



计算机图像处理

COMPUTER IMAGE PROCESSING

The background of the slide is a light gray gradient. It is decorated with numerous realistic water droplets of various sizes. Some droplets are large and prominent, while others are small and scattered. They are primarily located in the top-left and bottom-right corners, with a few smaller ones in the center and along the edges. The droplets have a glossy, reflective surface with highlights and shadows, giving them a three-dimensional appearance.

基于DCT的动态图像编码 MPEG基础

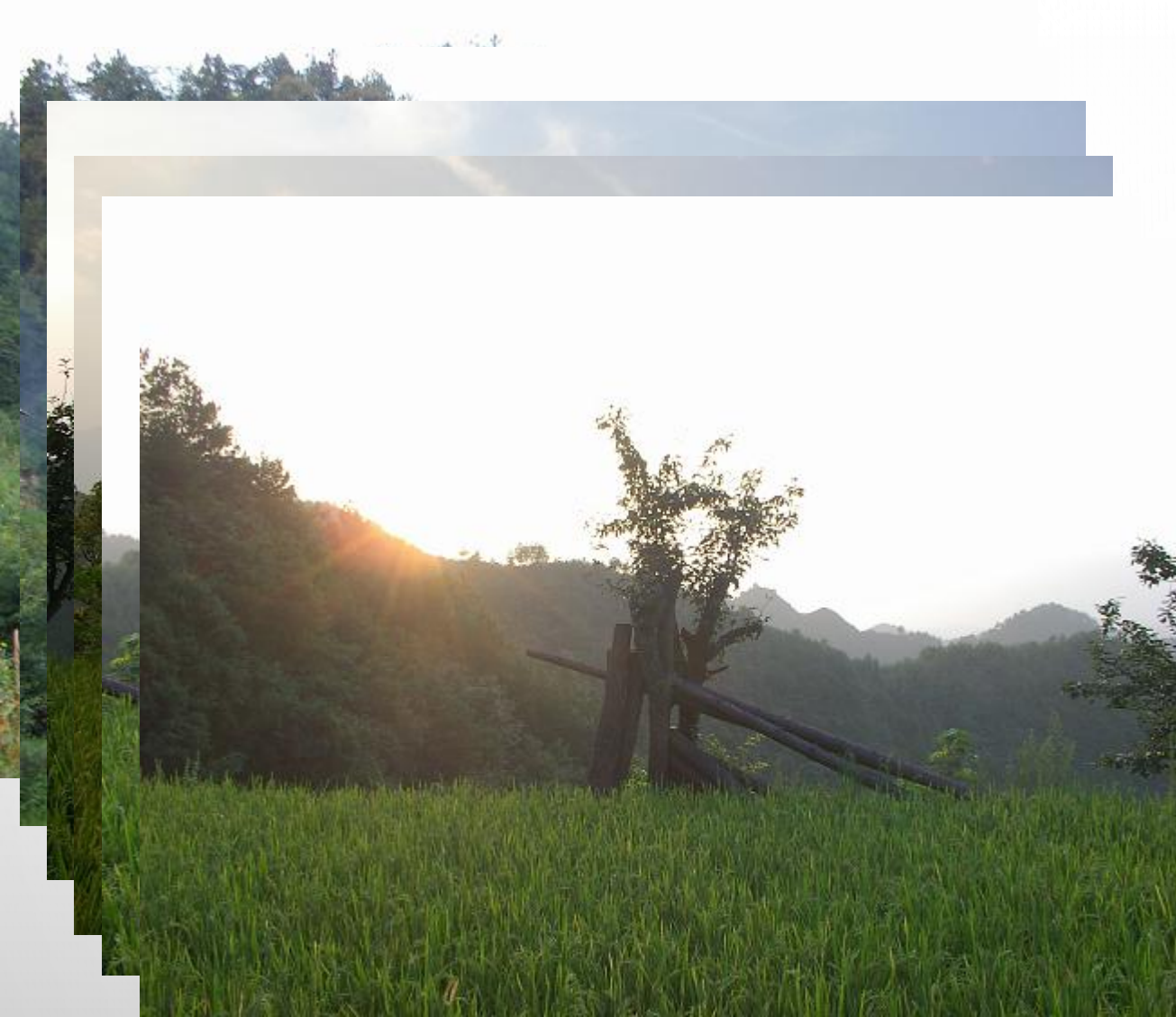




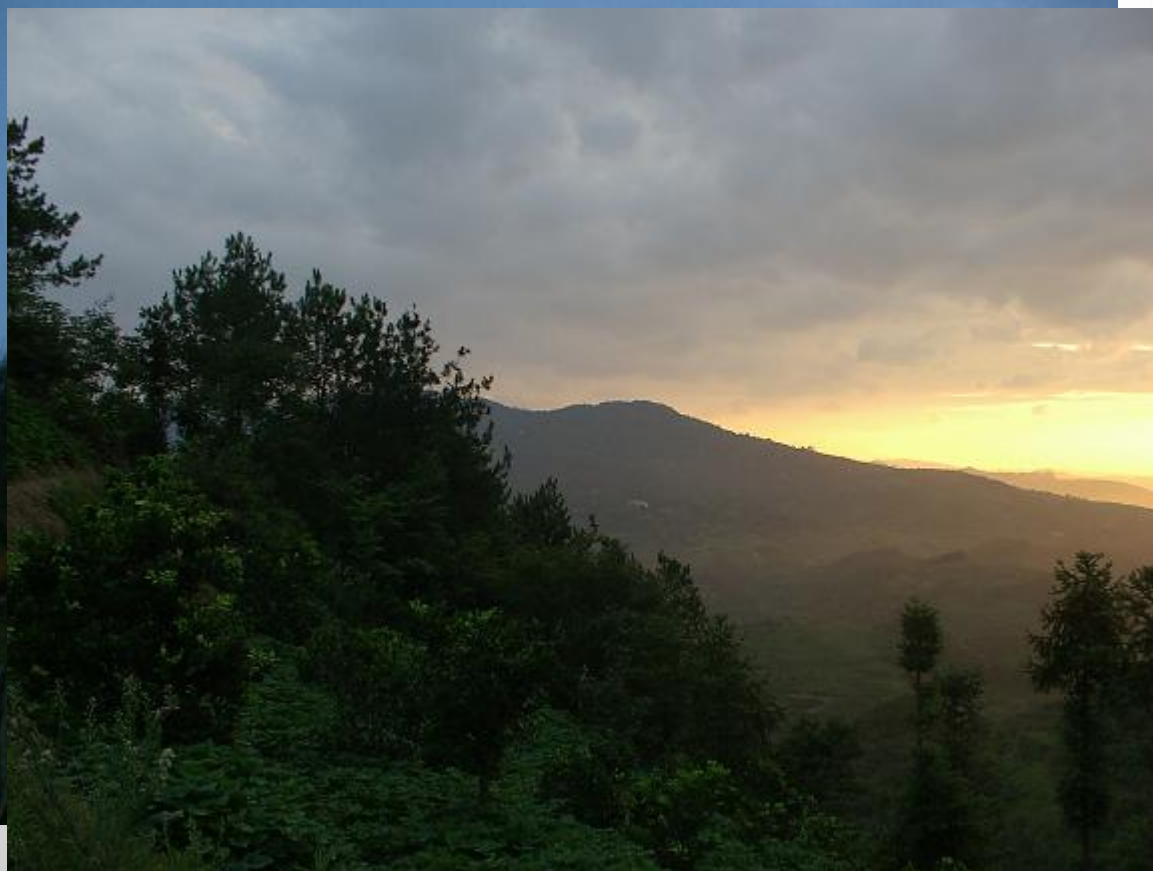




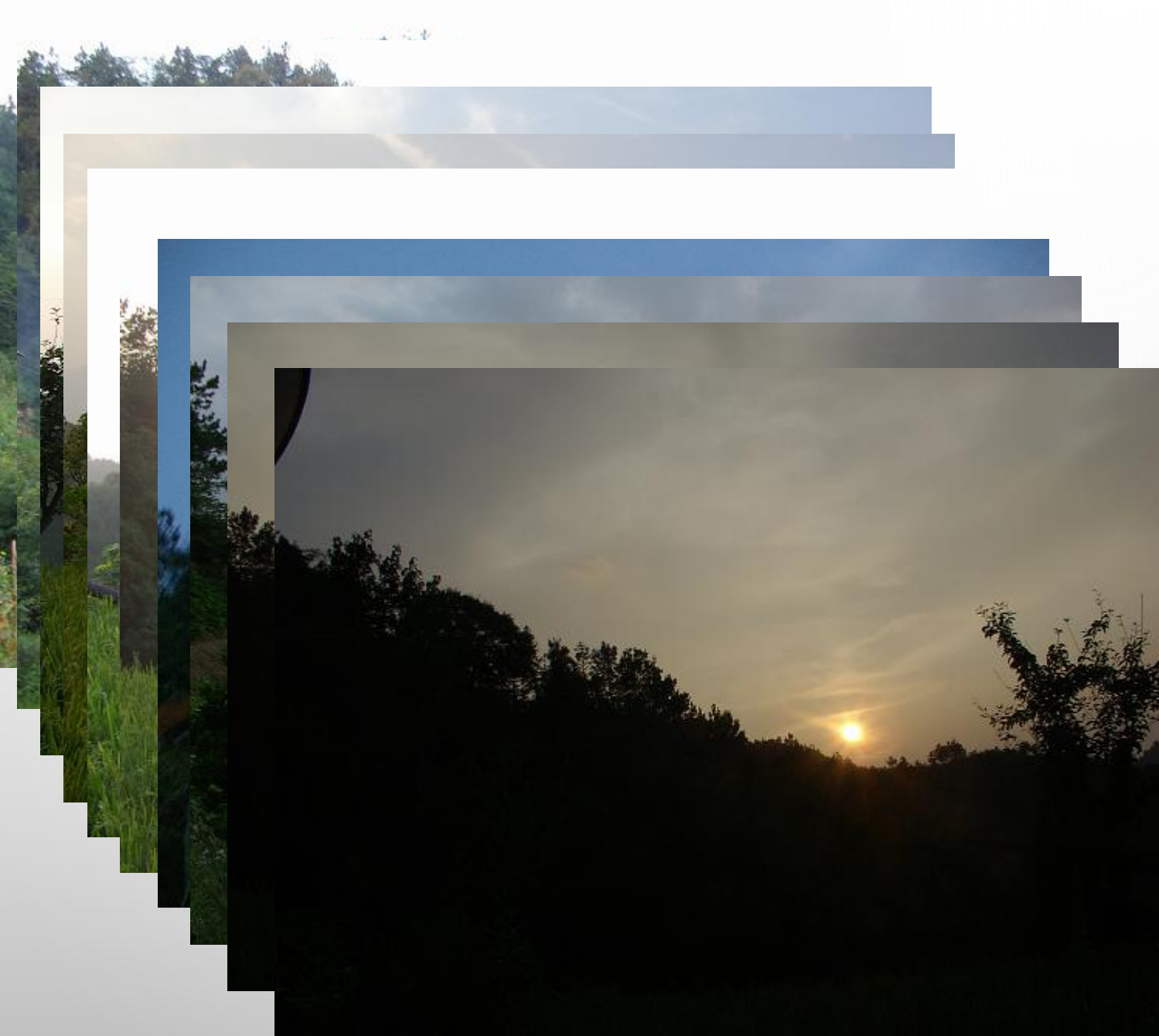


