Emerging Markets, Specialized Standards

Wenfei Jiang
Alibaba Cloud
Outline

• Next generation of video coding?
• Emerging markets and specific requirements
Next generation of video coding?
Bottleneck?

**PSNR vs Bitrate**
- x264_medium
- x265_medium
- JM
- HM

**SSIM vs Bitrate**
- x264_medium
- x265_medium
- JM
- HM
HEVC wins in the perceptual quality

**AVC:** PSNR = 30.47, SSIM = 0.8844

**HEVC:** PSNR = 30.47, SSIM = 0.9217
More reliable metric, more powerful codec

• Temporal consistency
• Noise suppression

• Structure preservation

PSNR=34.96, SSIM=0.94, Bitrate=12Mbps
PSNR=33.78, SSIM=0.95, Bitrate=3Mbps
Is there a universal metric?

- 4K & 60fps Movie
- Internet video
- Live Game streaming
- E-education
- Panorama
- Surveillance
- Mobile live streaming
- Video conference
Specialized metric, specialized codec

- Movie copy
  - Extremely high bitrate
  - Moderate framerate
  - Film grain

- Game streaming
  - moderate bitrate
  - preferably higher framerate
  - smooth
Emerging markets and specific requirements
Booming markets in China
Emerging Markets

4K & 60fps Movie
Internet video
Live Game streaming
E-education
Panorama
Surveillance
Mobile live streaming
Video conference
Specific requirements

- High resolution
- Low latency
- fast seek
- Immersive experience
- Interactivity
- Friendly to visual computing
- High framerate
- Moderate bandwidth
For video game

- High framerate
- High resolution
- Moderate bitrate
- Clear text
For internet VOD

• The resolution and framerate get higher and higher, the bitrate is expected to remain moderate.
• Can we control the bandwidth cost by just reducing the bitrate of streams?
For mobile live streaming

- Shaky
- Blur
- Power hungry for end-devices
- High bitrate (unworthy)
For panorama / VR content

- Artifact resistance
- Bitrate reduction
- Adaptive streaming
For screen content?

High compression
Low latency
Clear text

...
Alibaba Cloud: Apsara Video

VOD/Live
- Set up video service with zero-coding
- End-to-end video solution

Transcoding
- Elastic transcoding cluster
- Professional video encoder

Video Revive
- High resolution / framerate remake
- Quality improvement for damaged videos
Thanks!

为了无法计算的价值  |  阿里云