

Call for Papers
IEEE Signal Processing Society
IEEE Journal of Selected Topics in Signal Processing
Special Issue on Perception Inspired Video Processing

Video services are demanding a significant and rapidly increasing fraction of Internet traffic. The ability of traditional approaches to video processing to cope with this data glut are being stretched to the limit, hence new approaches to video processing are necessary to keep up with current and predicted exponential increases in the creation and consumption of video. Perceptual and cognitive factors affect what users experience when they watch video and an understanding of these factors and experiences offers opportunities to achieve the next big leap in video processing. In particular, the knowledge accrued by more than a century of largely unexplored findings from Vision Science research, along with recent breakthroughs in brain imaging, neural computational modeling, and models of users' Quality of Experience (QoE), provides verdant ground for developing efficient, perceptually optimized video processing paradigms.

We invite original and unpublished research contributions in the following areas:

Perceptual Video Coding: Conventional codecs are typically optimized to improve video signal reproduction at the receiver measured in PSNR rather than reproducing visual experience perceived by humans. We encourage papers on methods that exploit direct models of visual perception as well as cross-model interactions towards better tradeoff between bit rates and perceived video quality

Quality Evaluation and Enhancement of Processed Video: Traditional objective metrics for video quality may fail to deliver high performance when perceptual optimization is required for tasks such as video denoising, deinterlacing, interpolation, reconstruction, restoration, or video coding. Papers are encouraged that create or apply quality metrics and evaluation methods that take human viewers' quality of experience into consideration.

Perception-Driven Video Analysis: Humans process visual information efficiently by directing perceptual and cognitive resources to accomplish specific tasks. Conscious and sub-conscious processing aids in tasks such as saliency analysis, visual search, and recall. Papers are encouraged that exploit theories of visual perception, visual memory, and high-level visual processing to improve video search and analysis.

Perception-Oriented Video Content Creation: Models of human visual perception offer important tools and sound principles for improving the usability and quality of video processing tools used in such increasingly popular and important applications as video content creation, retargeting and summarization. Papers on perception-driven video content creation methods and systems are encouraged.

3D and Depth Augmented Video Perception and Processing: Given the development of new technologies for sensors and devices that can capture high-resolution 3D or depth-enhanced videos, new approaches considering principles of vision are called for in coding, processing and display. Papers that focus on novel formulations and applications, rather than straightforward extensions of conventional 2D techniques, are welcome.

Perceptual Models for Video Processing: We invite papers on new psychophysical techniques and studies, and computational models deriving from them that yield better understanding or modeling of important aspects of video perception, such as spatiotemporal masking, spatiotemporal summation, motion processing, color appearance models, and relationships between neural coding and the statistical properties of natural videos.

Prospective authors should visit <http://www.signalprocessingsociety.org/publications/periodicals/jstsp/> for information on paper submission. Manuscripts should be submitted at <http://mc.manuscriptcentral.com/jstsp-ieee>. Manuscripts will be peer reviewed according to the standard IEEE process.

Manuscript Submission	First Review Due	Revised Manuscript Due	Second Review	Final Manuscript
15 Sep 2013	15 Nov 2013	15 Jan 2014	1 March 2014	1 April 2014

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