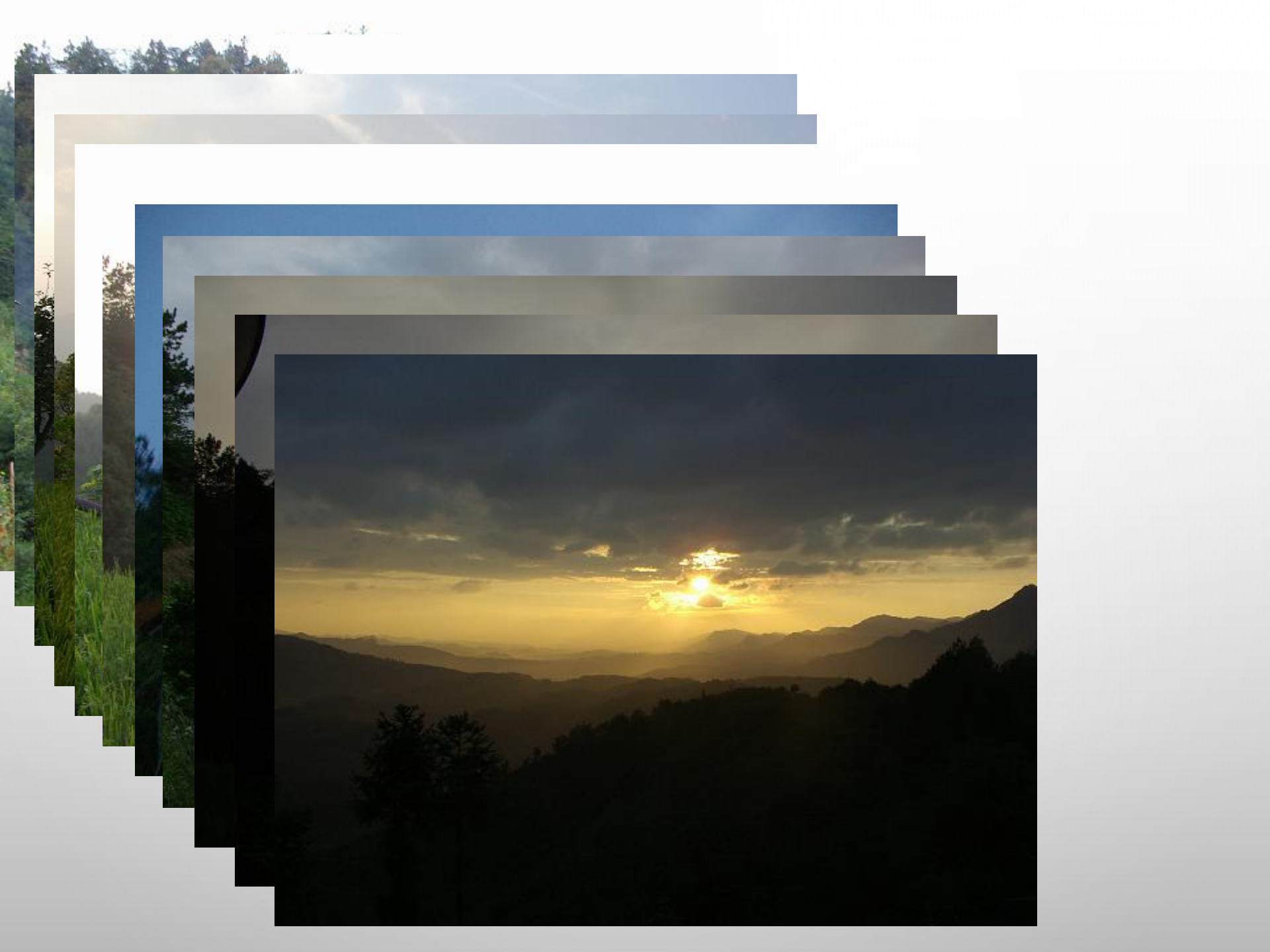


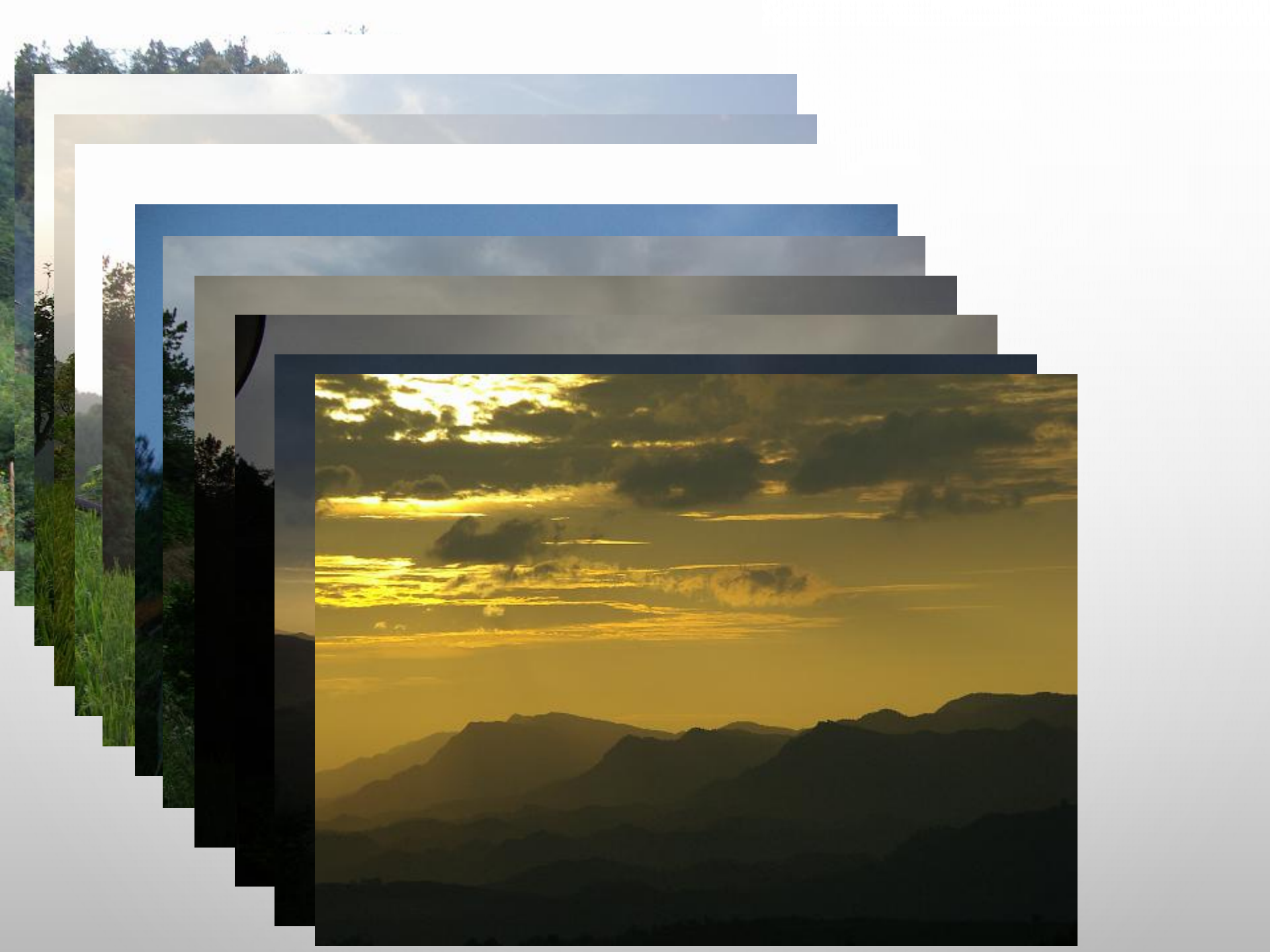
















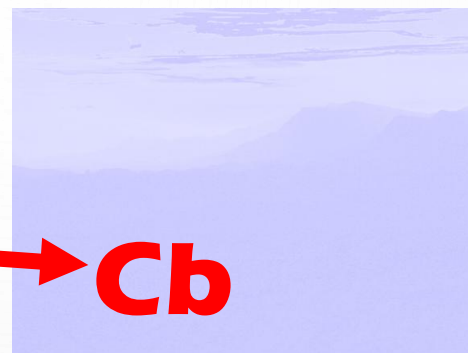








RGB



Cb



Y



Cr

4:4:4

4:2:2

4:2:0

4:1:1

RGB

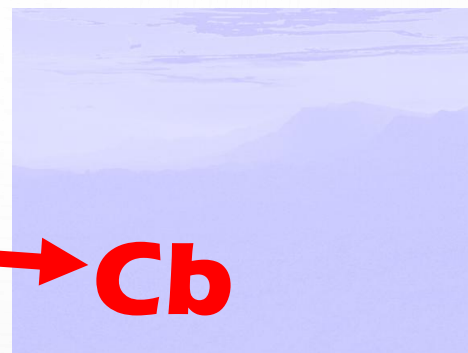
Cb

Y

Cr



RGB



Cb



Y



Cr

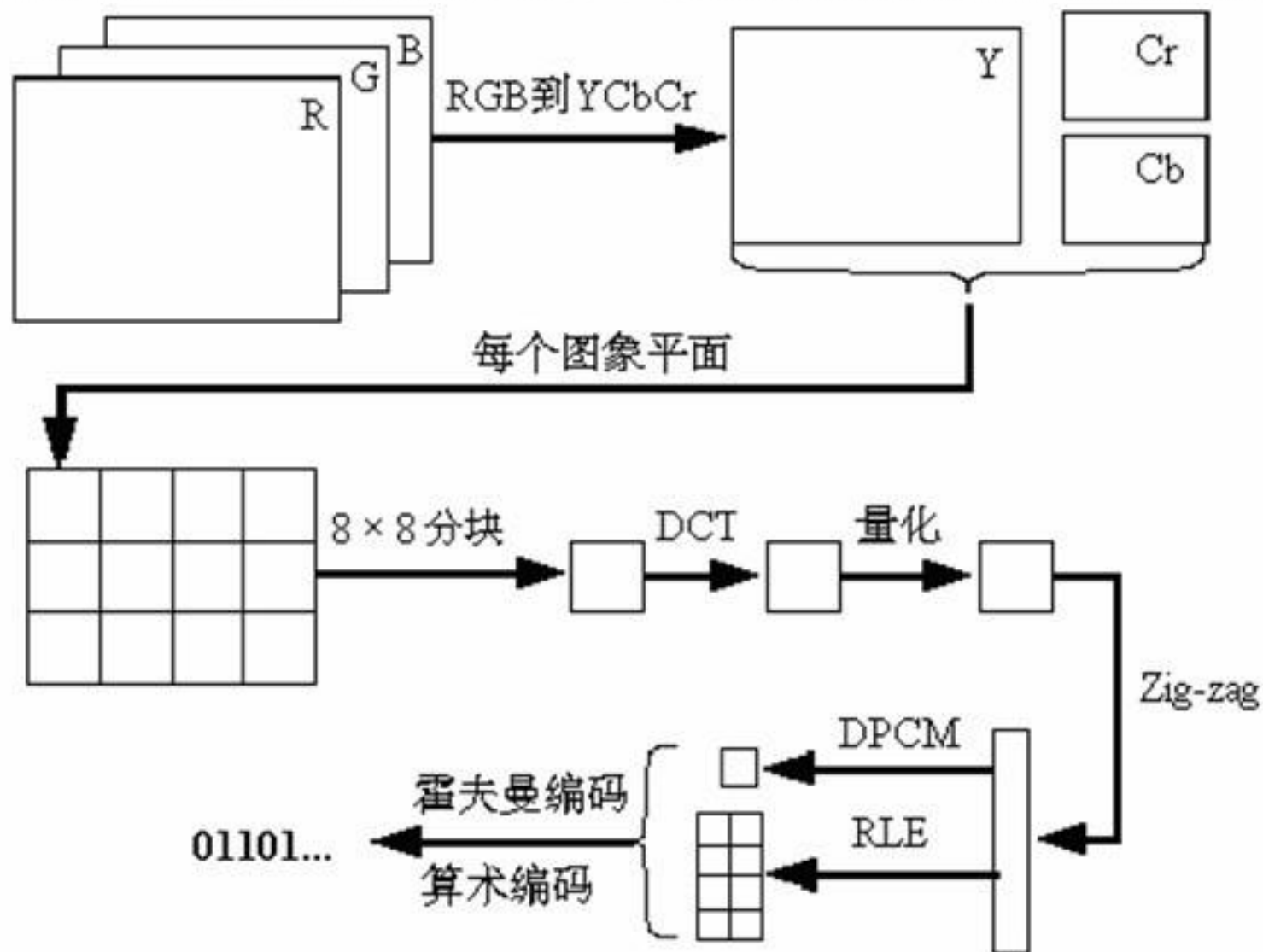
