful regions with respect to a particular application.
- Simple segmentation is based on measurements taken from the image and might be based on brightness (grey-level), colour, texture, motion, etc.

Image Segmentation Techniques

Regions	Boundaries
Pixel-by-pixel (global statistics) Thresholding	Image Gradient (energy driven) Active Contours
Groups of Pixels (similarity) Clustering Region Growing Relaxation	Model Based (statistics of shape) Active shape model

Image Segmentation can be classified as:

- Non-automated
    - Identifying regions by hand!
- Semi-automated
    - Thresholding
    - Region Growing
    - Active Contour, etc.
- Automated
    - Model based
        - Area of intensive research

Thresholding

Classifying pixels as belonging to the “objects” or “background” depending on their value. T is called ‘Threshold value’.

But how to select the threshold value?

Possible approaches:

- Interactive threshold (manually setting threshold values)
- Adaptive threshold
- Variance minimisation method (Otsu threshold selection algorithm)

Advanced segmentation methods

- Active contours (snakes)
- Watershed

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