Time complexity : $O(n^2)$

Prove : $O(W \cdot H \cdot w \cdot h) = O(A \cdot a)$

A : Area of input image a : Area of scanning

$$= O(A) \cdot O\left(\frac{w \times h}{W \times H} \cdot A\right)$$

W : Width of input image w : Width of scanning area

H : Height of input image h : Height of scanning area

$$= O(A) \cdot O\left(\frac{10 \times 10}{480 \times 640} \cdot A\right)$$

$$= O(A) \cdot O\left(\frac{1}{3072} \cdot A\right)$$

$$= O\left(\frac{3073}{3072} \cdot A\right)$$

$$\fallingdotseq O(A)$$