4:4:4

4:2:2

4:2:0

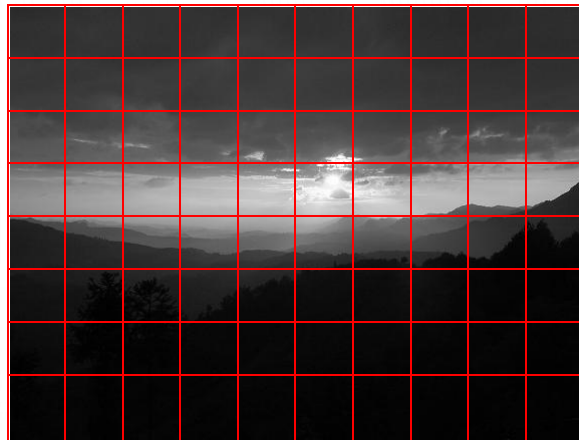
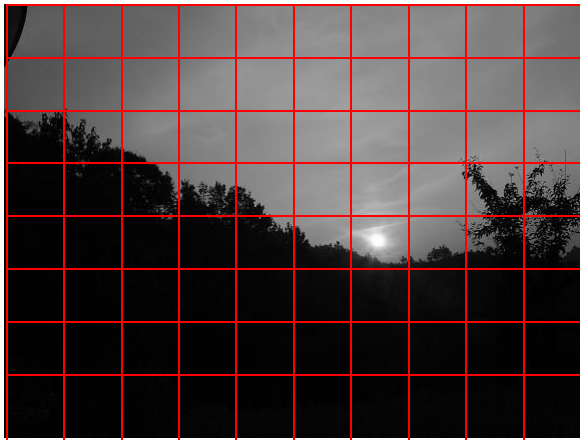
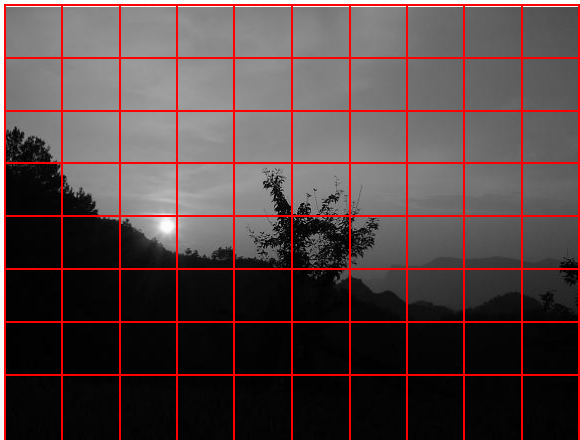
4:1:1

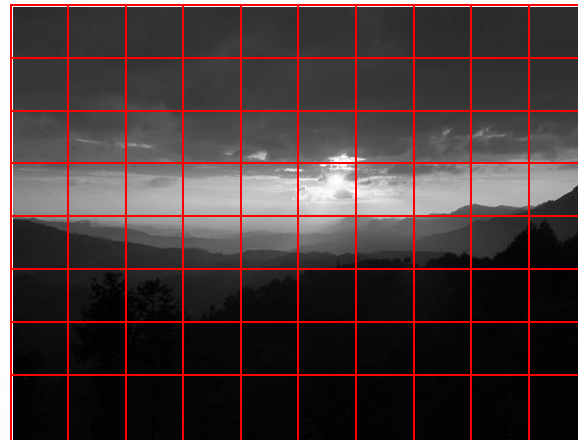
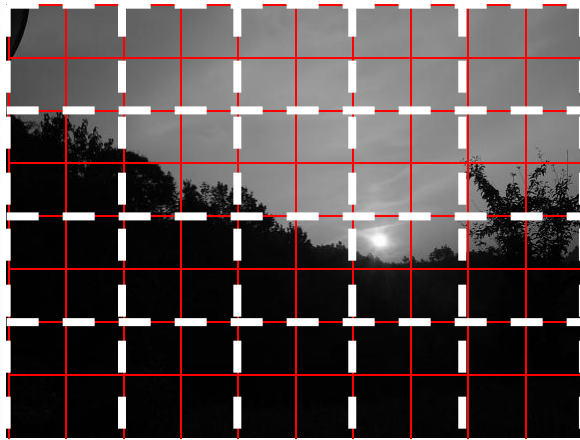
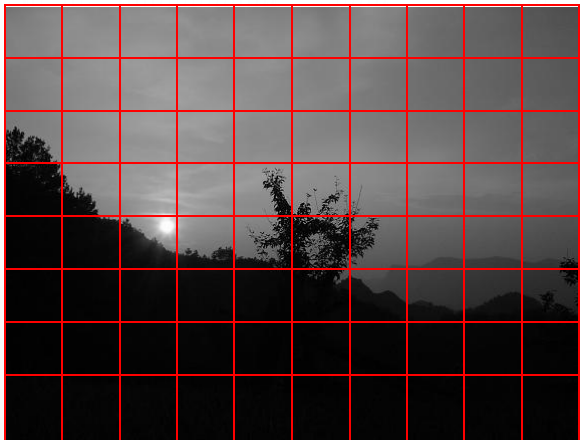
- 分块
- 零偏
- DCT
- 量化
- Z排序
- RLE/差分
- 熵编码

