

# Exploring the Image Science Landscape

By Jaclyn Pytlarz

**T**he landscape of imaging is changing. With generative artificial intelligence and the expanse of social media-sharing platforms, the definition of what makes a professional content creator is widening. Many questions about content creation, privacy, and rights are wiping over the media and entertainment industry as we move toward a more decentralized ecosystem. Even within this rapidly changing space, core imaging science advancements continue.

In this issue of the *Motion Imaging Journal*, we will present state-of-the-art research in human perception, image processing, and color science. As the domain for media and entertainment begins to expand into new spaces such as augmented, mixed, and virtual reality and as new displays emerge such as light-field and micro-LED displays, imaging science needs to be both employed and adapted.

We begin with a paper exploring high-dynamic-range tone-mapping techniques. Specifically, we explore methods to produce high-quality roundtrip performances for dual-master workflows as might be employed in future broadcast productions. Media is being consumed on a wide variety of devices. So, we will expand from this single-display style master workflow to a paper that explores how novel cameras can enable us to use a single format to deliver experiences to TV, social media, and augmented reality—exploring the future of mastering content. With these mapping and image adjustment methods, maintaining consistent skin tones is vital. We share a novel color science research paper exploring skin tone perception under changes in color correction and editing. The paper presents the

results of a psychophysical experiment and guidance on skin tone reproduction.

Display evolution has come in waves—staying static for years and then making leaps in evolution. Calibration of these devices is vital for high-precision content creation. Traditional display measurements are done with single patches which on modern displays pose challenges when related to real-world imagery. We now explore how to characterize a display with complex imagery. A paper shows how using a high-resolution imaging device and per-pixel characterization of complex imagery gives a more accurate picture of luminance reproduction allowing for a wider variety of adaptive display techniques to improve image quality. What is the next leap in display technology? We explore a possible future with a paper about practical designs for light-field displays. This article explores shortcut techniques for designing light-field displays and how limitations in human perception can be utilized in the design of novel systems.

This journal issue provides a glimpse into the dynamic landscape of media and entertainment with a focus on imaging science, showcasing our exploration of emerging technologies such as virtual reality, light-field displays, and our grounding in basic vision and psychophysics. By addressing the industry's current needs, and predicting and preparing for future needs, we are paving the way for more efficient workflows and enhanced visual experiences.

## About the Author



**Jaclyn Pytlarz** is a senior staff researcher at Dolby Laboratories in Sunnyvale, CA, where she leads Dolby's Vision Science research organization. She also chairs the SMPTE Board of Editors.

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