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### Assignment 1

	Kernel Size 3x3	Kernel Size 5x5
Mean Filter		
Median Filter		

**Q: Which of these two filters preserves the edges better and why?**

A: Both mean and median filters look at a particular pixel's surrounding pixels to decide whether they are similar to them. As in the name, the mean filter replaces the particular pixel with the mean of the convolved part. On the other hand, the median filter is a better way to take the average as it has less variance.

Hence, the **median filter is better at preserving sharp edges and the intersection of lines**. But, as we see in the above table, the **overall image is slightly blurred but better preserved in the mean filter**.

### First Order

Robert's (2x2)

Edge detection



After adding edges



Sobel's (3x3)

Edge detection



After adding edges



Prewitt's (3x3)

Edge detection



After adding edges



**Second Order**

Laplacian



Edge detection

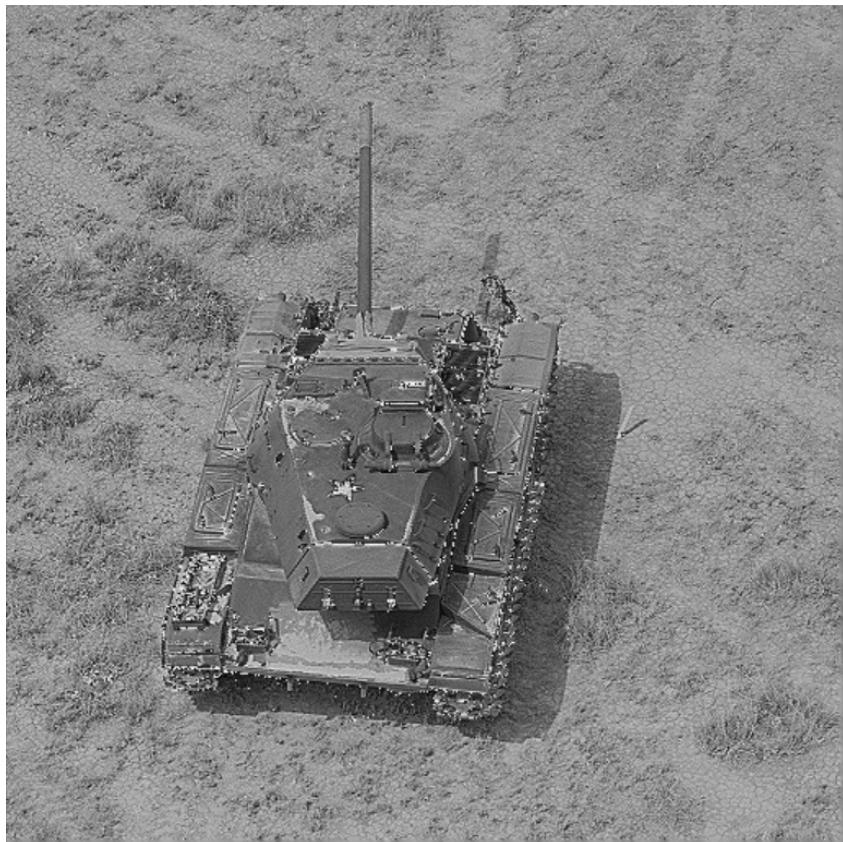


After adding edges

Laplacian (Composite)



Edge detection



Laplacian of Gaussian



Edge detection



After adding edges

All matrices and filters are implemented in the python files attached in the zip folder.