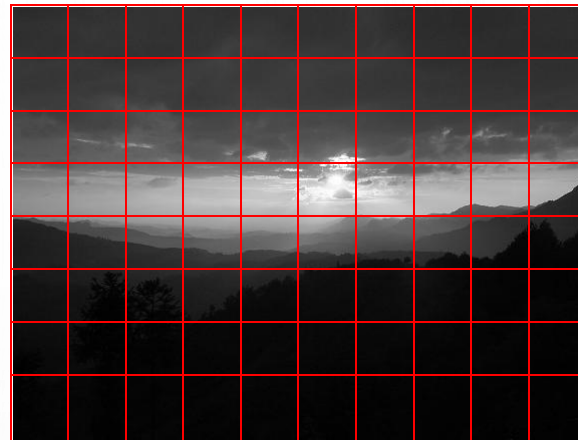
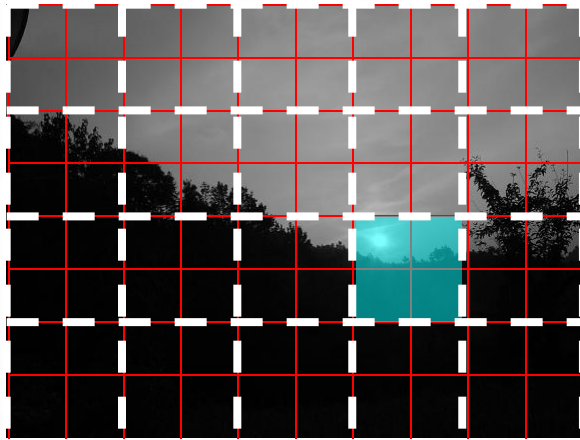
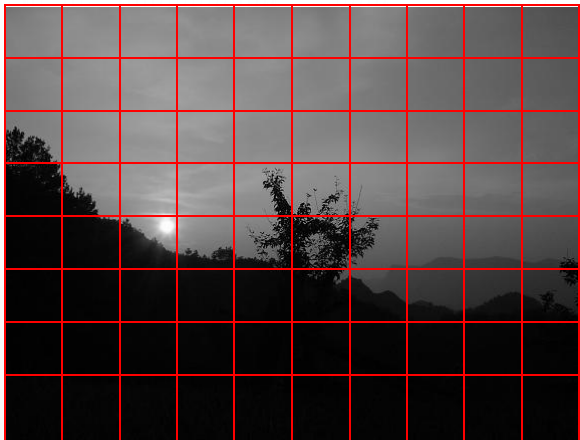


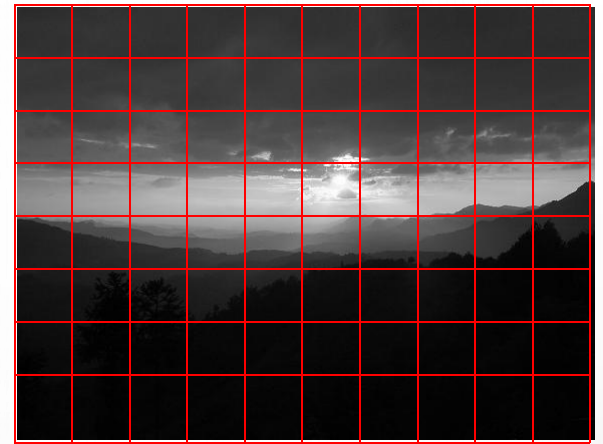
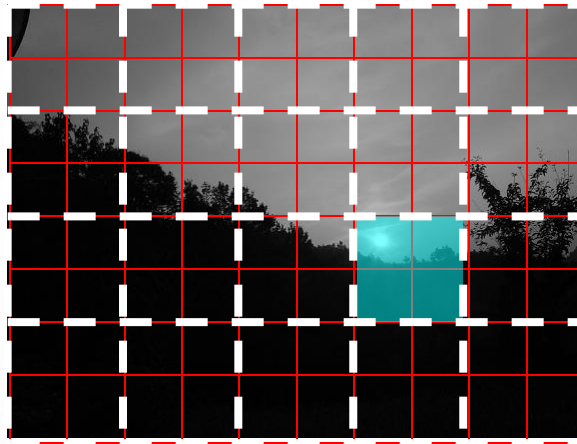
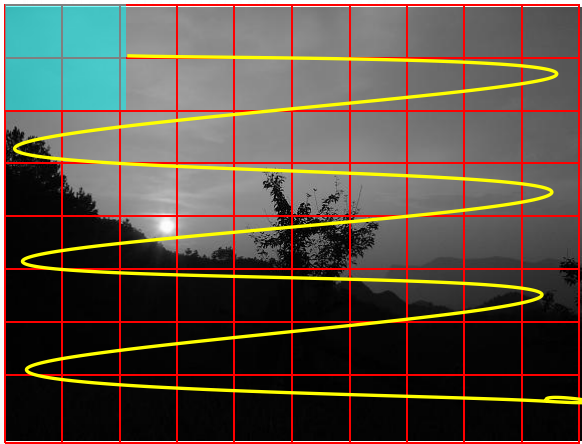
帧内图像 I 的压缩编码算法框图

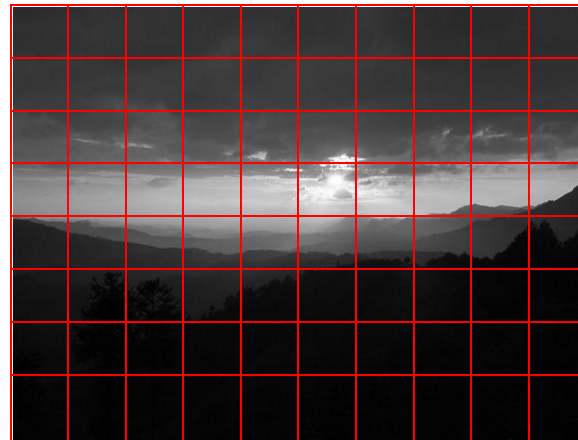
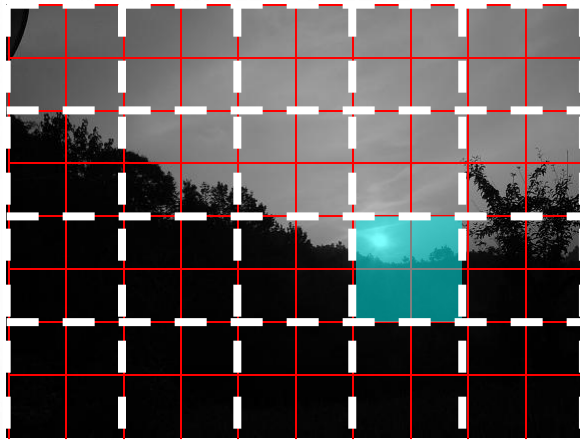
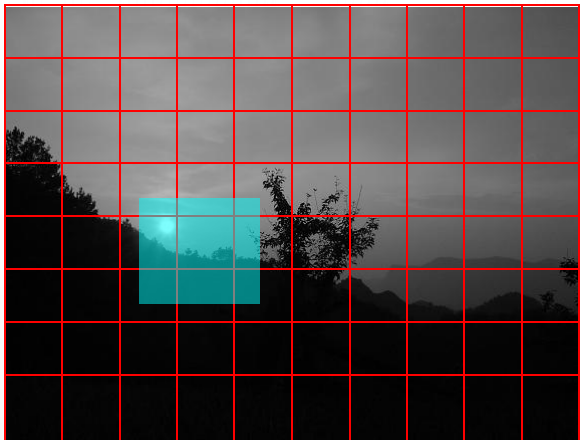


