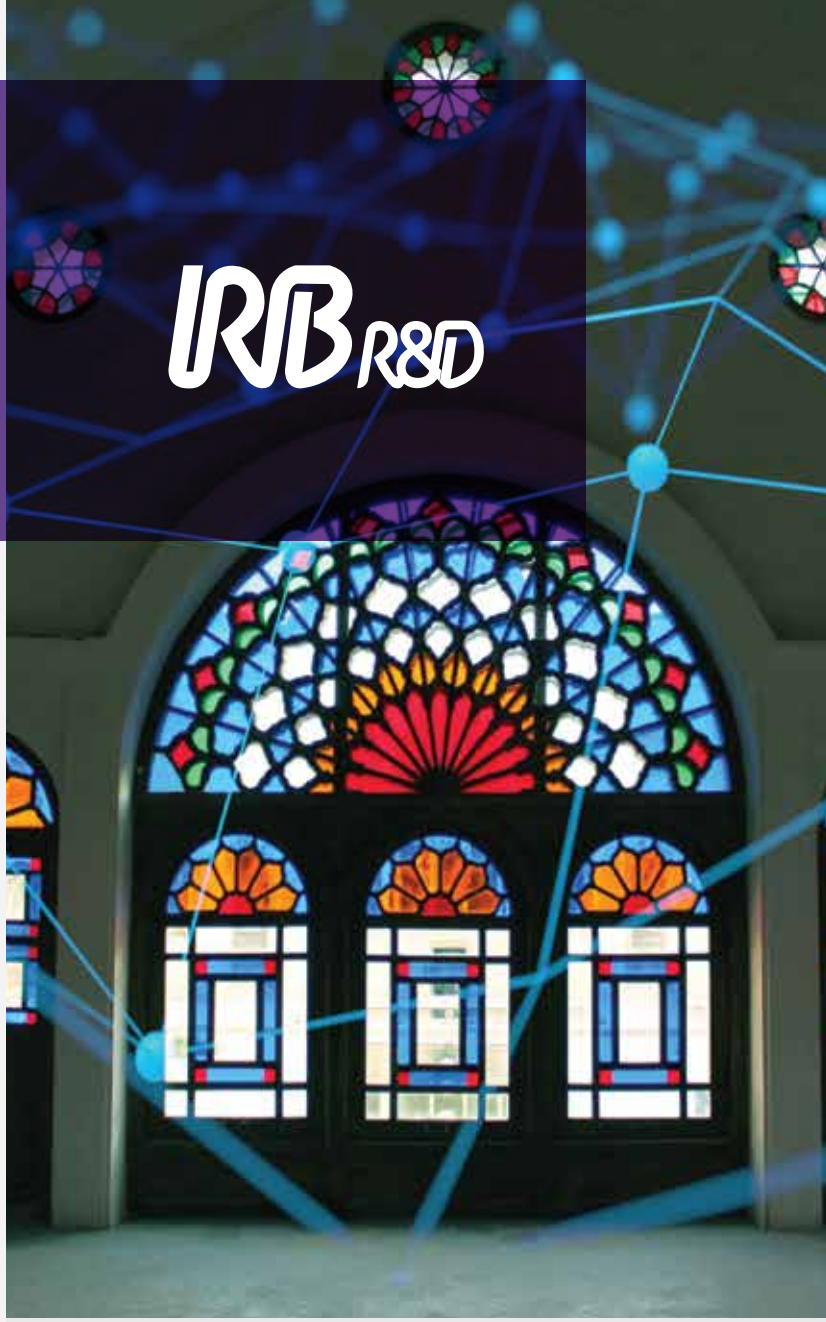
Video Quality Assessment



Video Quality Assessment (VQA)

The video quality depends on various features such as brightness, colorfulness, sharpness, noise level, etc. These features provide a quality measure; however, the perception of quality by human observers coincides with none of them. Indeed, the human perception of quality is a highly nonlinear and rather unknown function of all those features. For instance, there is no consensus whether sharpness outweighs colorfulness in determining a quality score. Besides, estimating the perceivable quality of a video data is an important issue for content providers at various stages of production to transmission. IRIB R&D is proud to announce a solution based on artificial intelligence which estimates the average perceived quality score of any video data which high precision. The method is trained on a large dataset of video files with various quality levels each accompanied with opinion scores of many human observers.

Applications

- Monitoring of broadcast chain
- Quality assessment for content providers
- Video ranking for search engines
- Sorting of similar contents for video on demand (VoD) services

Objective quality metrics

In addition to estimating the perceived mean opinion score (MOS), our solution measures a long list of conventional and tailored objective quality metrics to provide a comprehensive tool for video quality assessment. The list includes:

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Video Features

- MOS
- Brightness
- Chroma
- Contrast
- Colorfulness
- Chroma imbalance
- Loss of Chroma
- Color gamut
- Photosensitive epilepsy risk
- Saturated red transition epilepsy risk
- Blockiness
- Frame luminance
- Frame freezing
- Scene change
- Letter boxing
- Pillar boxing
- Window boxing
- Black frame
- Frame drop
- Video information
- Blurriness
- Blooming
- Stripe noise
- Low luminance
- Noise estimation

Audio Features

- Audio clipping
- Mute detection
- Audio constant
- Noise detection
- Phase distortion
- Phase coherence
- Audio contrast
- THD+N
- Clicks and pops
- Loudness Momentary
- Loudness Short Term
- Loudness Integrated
- Loudness LRU
- Loudness true peak level
- Loudness Mismatch
- SINAD
- S/N SNR

Advantages

- Comprehensive list of quality features for audio and video
- Several operating modes:
  - Offline mode for visualised quality details of a video file
  - Real-time mode for instantaneous depiction of quality metrics of a stream
  - Archive mode for producing quality log reports of a set of video files
- Compatibility with most video codec formats
- Detailed reports
- Real-time alarms for critical features
- Adjustable and customizable warning thresholds
- Inclusion of various report formats: XML, JSON, CSV, PDF

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