

Call for Papers
IEEE Journal of Selected Topics in Signal Processing
IEEE Signal Processing Society

Special Issue on Visual Media Quality Assessment

With the increasing demand for digital image and video technologies in applications as broad as entertainment and communications, security, monitoring, and medical imaging, there is a growing need for the automatic assessment of the quality of visual media. Many factors can affect and impair the quality of visual media including compression, transmission, protection, display, printing, acquisition and reproduction systems. Automatic visual media quality assessment is crucial for monitoring and controlling the visual quality in existing and emerging multimedia systems, and has the potential to impact next-generation systems by providing objective metrics for use during the design and testing stages and by reducing the need for extensive evaluation with human subjects.

Visual media quality assessment aims at quantifying the quality of visual media, including still pictures, image sequences, 3D visual data, and 3D models, by means of quality metrics. These metrics vary with the considered applications, and range from metrics that measure specific visual impairments to those that assess the overall visual quality in the presence of various impairments. For applications and products that target human consumers, it is desirable to have metrics that will predict the perceived visual quality as measured with human subjects. Visual quality assessment metrics can be further divided into full-reference, reduced-reference, and no-reference quality metrics. Full-reference visual quality metrics compare the to-be-assessed visual media to a reference, which is typically the original visual data. In many applications where the original visual data is not available, reduced-reference and no-reference metrics are used. Reduced-reference metrics make use of a set of reference features or characteristics, which could have been extracted from the original visual data. No-reference quality metrics attempt to predict the visual quality without any reference, which is very useful in practice but very challenging.

A great deal of interest and research have been devoted to the design and development of visual quality metrics, particularly full-reference and reduced-reference metrics for image quality assessment. However, for many applications, reliable automatic visual quality assessment is lacking, particularly those requiring no-reference visual quality assessment. In addition, there is a need for methods that can reliably assess the visual quality of video and other 3D visual media. The motivation for this special issue is to highlight the importance, challenges, and applications of visual media quality assessment and its interdisciplinary nature which includes vision science, optics, color science, signal processing, psychology, and biology. Our goal is to feature recent advances in the area of automatic visual media quality assessment, including theoretical, experimental, and computational methods and results. We invite researchers to submit original papers describing new approaches in all areas related to automatic visual media quality assessment including, but not limited to, the following topics:

- Global and impairment-specific visual quality assessment metrics
- Full-reference, reduced-reference, and no-reference visual quality assessment of still-pictures and video.
- Visual quality assessment of 3D visual data and 3D models
- Visual quality assessment of High-Definition image and video content
- Statistical methods for automatic visual quality assessment
- Perceptually/Biologically-inspired automatic visual quality assessment
- Visual quality metrics for specific applications

Prospective authors can find submission information at <http://www.ece.byu.edu/jstsp>. Submitted manuscripts should not have been previously published nor be currently under consideration for publication elsewhere. Authors are advised to follow the Author's Guide for the formats of manuscripts submitted to the IEEE Transactions on Signal Processing as detailed at <http://ewh.ieee.org/soc/sps/tsp/>. The manuscript will undergo a standard peer review process.

Manuscript submissions due: **April 30, 2008**

First review completed: July 31, 2008

Revised manuscripts due: September 15, 2008

Second review completed: October 31, 2008

Final manuscript due: November 30, 2008

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