filter Average (Mean) filter filter filter filter

Mean filter

What will be new value of pixel (2,2) if smoothing is done using a 3×3 neighborhood.

0	1	0	2	7
2	7	7	4	0
5	6	(4)	3	3
1	1	0	7	5
5	4	2	2	5

7	7	4
6	4	3
1	0	7

3×3

Mean filter $\frac{1}{9}[7+7+4+6+4+3+1+0+7]$

$= \frac{1}{9} \times 39 = 4.33 \approx 4$

Neighborhood average filter is also called mean filter. Here, pixel values will be replaced by avg. value of neighbour pixels.

O/P is not a linear fn of its input.

Median Filter (Non-linear) ⇒ effective at removing impulse noise, pepper & salt noise

7	7	4
6	4	3
1	0	7

3×3

0 1 3 4 (4) 6 7 7 7

= (4)

Min Filter

0, 1, 3, 4, 4, 6, 7, 7, 7

(0)

Max filter = (7)