The Rhythm of Streaming: Enhancing Streaming Auditory Experiences with Generative AI

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The prevalent use of social media has increased attention on the content created by content creators [1, 9, 15, 20, 25]. Previous academic research has investigated the factors that foster audience engagement with content creators, focusing on concepts like parasocial [6, 14, 22] and trans-parasocial interaction [13, 19]. Similarly, our research aligns with these findings, highlighting that reciprocal interaction plays a crucial role in bolstering audience engagement [7]. This dynamic is particularly evident in the context of live streaming, where streamers enhance engagement through direct interactions, such as real-time comments, collaboratively shaping the content and atmosphere [7, 10, 18].

However, research on the auditory experience within the context of live streaming is limited, despite its proven effectiveness in enhancing emotional engagement across various domains, such as gaming [2, 11]. Particularly, the potential of live streams' interactive nature to enrich the auditory experience of viewers remains underexplored. Existing studies on auditory experience have predominantly focused on background music and its static and non-interactive attributes [3, 17, 26], neglecting the interactive opportunities in live streaming. In recent times, the significance of background music in content creation has begun to attract academic interest [3, 5, 23, 26]. Background music is commonly used to complement visual content in non-streaming videos [16], and platforms like TikTok, Instagram, and YouTube have facilitated the integration of music into the content creation workflow, simplifying the process of adding background music while also enhancing user convenience. Exploring the use of auditory experiences to increase viewer engagement presents a compelling opportunity for research into how live streaming can adjust various musical elements to support different interaction contexts.

More importantly, the growing popularity of generative AI has broadened its application to create text-to-music content [8, 21]. Leveraging AI for music and audio generation offers an exciting opportunity to support streamers with background audio creation. Generative AI can analyze real-time feedback from viewers and the stream's content. Employing tools like sentiment analysis [12, 24] and other language processing technologies [4] enables the mood and atmosphere of the stream to be assessed. This information could then inform the automatic customization of background audio to align with the stream's current atmosphere and context, potentially boosting viewer engagement. Furthermore, utilizing generative AI in auditory experience creation allows streamers to focus more on content creation and presentation while maintaining a high level of interaction with viewers. Through this approach, we aim to harness computational methods to enhance the streaming experience for both viewers and streamers.

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