Метод скользящего окна

$$H(X) = -\sum_{i=0}^{255}(p_i \cdot \log_2 p_i). \tag{1}$$

$$p_i = \frac{k_i}{N}. \tag{2}$$

$$p_i \cdot \log_2 p_i = \frac{k_i}{N} \cdot \log_2 \frac{k_i}{N}. \tag{3}$$

$$p_i \cdot \log_2 p_i = \frac{k_i}{N} \cdot (\log_2 k_i - \log_2 N). \tag{4}$$

$$H(X) = -(\frac{k_1}{N} \cdot (\log_2 k_1 - \log_2 N) + ... + \frac{k_{255}}{N} \cdot (\log_2 k_{255} - \log_2 N)). \tag{5}$$

$$H(X) = \frac{k_1}{N} \cdot (\log_2 N - \log_2 k_1) + ... + \frac{k_{255}}{N} \cdot (\log_2 N - \log_2 k_{255}). \tag{6}$$

$$H(X) \cdot N = k_1 \cdot (\log_2 N - \log_2 k_1) + ... + k_{255} \cdot (\log_2 N - \log_2 k_{255}). \tag{7}$$

$$N = PAGE\_SIZE. \tag{8}$$

Биномиальный метод

$$H(X) = -\sum_{k=0}^{n}(C_n^k \cdot P_k \cdot \log_2 P_k). \tag{9}$$

$$P_k = p^k \cdot (1-p)^{(n-k)}. \tag{10}$$

$$p = \frac{x_i}{N \cdot 8}, x_i \text{ — число единиц.} \tag{11}$$

$$P_k = (\frac{x_i}{(8N)})^k \cdot (1 - \frac{x_i}{(8N)})^{(n-k)}. \tag{12}$$

$$P_k = \frac{x_i^k}{(8N)^k} \cdot \frac{(8N - x_i)^{(n-k)}}{(8N)^{(n-k)}}. \tag{13}$$

$$P_k = \frac{x_i^k \cdot (8N - x_i)^{(n-k)}}{(8N)^n}. \tag{14}$$

$$P_k \cdot \log_2 P_k = \frac{x_i^k \cdot (8N - x_i)^{(n-k)}}{(8N)^n} \cdot (\log_2 x_i^k \cdot (8N - x_i)^{(n-k)} - \log_2 (8N)^n). \tag{15}$$

$$H(X) = -(C_n^0 \cdot \frac{x_i^0 \cdot (8N - x_i)^{(n-0)}}{(8N)^n} \cdot (\log_2 x_i^0 \cdot (8N - x_i)^{(n-0)} - \log_2 (8N)^n) + ...). \tag{16}$$

$$H(X) = (C_n^0 \cdot \frac{x_i^0 \cdot (8N - x_i)^{(n-0)}}{(8N)^n} \cdot (\log_2 (8N)^n - \log_2 x_i^0 \cdot (8N - x_i)^{(n-0)}) + ...). \tag{17}$$

$$H(X) \cdot (8N)^n = (C_n^0 \cdot x_i^0 \cdot (8N - x_i)^{(n-0)} \cdot (\log_2 (8N)^n - \log_2 x_i^0 \cdot (8N - x_i)^{(n-0)}) + ...). \tag{18}$$

$$n = 8, N = PAGE\_SIZE. \tag{19}$$

$$C_8^0 = 1, C_8^1 = 8, C_8^2 = 28, C_8^3 = 56, C_8^4 = 70, C_8^5 = 56, C_8^6 = 28, C_8^7 = 8, C_8^8 = 1. \tag{20}$$