Part2

Haffman Coding

概率合并的时候，上1下0，把符号翻译成码字的时候，从右往左看

DCT

KLT

lexicographical：

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} => \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \end{bmatrix}$$

SVD

学习推荐这两个视频：
https://www.bilibili.com/video/BV1B44y1C7CX
https://www.bilibili.com/video/BV1MT4y1y75x

Σ 从大到小排列，形状和 A 一样
U 里面的特征向量是列向量，V^T 里面的特征向量是行向量
做法演示：https://www.cnblogs.com/marsggbo/p/10155801.html

A,B是两个矩阵 c是常数
$\mathrm{dct2}(A+B) = \mathrm{dct2}(A) + \mathrm{dct2}(B)$
$c \cdot \mathrm{dct2}(A) = \mathrm{dct2}(c \cdot A)$

$$\begin{bmatrix}10 & 10 & 10\\10 & 10 & 10\\10 & 10 & 10\end{bmatrix} => \begin{bmatrix}30 & 0 & 0\\0 & 0 & 0\\0 & 0 & 0\end{bmatrix}$$

$$\begin{bmatrix}10 & 10 & 10 & 10\\10 & 10 & 10 & 10\\10 & 10 & 10 & 10\\10 & 10 & 10 & 10\end{bmatrix} => \begin{bmatrix}40 & 0 & 0 & 0\\0 & 0 & 0 & 0\\0 & 0 & 0 & 0\\0 & 0 & 0 & 0\end{bmatrix}$$

Part3

Chroma Subsampling

https://zh.wikipedia.org/zh-cn/%E8%89%B2%E5%BA%A6%E6%8A%BD%E6%A0%B7

Motion Estimation Methods

- direct methods
  - block-matching algorithm
    - **full search**
    - **three step search**
    - **two dimensional logarithmic search**
  - optical flow
- indirect methods
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Part4

MAC

https://zhuanlan.zhihu.com/p/331750721
https://zhuanlan.zhihu.com/p/401068717

CRC

m-bit dataword
n-bit CRC
(n +1)-bit generator
codeword = dataword + remainder(CRC)

modulo 2 Arithmetic --> xor

dataword后面先补n-bit的0，被除数的0用完，余数就是n-bit CRC

CRC Decoder 余数全0就校验成功

polynomial:
n-order generator
(n-1)-order CRC
Augmented dataword polynomial = dataword polynomial multiplied by x^n

TCP/UDP

https://www.zhihu.com/question/39849641/answer/83774680