Inhalt

Edges:

Edges are pixels, in which the image intensity function changes its magnitude

(a) Original Image

(b) Image after Edge Detection

Abbildung: Edge Detection using Canny

Edge Detection:

Almost every Edge Detector uses either the first derivative or the second derivative of the intensity function.

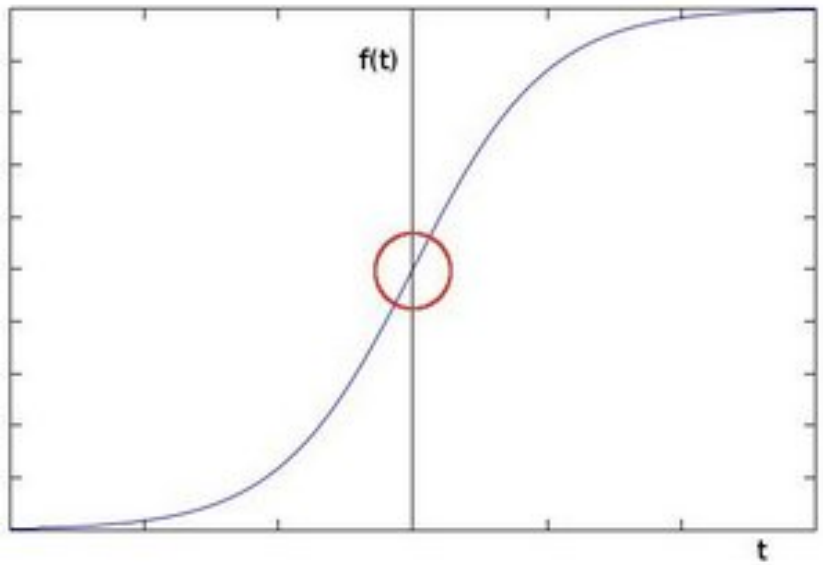

Abbildung: Intensity function

First Derivative:

Sobel-, Roberts-, Robinson-, Kirsch-Operator

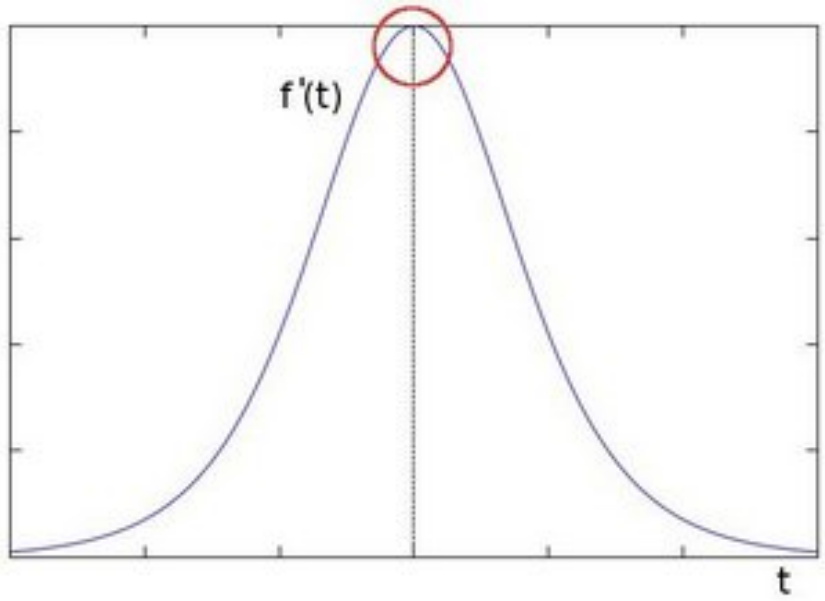

Abbildung: Intensity function - First derivative

Second Derivative:

Laplace-, Mexican-Hat-Operator

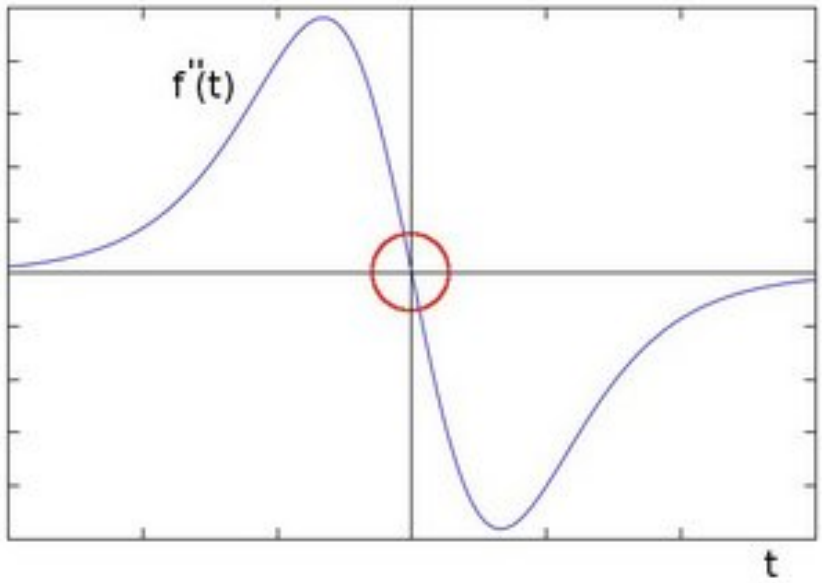

Abbildung: Intensity function - Second derivative

Canny Edge Detection:

- Low error rate
- Good localization
- Minimal response

Steps:

1. Filter out noise using Gaussian filter
2. Find the intensity gradient using Sobel-Operator
   $G = \sqrt{G_x^2 + G_y^2}$ or $G = |G_x| + |G_y|$
3. Non-maximum suppression
4. Hysteresis