


The Cutting Edge: There is Always Something New Under the Sun

BY STEVEN BILOW



When the writer of the book of Ecclesiastes said that “*there is nothing new under the sun,*” he (or she) had clearly never considered the 21st-century media and entertainment industry. Of course, I say that in jest. But frivolity aside, there is most definitely something new every day under our SMPTE sun! It is for that reason that I am thrilled to present this issue on a theme we call “*The Cutting Edge.*”

Unlike recent specialized Motion Imaging Journal themes with focused topics like as machine learning, color science, streaming technology, audio, production, or workflow innovation, this issue focuses on leading advances across a range of disciplines. There were many more submissions than the page space allowed, and

some important works, such as MXL, Catena, IPMX, and cybersecurity, are not included here. Nonetheless, this indicates that the industry is changing fast enough that this will likely not be the last issue on the broad theme of far-reaching innovation.

There are many topics to cover in the future. But what we include herein is both broad and fascinating. It will come as no surprise to find AI. It is essential. But we have also selected papers on video generation, compressed 3D content, virtual production, facial recognition, and streaming stage events for virtual reality consumption. The papers originate from various sources, including NAB, IBC, and our own Media Technology Summit, and they represent diverse geographical regions. Here is what you will find:

Yuki Yasuda, Simon Clippingdale, Taro Miyazaki, Jun Goto, and Takahiro Mochizuki, and the NHK Foundation in Japan present “*Multi-Label Indexing Technology for News with AI-Based Text Processing.*” In this paper, they apply AI methods to tackle the high labor needs of manually labeling news stories for indexing and reuse. Their system automatically labels news articles while circumventing what they call ‘imbalanced learning.’ Using a unique loss function that involves weights and a label-smoothing technique, they can suppress imbalances and achieve more useful automatically generated labels. It is noteworthy that the authors devote time to describing the formal underpinnings of their algorithms. This offers us useful insights into how algorithms can be adapted rather than reused for a practical purpose.

We turn next to virtual reality with a paper entitled “*Advancements in Radiance Field Techniques for Volumetric Video Generation: A Technical Overview*” by Joshua Maraval, Nicolas

Ramin, and Lu Zhang. Here, the authors provide a detailed summary of innovative volumetric video methods for synthesizing novel views based on neural radiance fields. I was new to this field, and the title alone forced me into “learning mode.” I would suggest that a good discussion of unfamiliar technology should do exactly that. The paper covers the advantages and downsides of these Radiance Field techniques. In the author’s own words, they present “*a diverse multi-view video dataset of diverse real-world scenarios,*” and an “*objective evaluation of these methods for video volumetric content generation.*”

The next progression addresses 3D content creation in the paper “*MV-HEVC: How to Optimize Compression of Immersive 3D Content*” by Thomas Guionnet, Khaled Jerbi, Thomas Burnichon, and Mickaël Raullet from Ateme, and Scott Labrozzi and Yuanyi Xue from Disney. The paper discusses a specific application of the MV-HEVC standard in the context of the Apple Vision Pro. They describe the implementation of a professional encoder and explain the benefits of their specific application.

We head back to the world of physical reality as Alexandre Rouxel, Alberto Messina, Sébastien Ducret, and Pierre Fouché present “*A User-Centric Approach to Facial Recognition for TV Content.*” Here we learn about the European Broadcasting Union (EBU) benchmarks and AI models for facial recognition. The authors describe how to annotate a video dataset with user-centric metrics. Their Machine Learning model can identify the main personalities in a program and intentionally exclude subsidiary characters to improve the relevance and quality of metadata. I was especially encouraged by the focus on privacy ethics and adhering to GDPR.

Returning to the virtual world, “*Integration of Depth and Volumetric*

Capture Workflows for 2.5D Virtual Production” by Chris Nash, Nathan Butt, Andrea Loriedo, Robin Spooner, Taegyun Ha, Philip Coulam-Jones, James Bentley, and Aljosa Smolic takes the concept of “virtual” media in a different direction. The paper illustrates how to capture a volumetric representation of performers in a production environment and how that facilitates many unique workflows. They offer a way to derive 2.5D assets from a monocular video, so that digitized performers can be viewed from several angles while supporting visual depth perception.

Finally, “*Bringing Stage Events with Real Actors to Your Home in VR: A Low Complexity Solution for Immersive Media Streaming*” by Joachim Keinert, Tobias Jaschke, Hendrik Hawer, Andree Josef, Dr.-Ing. Frank Dittrich, and Siegfried Föbel presents a new way to integrate the stereo content of a live performance into a VR environment. The authors learned a variety of lessons, and a value of the paper is how effectively they share that knowledge.

In summary, after 40 years in this industry, it is tough for me to reckon with the fact that it continues to become more exciting and innovative each year. If anything, forward-motion continues to accelerate! The papers in this issue attest to that. With luck, they will encourage you to pursue your own ongoing innovation. As you will see, there is more “new under the sun” than ever!

About the Author



Steven Bilow is Sr. Product Manager for Orchestration and Software Infrastructure Platforms at Grass Valley. He has 40 years of experience in video, audio, and computer graphics.

DOI: 10.5594/JMI.2025/HWHE6737
Date of publication: 1 October 2025