



Video quality measurement

Assessment and control of video quality is a major challenge facing new video distribution channels such as xDSL and mobile. BT has world-leading tools and expertise for video quality measurement, including in real-time.



Video quality is important. Service providers, network operators, equipment manufacturers and broadcasters need to ensure that the video products and services they offer meet minimum quality requirements. And the quality requirements are those of the customer – the individual subscriber or business client. In the end, video quality is what the user experiences: a human judgement. If the quality is too poor, customers complain, change provider or leave the service altogether.

Measurement of video quality is becoming more and more important: this is because video is being carried over lower bandwidths (DSL or mobile) where, even with latest generation coding (e.g. H.264 and VC1), the bandwidth is scarcely sufficient. In addition, modern coding technologies need more control and monitoring to ensure optimum encoding.

Perceptual Testing

With these challenges, traditional measurements such as packet loss, jitter and PSNR are not sufficient. “Perceptual testing”, which is to say assessment of the quality as would be perceived by a human viewing the video is needed.

Our solutions

How can perceived video quality be measured? Two methods - subjective assessment and objective measurement - are suitable for evaluating perceived video quality, and BT has expertise in both of these. We have world-class subjective test facilities including soundproofed test cabinets together with broadcast standard video presentation and display equipment. BT has developed a full suite of objective video quality measurements tools and we are active in international standards bodies, including ITU-R WP6Q, ITU-T SG9 and the Video Quality Experts Group.

Subjective video quality assessment

Subjective tests are controlled experiments using human subjects to investigate the perceived quality of video material. Using internationally defined test procedures and environmental conditions, subjects are presented with a series of processed video sequences. These video sequences are evaluated using ITU standardised assessment methods. Statistical analyses are performed on the test data. Subjective tests enable informed decisions to be made regarding the performance characteristics of a video service, coding scheme or equipment.

Objective video quality measurement – ITU international standard

BT has developed a number of objective video quality measurement tools. Available as software programs, these tools provide accurate measurements of video quality across a spectrum of applications. Objective video quality measurement tools have been produced to perform both double-ended and single-ended analysis. The double-ended (also known as “full reference”) tool, has access to both the original video and its processed counterpart. BT’s double-ended tool is part of two international standards (ITU-T Recommendation J.144, ITU-R BT.1683).

BT has developed single-ended models that operate either purely on the decoded picture or using information extracted from the bit-stream. Single-ended models have access only to the processed video. The bit-stream model operates in real-time (or faster) and has been shown to be very accurate, on a par with double-ended methods. We have developed a quality assurance tool based on our bit-stream model.

BT’s perceptual quality tools deliver quality measurements that are representative of human quality judgements. Objective measurement tools are especially useful during the stages of test and development, planning of video services, and equipment testing. They can also be used for in-service monitoring of video quality.

Further information

Further information on our video coding and quality assessment technology is available from licensing@bt.com.

Innovative Research

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