Guest Editorial

This special issue of *ACM Transactions on Applied Perception* includes five papers that expand upon work presented at the *3rd Symposium on Applied Perception in Graphics and Visualization* (APGV), held in Boston in July 2006 and colocated with SIGGRAPH. From its beginnings, APGV has fostered interaction between computer graphics and vision science. That tradition is well displayed by this set of papers. More information on APGV can be found at `http://www.apgv.org`.

The issue starts with "Perceptual Rendering of Participating Media" by Sundstedt et al. The paper describes a method for generating rendered images of environments in which dust, smoke, fog, and the like substantially affect appearance. Since a complete and accurate physical simulation of light transport involving such participating media is computationally intractable, the paper emphasizes approximations that are perceptually effective at much reduced cost.

In "The Evaluation of Real-World and Computer-Generated Stylized Facial Expressions," Wallraven et al. explore stylized renderings of faces, as might be used in applications such as animation. This is an example of what the computer graphics community refers to as nonphotorealistic rending (NPR). The particular contribution of this paper is to explore how different stylization techniques affect the perceptual impact and effectiveness of visualized faces.

"Perception-Based Contrast Enhancement of Images" by Majumder et al. also involves the generation of perceptually effective images. In this case, the problem involves enhancing the local contrast of images without introducing perceptually distracting artifacts and without requiring an explicit segmentation of the image. An optimization approach is described, which is applicable to both grayscale and color images.

Two sessions of APGV 2006 focused on virtual environments, including both virtual environment applications and the use of virtual environments as tools for conducting perceptual research. Seward et al.'s "Using Virtual Environments to Assess Time-to-Contact Judgments from Pedestrian Viewpoints" explored the effectiveness of desktop and visually immersive virtual environments in assessing time-to-contact (TTC) judgments involving simulated vehicular traffic. The paper extends a number of classic time-to-contact studies closer to real-world situations of pedestrians crossing a street while vehicles are approaching.

"Categorization of Natural Scenes: Local versus Global Information and the Role of Color" by Vogel et al. describes a set of behavioral experiments and comparison with computational models with the aim to evaluate the role of global and local information and color in natural scene categorization. This paper contributes to our understanding of how people categorize whole scenes, as opposed to how individual objects in a scene are categorized.

Finally, more than a word of thanks needs to go to the reviewers of these papers, who continued the TAP tradition of careful and technically sound evaluations. The special issue is better for their efforts.

WILLIAM B. THOMPSON
University of Utah