



In previous section - Multitasking Operation

Grey level of one I/p Image - is mapped - to another image - ^{o/p}

But in multi Image operation Grey level of two or more I/p images mapped to a single o/p image

$$g(x, y) = \text{op} [f_1(x, y), f_2(x, y)]$$

Operations (op)

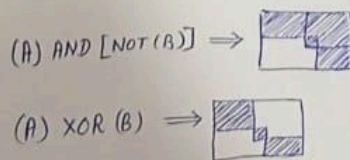
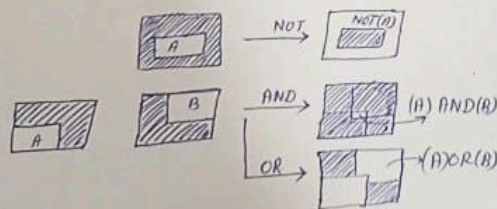
- ① Addition $\rightarrow g(x, y) = f_1(x, y) + f_2(x, y)$ (Can be double exposure image or composite image)
- ② Subtraction $\rightarrow g(x, y) = f_1(x, y) - f_2(x, y)$ (Motion detection)
- ③ Multiplication $\rightarrow g(x, y) = f_1(x, y) \times f_2(x, y)$ (Background illumination)
- ④ Logical AND $\rightarrow g(x, y) = f_1(x, y) \wedge f_2(x, y)$ (Calculating error)
- ⑤ Logical OR $\rightarrow g(x, y) = f_1(x, y) \vee f_2(x, y)$ (Mean Square Error)
- ⑥ Logical XOR $\rightarrow g(x, y) = f_1(x, y) \oplus f_2(x, y)$

⑦ Image Averaging $\Rightarrow \bar{g}(x, y) = \frac{1}{n} \sum_{i=1}^n f_i(x, y)$ f_1, f_2, \dots, f_n are n images

Average image

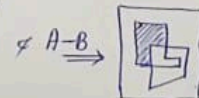
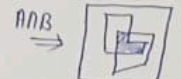
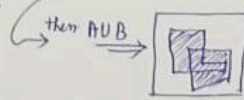
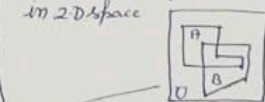
Boolean Operations used when dealing with binary image

- foreground (1-valued) set of pixels
- background (0-valued) set of pixels



Basic Set operations

Let two sets of coordinates A & B in 2D space



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$$g(x, y) = op[f_1(x, y), f_2(x, y)]$$

Operations (op)

① Addition

$$g(x, y) = f_1(x, y) + f_2(x, y)$$

Grayscale composite image or comparison image

② Subtraction

$$g(x, y) = f_1(x, y) - f_2(x, y)$$

Masking

③ Multiplication

$$g(x, y) = f_1(x, y) \cdot f_2(x, y)$$

Background illumination

④ Logical AND

$$g(x, y) = f_1(x, y) \wedge f_2(x, y)$$

Calculation error

⑤ Logical OR

$$g(x, y) = f_1(x, y) \vee f_2(x, y)$$

Binary Image (Mean Square Error)

⑥ Logical XOR

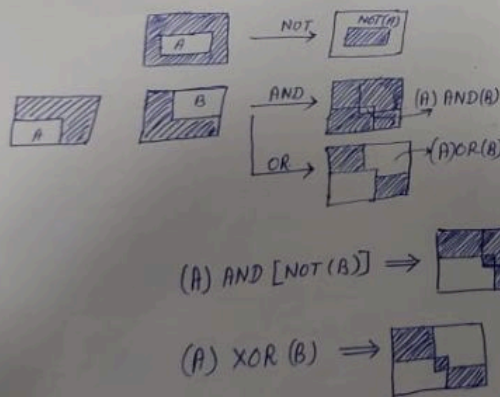
$$g(x, y) = f_1(x, y) \oplus f_2(x, y)$$

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Average image

Boolean Operations used when dealing with binary image

foreground (1-valued) set of pixels
background (0-valued) set of pixels



Basic Set operations

Let two sets of coordinates A & B in 2-D space.