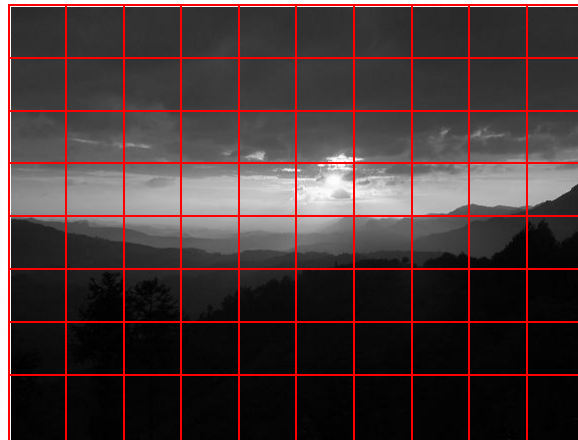
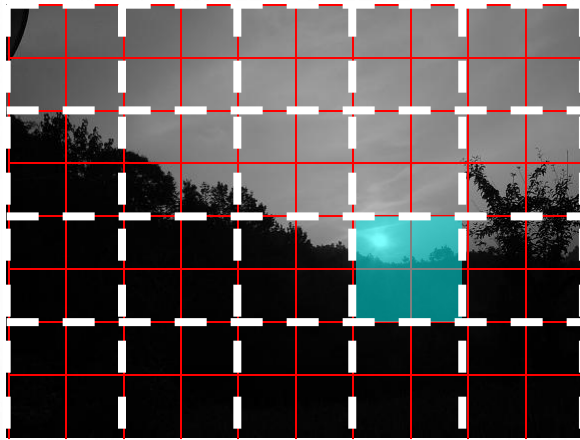
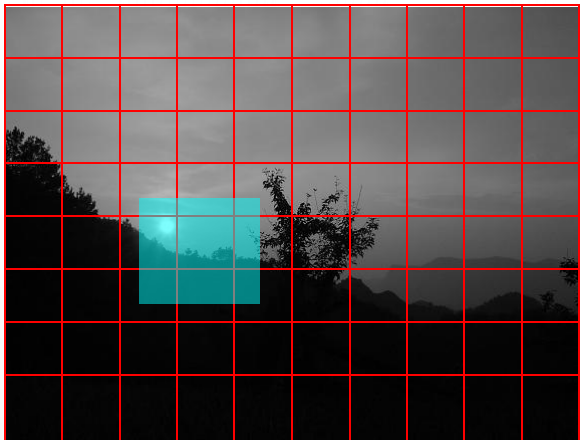






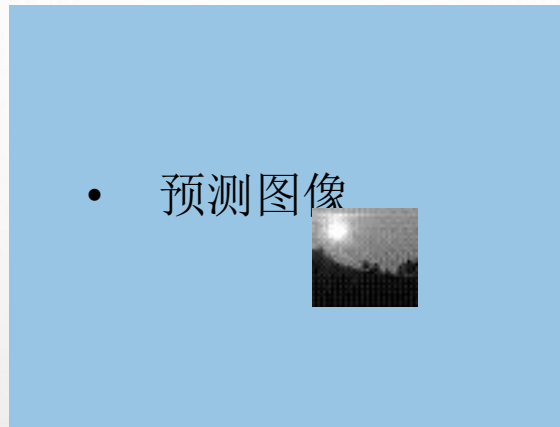
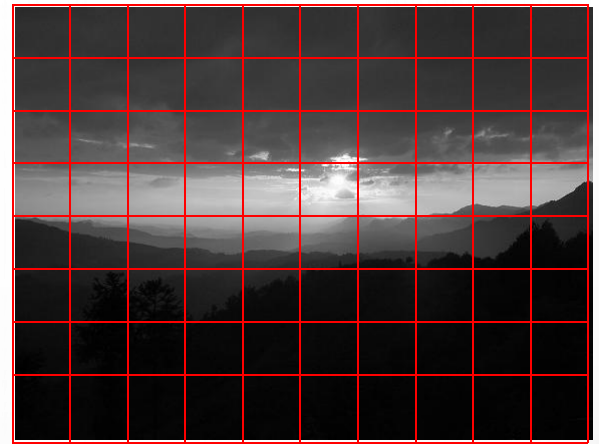
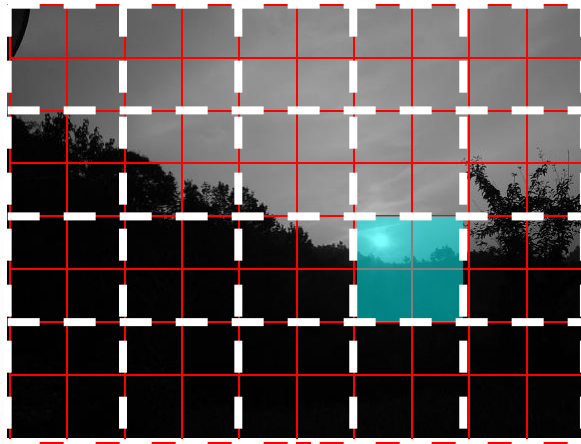
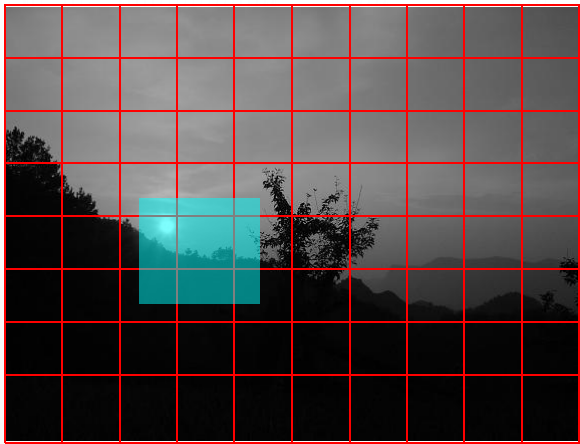




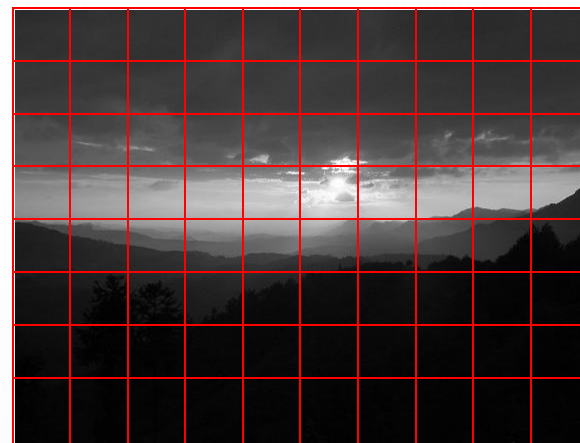
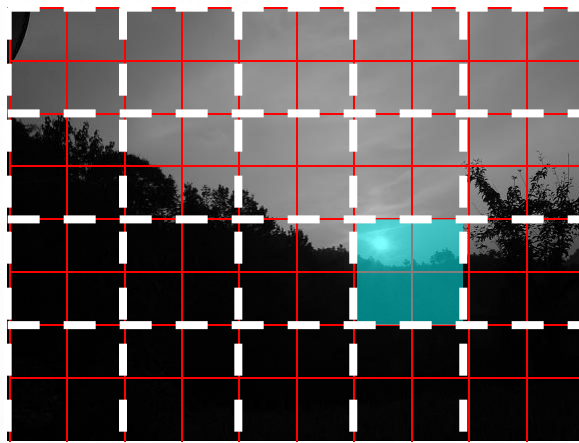
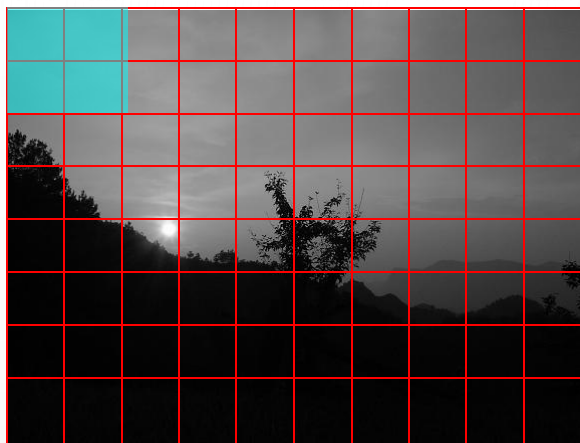


