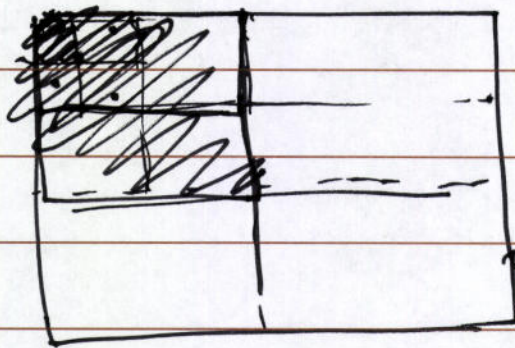


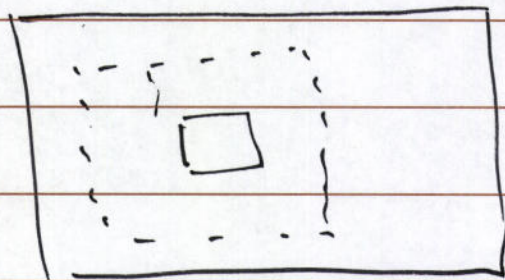
Assignment



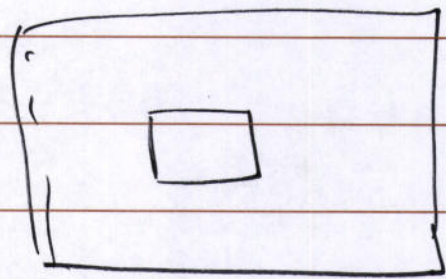
512
x 512

256 x 256

Video Compression

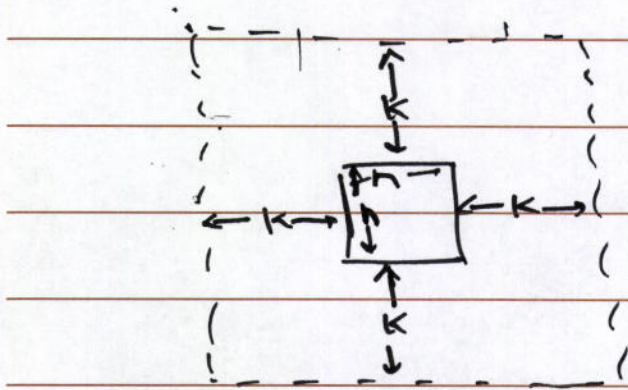


frame n

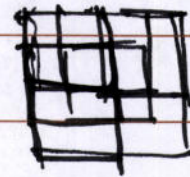


frame n+1

$n \times n$ macroblock $\rightarrow O(n^2)$



~~$$(2K+1)^2$$~~



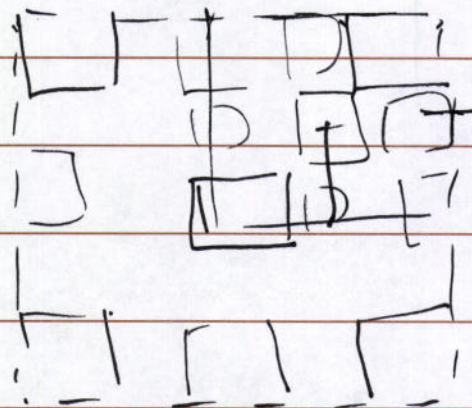
$$O(2K+1)^2$$

$$K \approx n$$

$$\text{one mv} \rightarrow O(n^2) \times O(n^4) \rightarrow O(n^6)$$

Full search OR Brute force search

Fast Motion Estimation

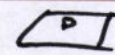


Hierarchical Motion Estimation

$K=4$



level 4

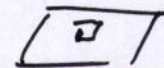


