### Department of Artificial Intelligence & Machine Learning Academic Year 2023-2024

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Batch: A1

### **Experiment No. 5B**

**Aim:** Feature Detection in Images

**Objective:** Develop a program to detect features in an Image (Edge)

Theory:

Difference of Gaussians (DoG) is calculated as the difference between two smoothed versions of an image obtained by applying two Gaussian kernels of different standard deviations (sigma) on that image

As an image enhancement algorithm, the difference of Gaussians can be utilized to increase the visibility of edges and other detail present in a digital image.

A wide variety of alternative edge sharpening filters operate by enhancing high frequency detail, but because random noise also has a high spatial frequency, many of these sharpening filters tend to enhance noise, an undesirable artifact.

The difference of Gaussians algorithm removes high frequency detail that often includes random noise, rendering this approach one of the most suitable for processing images with a high degree of noise.

A major drawback to application of the difference of Gaussians algorithm is an inherent reduction in overall image contrast produced by the operation.

#### **Problem Definition**

• Edge Detection using Difference of Gaussian

#### **Observations**



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# DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING



(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA: 3.18)

## Department of Artificial Intelligence & Machine Learning Academic Year 2023-2024

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	CV Experiment S-B.
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	Aim: Forture adviction in Images
	Objective: Develop a program to defect features in a image (Edge)
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	Observations: We upoted to detect edges in a image using the difference of Gaussian (DoG) method.
	They all a slee Country Plane a sugar
	This wethod applies Gaussia. Plur on an image using the cv2. Croussian Blur function first
-	with a different standard deviation and the
	with another different standard deviation.
	First we tried with the first bases blur truction's
-	Studard deviation eginl to 5 and the second Grassian Blor furthe's standard
	Second Gasta Olive further standard
	deviation equal to 3. Both having a kernel size
	of 3x3. We got as majo with very les
	noise but the edges were also thin and a
0	of 3 × 3. We got on image with very lex noise but the edges were also thin and a little grown. When we increased the bornel size of was increased to 5×5 the edge thickness
	of was increased to SXS the edge thickness
	(ACTESSE) but The edges belone more
	size interested to 7x7 the edge becomes
	Size is increased to 7x7 the edge to
	too thick & noise becomes much lesser. This
	the ideal kernel size should be 5x5
	Who the hand of the session
	When the kernel size is begt constant
	as 5x5 and the standard deviation are
	raised, them following results are obsered.
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