- 预测图像

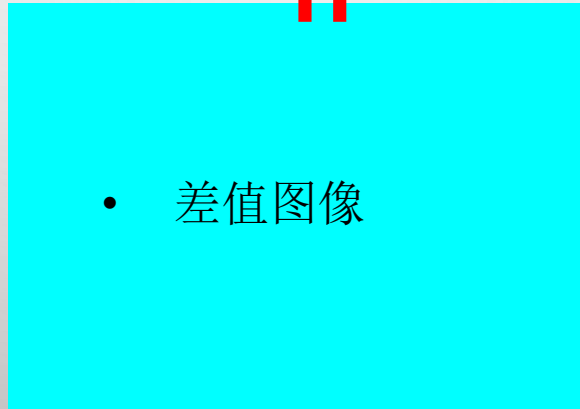
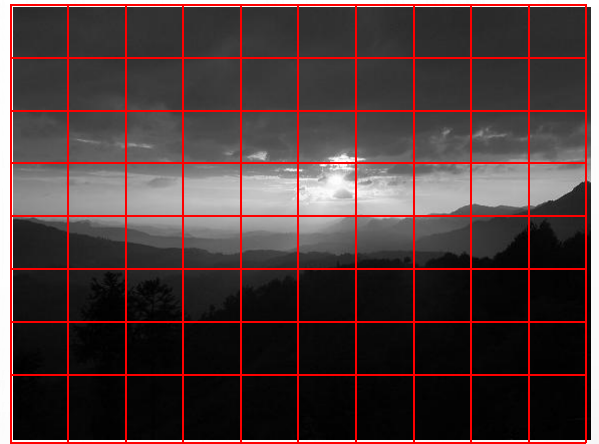
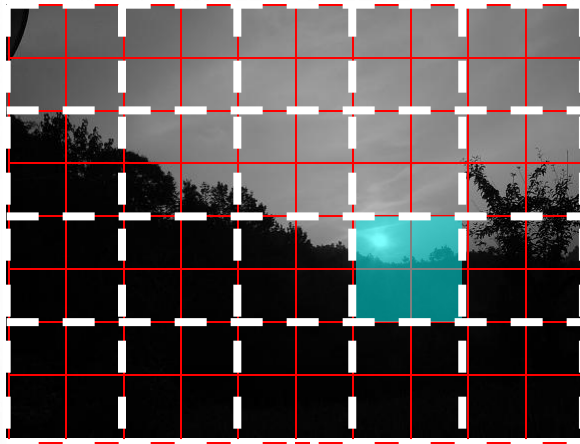
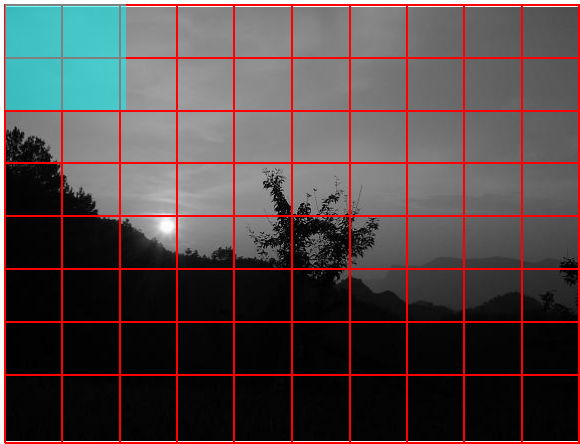




• 运动矢量(dx,dy)

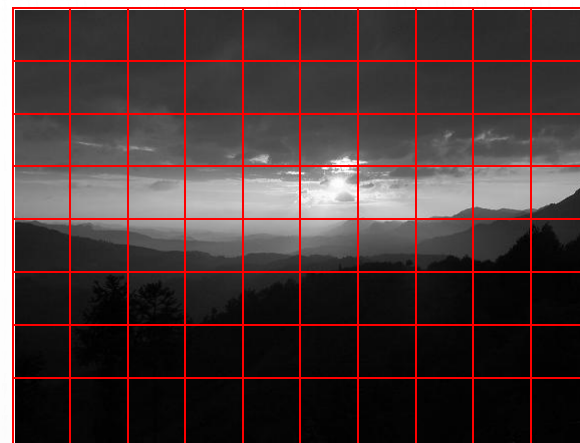
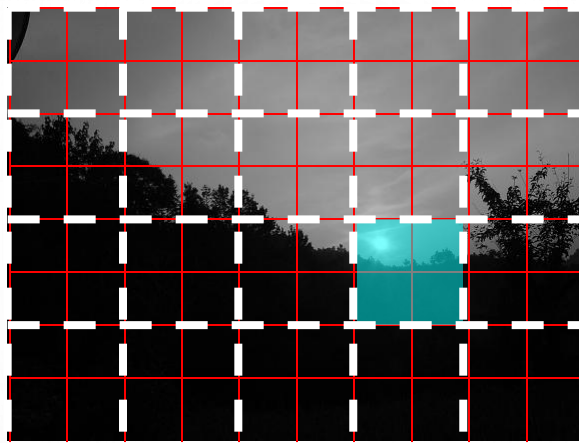
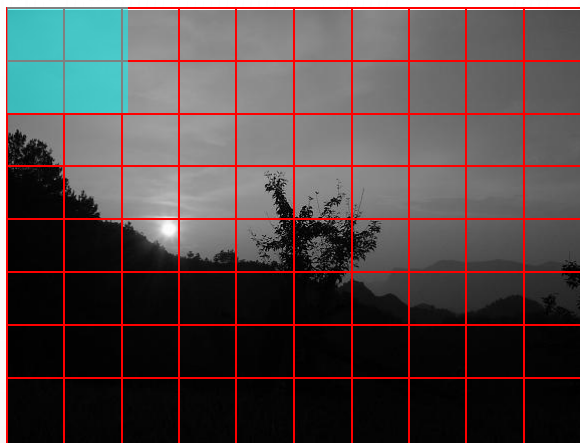


- 运动矢量(dx,dy)

