

FILTROS DE ORDEN (no lineales)

- **FILTROS ESTADÍSTICOS ORDENADOS:**

- **Operación no lineal:** Ordenar los valores en la vecindad de cada píxel de menor a mayor y obtener algún valor a partir de la lista.

- **Tipos:**

- Máximo

- Mínimo

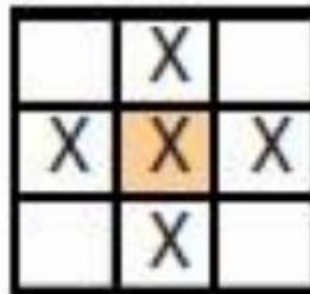
- Mediana

FILTROS DE ORDEN (no lineales). Vecindad de píxeles

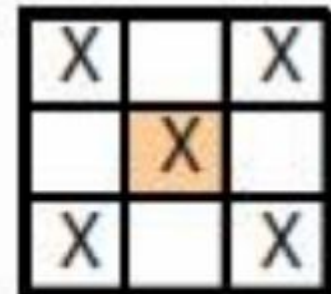
$$\begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$$



$$\begin{bmatrix} 0 & 1 & 0 \\ 1 & 1 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$



$$\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 1 \end{bmatrix}$$



ORDFILT2

Menor

X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
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Mayor

10	24	8
7	15	10
9	6	20

6	7	8	9	10	10	15	20	24
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ORDFILT2

Menor

X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
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Mayor

10	24	8
7	15	10
9	6	20

MÍNIMO

6	7	8	9	10	10	15	20	24
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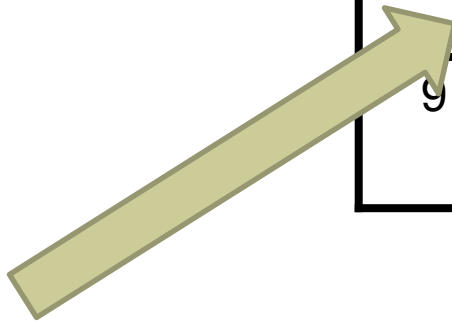
ORDFILT2

Menor

X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
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Mayor

10	24	8
7	6	10
9	6	20



6	7	8	9	10	10	15	20	24
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ORDFILT2

Menor

X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
-------	-------	-------	-------	-------	-------	-------	-------	-------

Mayor

10	24	8
7	15	10
9	6	20

MEDIANA

6	7	8	9	10	10	15	20	24
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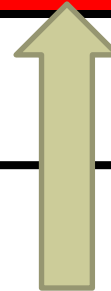
ORDFILT2

Menor

X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
-------	-------	-------	-------	-------	-------	-------	-------	-------

Mayor

10	24	8
7	10	10
9		20



6	7	8	9	10	10	15	20	24
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ORDFILT2

Menor

X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
-------	-------	-------	-------	-------	-------	-------	-------	-------

Mayor

10	24	8
7	15	10
9	6	20

MÁXIMO

6	7	8	9	10	10	15	20	24
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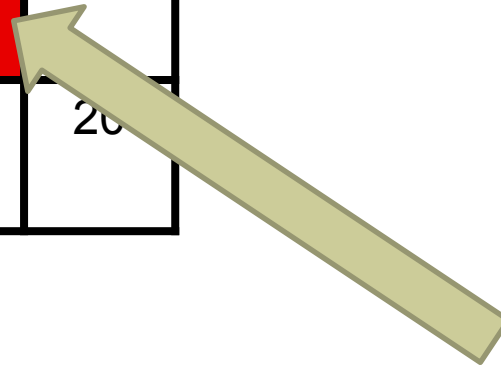
ORDFILT2

Menor

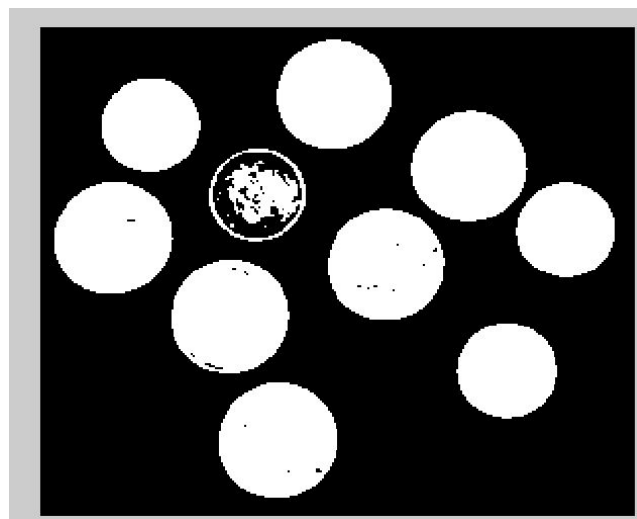
X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9
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Mayor