81

$K=8$

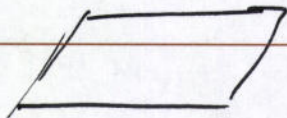


level 3

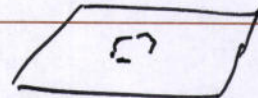


8

$K=16$

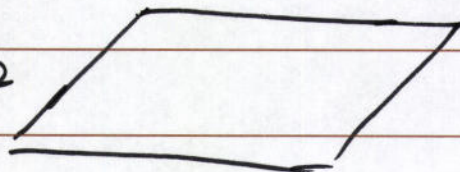


level 2

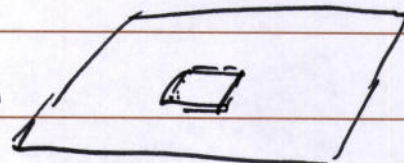


8

$K=32$



level 1



8

frame n

frame n+1

105

macroblock

16×16

$K=32$

Full search $\rightarrow 65^2 = 4225$

Audio compression

① Audio as a waveform

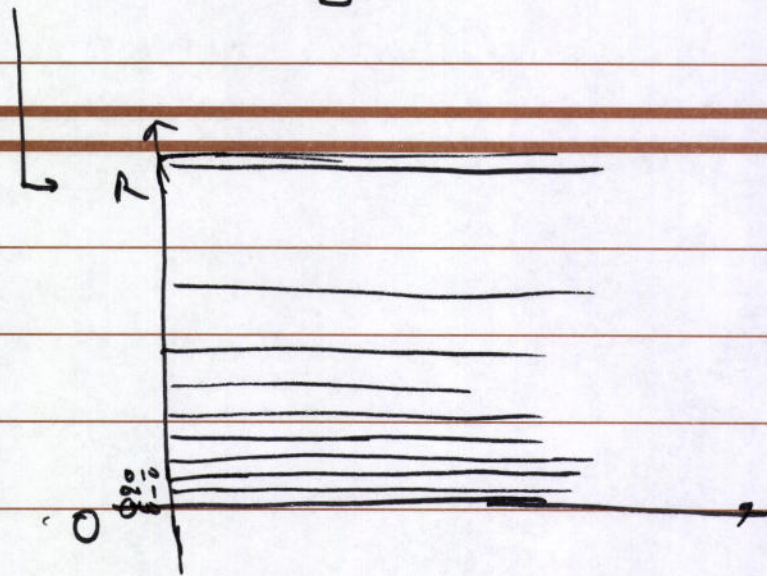
DPCM - find differences

encode differences with
less bits

Delta modulation

ADPCM

Companding



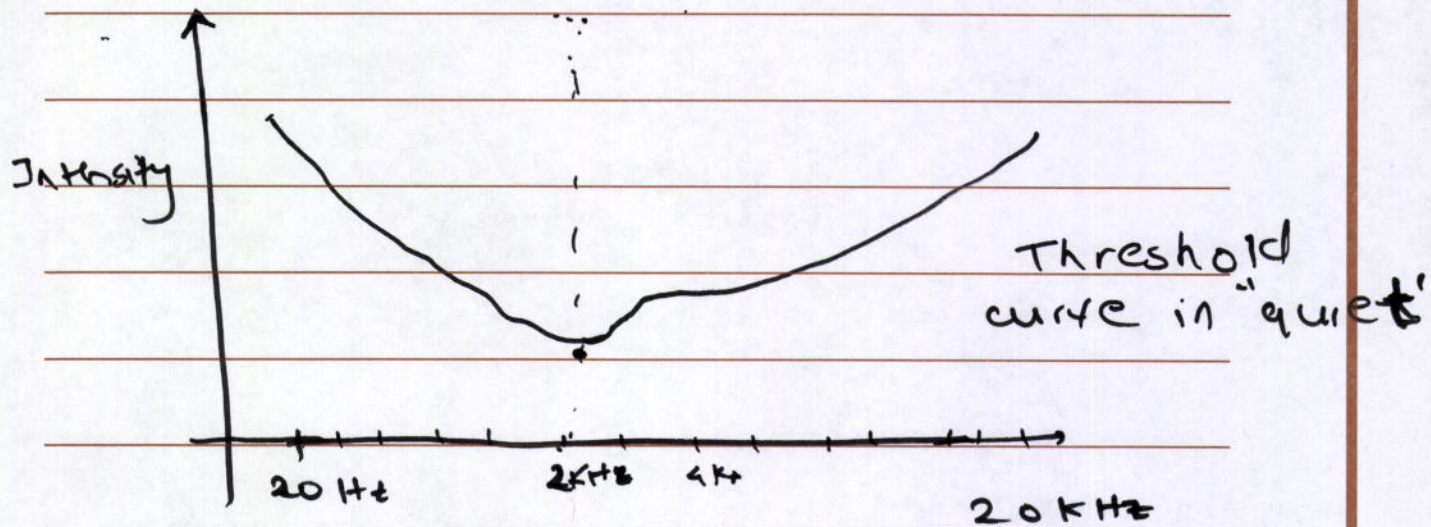
decible

$$10 \log \frac{I}{I_0}$$

A law μ law

Sound is "perceived"

→ Psychoacoustics



Masking

