

Storyboard

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Introduction

No-reference perceptual image quality needs to address the effects of image capture and rendering in consumer devices

The Video Quality Experts Group (VQEG) provides an open forum where video quality experts meet to advance the field of video quality assessment. In the early years of VQEG, the group focused on video quality, addressing issues related to video compression and

transmission over lossy networks. However, with the latest advances in digital cameras and multimedia devices, and their widespread use to capture photos and videos, visual quality has opened another level of investigation. In particular, image quality of photos captured by such devices is not so much impacted by compression and transmission errors but by capture and rendering. With the current state of multimedia devices, visual quality has expanded to include aspects such as aesthetic quality. Two photos without any visible compression degradation can still be perceived as exhibiting very different image quality due to the possible artifacts introduced by the capture and due to different post-processing algorithms. In this scenario, the notion of reference image has no real meaning anymore. What makes an image more appealing than another one? For a given content, what process is required to enhance the perception of the quality? To answer these questions, no-reference quality assessment methods are required. However, so far, most of the research work on objective no-reference perceptual image quality has been focused on the impact of image compression and transmission. Likewise, subjective assessment methods

consider either the notion of image quality fidelity or that processing degrades the quality of the image. The existing methods cannot be used to quantify the impact of a processing applied to enhance the quality of an image or to assess aesthetic quality.

To address this gap, VQEG started a new workgroup and project called VIME (Video and Image Models for consumer content Evaluation) in mid-2014. VIME addresses the no-reference measurement of the quality of images (and videos in the future) captured by consumer cameras, such as DSLRS, compact cameras, mirrorless cameras, and camera-enabled devices, such as mobile phones and tablets. In this context, both subjective and objective quality assessment methods are needed.

Issue Overview

This eLetter issue provides a collection of articles covering image datasets and scientific advances related to the work of VIME. Articles cover image datasets available for research, metrics and descriptors useful to characterize the quality of images.

[“The VIME Image Database”](#) by Dr. Quan Huynh-Thu of Canon Information Systems Research Australia (CiSRA) and Dr. Michele Saad of Intel provides an introduction and description of the free dataset of images being developed by the VQEG VIME project. This is an on-going effort and the article describes how anyone can easily contribute new images to the dataset.

[“Image Classifiers”](#) by Mikołaj Leszczuk, Remigiusz Baran, Michał Grega, Krzysztof Rusek, Piotr Guzik of AGH University describes several no-reference metrics developed or implemented by their research group.

[“VESA Advanced Display Stream Compression”](#) by James Goel of Qualcomm calls for proposals to support the work of VESA Advanced Display Stream Compression (Adv-DSC), which aims at developing algorithms for low-impairment compression of HDR and wide-color gamut images.

[“VIME and Subjective Image Quality Tests”](#) by Michele Saad and Philip Corriveau of Intel presents the Consumer Content Resolution and Image Quality (CCRIQ) database.

[“Combining HSV Color and rootSIFT for Image Retrieval”](#) by Ahmad Alzu’bi, Abbas Amira, Naeem Ramzan, and Tareq Jaber of the University of West Scotland introduces an optimized image descriptor that combines color and local features for image retrieval.

[“Open Source No-Reference Toolset moving image quality forward in new ways!”](#) by Philip Corriveau of Intel offers an open source no-reference image tool set called VIQET (VQEG Image Quality Evaluation tool).