

Video Quality Determination System And Method

Communications & Information

Computer/AI/Data Processing and Information Technology

Digital Broadcasting, Telecommunication and Optoelectronics

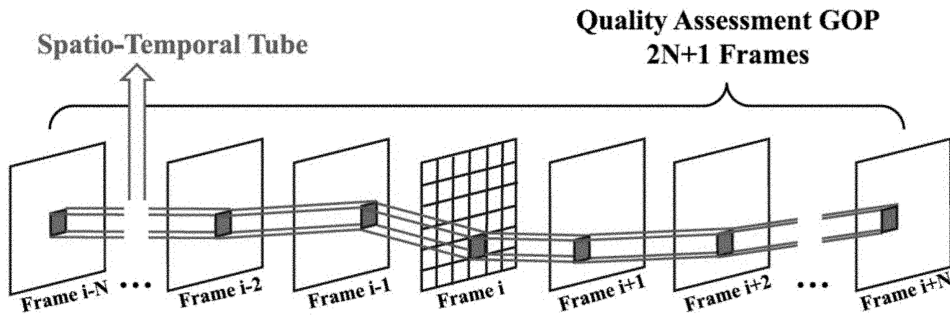


Figure 9

Opportunity

Three-Dimensional (3D) and virtual reality (VR) video are becoming increasingly popular because it can provide real depth perception, immersive vision, and novel visual enjoyment for multimedia applications, such as in omnidirectional videos, 3D Free-viewpoint Television, 3D Television broadcasting, immersive teleconference, 3DoF and 6DoF VR.

Objective virtual viewpoint image (VVI) quality metrics for quantifying and determining (e.g., predicting) the quality of these videos is highly desirable. This is because based on these metrics, visual processing techniques, e.g., such as image/video compression, digital watermarking, and image/video reconstruction in 3D video system can then be optimized accordingly to improve the quality of experience of 3D or VR systems.

Conventional 2D quality metrics, such as the well-known Mean Squared Error (MSE) or Peak Signal-to-Noise Ratio (PSNR), are relatively simple and are commonly used in measuring the quality of image and video applications. However, these metrics are based on pixel-wise difference between the distorted images and the source images, which could not properly reflect the real perceptual quality of visual signal (video). In addition, these metrics are not based on human perception of the visual signal (video).

Technology

The invention relates to a video quality determination method, and a related system implementing the method. A computer-implemented method and related system for determining a quality of a synthesized video file. The method includes processing a reference video file and a synthesized video file associated with the reference video file to compare the original video file

IP Status

Patent granted



Technology Readiness Level (TRL) ?

3

Inventor(s)

Prof. KWONG Tak Wu Sam

Dr. ZHANG Yun

Enquiry: kto@cityu.edu.hk

Develop
concept

Proof
Concept

Follow-on
IP

Build Value

and the synthesized video file. The method also includes determining an extent of flicker distortion of the synthesized video file based on the processing.

Advantages

- **Visuality:** it helps visualize the temporal features and can provide an explicit and intuitional cues
- **Capability:** the temporal layer picture, a surface formed by space lines varying with time, can be used to present the long-term temporal features of the video
- **Simplicity:** it avoids employing motion estimation method to match the patch between $t-i$ -th frame and t -th frame to capture the motion features.

Applications

- Three-dimensional TV and Free-view point TV
- Six-degree of freedom (6DoF) omnidirectional (360 degree) videos