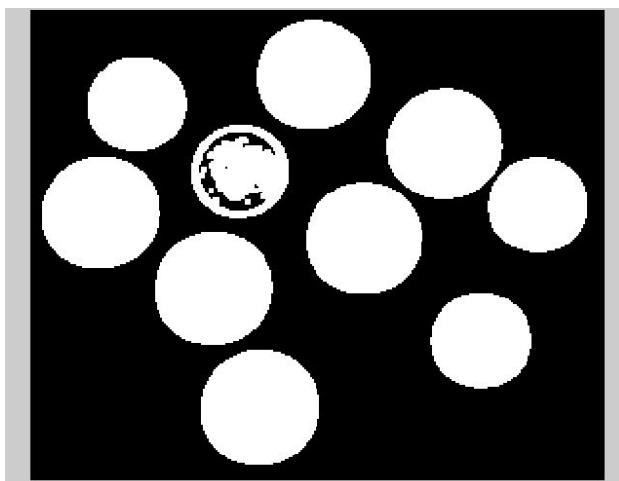
10	24	8
7	24	10
9	6	20



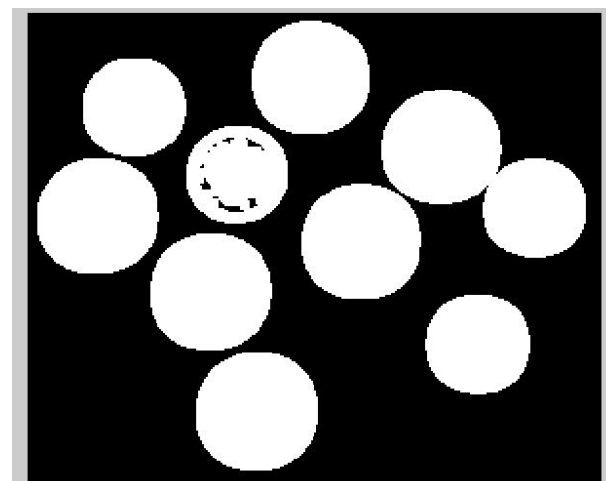
6	7	8	9	10	10	15	20	24
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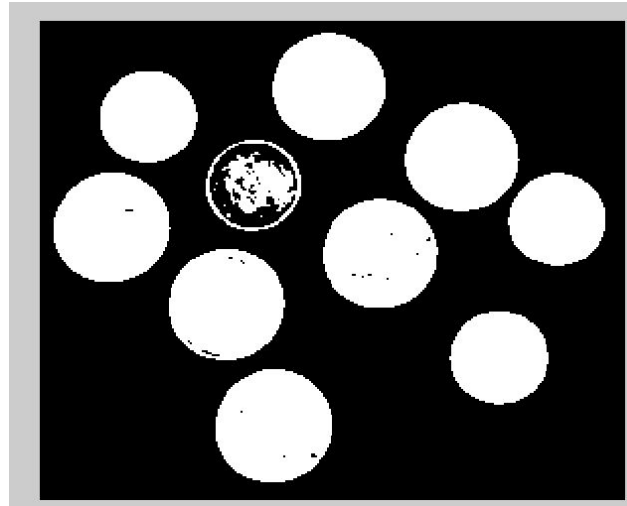


El Mayor de 3x3 vecinos

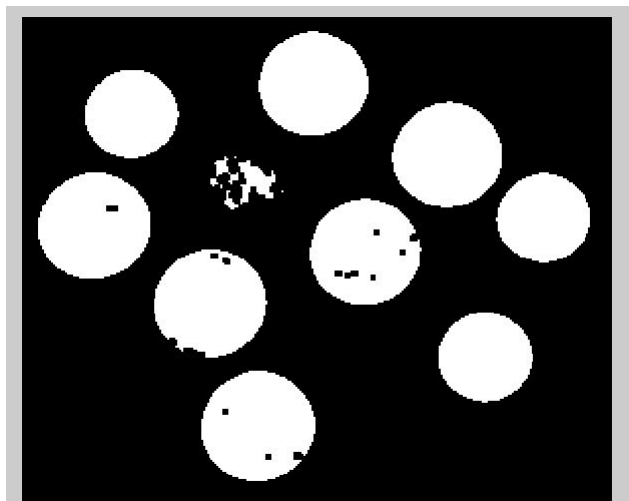


El Mayor de 5x5 vecinos

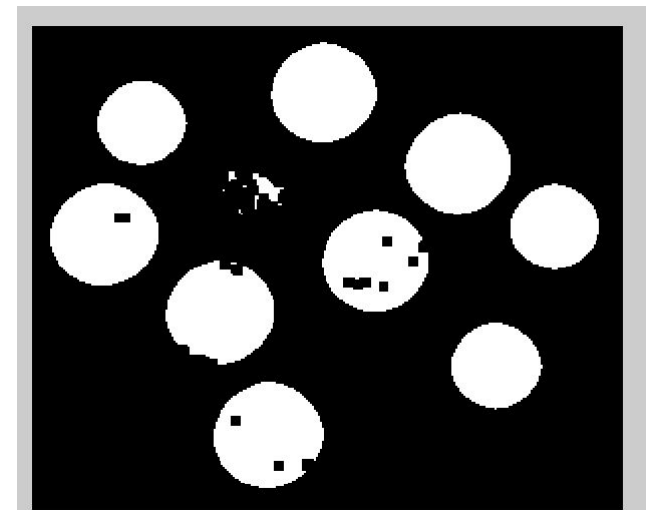




El Menor de 3x3 vecinos



El Menor de 5x5 vecinos



FILTROS DE ORDEN



Imagen con ruido

Filtro de mediana



Filtro de orden



Imagen filtrada