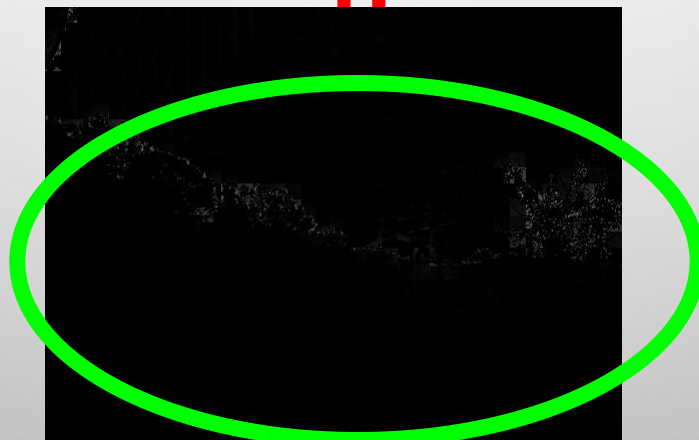
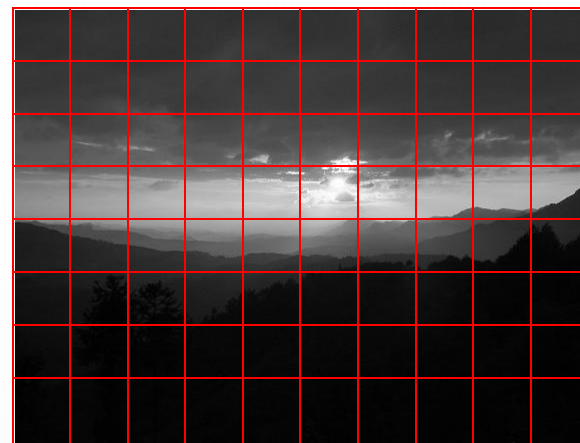
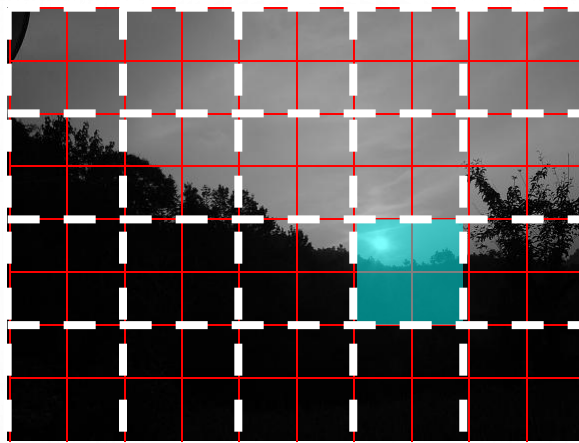
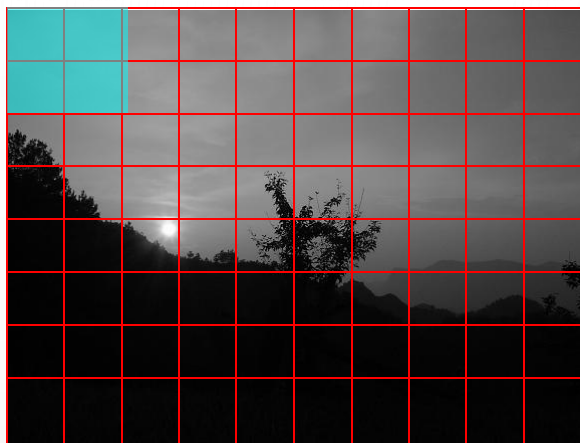


• 运动矢量(dx,dy)

• 差值图像



• 运动矢量(dx,dy)



- 运动矢量(dx,dy)

基本技术

- **DCT**

- 正交变换
- 准最佳变换
- 能量集中
- 快速算法(8*8、4*4等)

- **量化技术**

- 标量量化

- **游程长编码**

- 有效组织**AC**系数

- **差分编码**

- 有效组织**DC**系数

- **熵编码**

- 基于比特的编码

- **运动估计与补偿**

- 向前预测
- 双向预测

- **运动矢量**

- 预测编码

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• DCT

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- 准最佳变换
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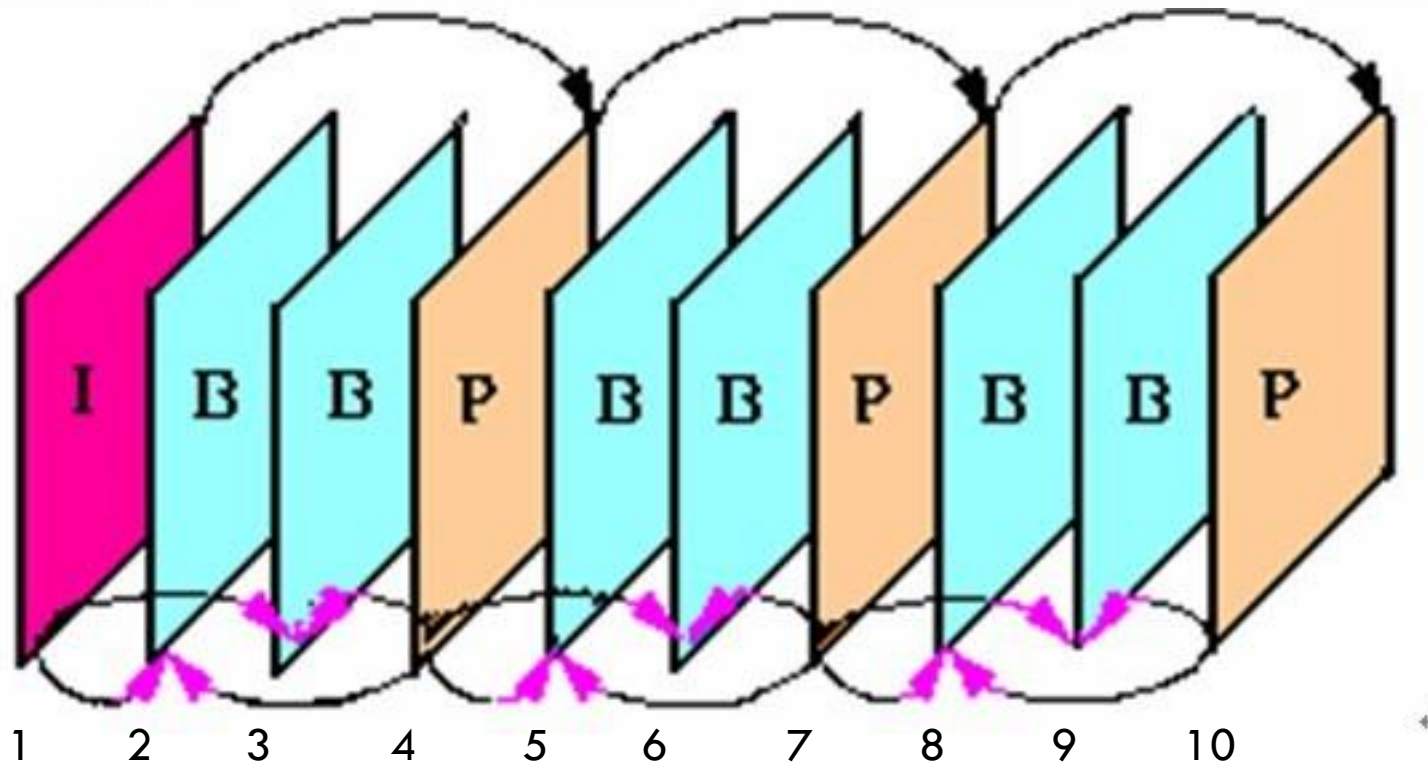
• 运动矢量

- 预测编码

帧间编码

- 帧内编码 I

- 帧间编码 P B



MPEG 定义的三种视频图像

1 4 2 3 7 5 6 10 8 9

分级编码

- 时间
- 空间
- **SNR**

误码

- 扩散与隐藏

