



# Introduction to Adaptive Content and Personalization

BY JACLYN PYTLARZ

**E**ntering the age of artificial intelligence and machine learning, as we saw in the previous issue of this *SMPTE Motion Imaging Journal*, the opportunity for hyper-personalizing our media arises. Content adaptation and personalization are the focus of this issue. This issue includes scientific, technical papers that delve deep into a variety of personalization, from adapting content recommendations based on your behavior, to adapting them based on your environment.

“Ambient Light Compensation Through Adaptive Visual Modeling” by Jaclyn Pytlarz provides a unique look at display adaptation for ambient surround illumination. It shows how perceptual modeling using a visual contrast sensitivity model can be used to compensate for loss of detail when watching media in a brightly lit environment.

The paper “Hybrid Images for Personalized Media Streaming Optimization” by Kim et al. presents a method to characterize delivered video resolution perceptual quality. They estimate a viewer’s visible frequency range (which could vary based on viewing conditions, device characteristics, or individual visual acuity) and show convincing experimental results on how resolution correlates with visual sensitivity.

“NGA Live-Production Workflows: Personalized Audio Experience in Broadcasting” by Iwasaki et al. is an overview of Next-Generation Audio production, targeting multiple output formats. It describes a live production method for personalizing an audio profile to address various speaker configurations.

The paper “Enhancing Linear TV Channel Surfing: A Real-time Personalized Ranking and Recommendation System with Dual Dynamic Queues” by Xu et al. describes a novel approach to linear TV channel switching. They propose a real-time personalized ranking and recommendation system incorporating dual-dynamic queues and advanced deep-learning models.

“Immersive and Interactive AR Graphics and Environments for Broadcast Applications” by Mishra et al. presents a mixed reality solution for broadcast TV. It discusses the challenges of incorporating augmented reality images into a live broadcast and provides the results of a subjective user study that shows improved audience scene understanding.

“Daily Context-Adaptive Presentation Driven by Personal Data Store” by Hiromu Ogawa et al. details a system that enables a consumer to view conventionally broadcasted content across a variety of platforms and locations. It adapts content based on the user’s live situation using context recognition and a personal data store.

In addition to these novel papers involving personalization and con-

tent adaptation, we have two off-topic papers. Guede et al. give an overview of one of the latest MPEG standards in the paper “MPEG-I Standards for Volumetric Video and a Real-time Implementation.” It describes a platform that showcases the usage of MPEG volumetric video standards and details a test sequence to prove the usability of the current implementation.

“Enhancing Real-Time Streaming Reliability and Performance Optimization with DASH Content Steering” by Silhavy et al. gives in-depth information about the possibilities of steering a streaming session between different content delivery networks (CDNs) from both the streaming provider and the player perspective. Additionally, the paper demonstrates the implementation of content steer-

ing in a widely used open-source media player, dash.js.

Personalization in media and entertainment is reaching new bounds as our devices become more connected and sensor prevalence increases. This trend will likely explode with the breakout of recent large language models (LLMs). We hope you enjoy this issue and gain some insight along the way. Happy reading!

### About the Author



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