

Technology, Mediation, and Performance Ecologies in Indian Classical Music

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Abstract

The rapid integration of digital technologies has transformed the cultural and aesthetic landscape of Indian classical music, creating new forms of mediation between performers, audiences, and pedagogical traditions. This paper, titled *Technology, Mediation, and Performance Ecologies in Indian Classical Music*, examines how performance practices are being reshaped within digital ecologies that blur the boundaries of liveness, intimacy, and authenticity. The objective of the study is to analyse the impact of technological mediation on the aesthetics, dissemination, and reception of Indian classical music while exploring how musicians negotiate the balance between preserving tradition and adapting to emerging digital platforms and audience expectations. Methodologically, the research adopts a qualitative approach that combines ethnographic interviews with musicians, teachers, and connoisseurs, alongside content analysis of online concerts, digital pedagogy platforms, and AI-driven tools. Case studies of live-streamed performances, virtual festivals, and online teaching are used to understand how the dynamics of performance are shifting in the digital era. The findings indicate that technology has enabled greater accessibility and global circulation of Indian classical music, democratizing engagement across geographical boundaries. Yet, this digital turn has also reconfigured the experiential core of performance, as immediacy and embodied presence are mediated through screens and recording technologies. Performers increasingly adapt to algorithmic visibility, audience interaction in virtual spaces, and new aesthetics suited to online consumption, while questions of authenticity, continuity of guru–shishya pedagogy, and preservation of intangible heritage emerge with renewed urgency.

Keywords: Digital ecologies, Indian classical music performance practices, technological mediation

Introduction

Indian classical music, one of the oldest and most sophisticated musical traditions in the world, is deeply rooted in a rich confluence of philosophy, spirituality, and cultural continuity. Its origins trace back to the ancient Vedic period, where music was conceived not merely as an aesthetic pursuit but as a means of metaphysical realization. The *Sama Veda*, one of the four Vedas, contains hymns set to melodic patterns, marking the earliest codification of musical expression as a spiritual offering. At its core, Indian classical music upholds the belief that sound (*nada*) is the primordial vibration of the universe, a bridge between the physical and the transcendental. This metaphysical foundation has guided its pedagogy, performance, and aesthetics across centuries. The *guru–shishya parampara* (teacher-disciple lineage) embodies not just a mode of instruction but a transmission of values (Banerji, 2017), discipline, and spiritual insight, ensuring that knowledge flows through lived experience rather than written text. Thus, Indian classical music is not only an art form but a philosophical practice, an auditory reflection of India's civilizational ethos, where music becomes a path to self-realization (*sadhana*). Over centuries, this tradition evolved through rigorous systems of *raga* (melodic framework) and *tala* (rhythmic cycle), each embodying a distinct emotional, temporal, and cosmological significance (Clayton, 2017). The *raga* is not merely a scale but a living entity, a mode of expression capable of evoking specific *rasa* (aesthetic emotion) and states of consciousness (Pudaruth, 2016). Similarly, *tala*

represents cyclical time, reflecting the philosophical notion of eternal recurrence found in Indian cosmology.

The aesthetics of Indian classical music (ICM) rest upon an intricate interplay of philosophy, emotion, and disciplined creativity. Indian aesthetics perceives music as a pathway to transcendence, a vehicle for spiritual realization and emotional refinement (Thielemann, 2001). The experience of beauty in music is not confined to sensory pleasure; it is an act of contemplation, where sound (*nada*) becomes an expression of the divine order. At the heart of Indian aesthetic philosophy lies the concept of *rasa*, a term that signifies the distilled essence of emotion experienced by the listener. Originating from Bharata's *Natyashastra*, the *rasa* theory was later refined by Abhinavagupta, who emphasized the role of aesthetic detachment (*alaukika ananda*), a transcendental joy beyond ordinary emotional experience (Visuvalingam, 2006). In the musical context, *rasa* manifests through the performer's evocation of moods such as devotion (*bhakti*), love (*shringara*), valor (*veera*), or tranquility (*shanta*). A successful performance enables both musician and listener to transcend the personal and enter a shared realm of universal emotion. The *raga* serves as the fundamental aesthetic and structural unit of ICM. It is not merely a scale but a dynamic melodic entity, defined by its characteristic notes (*swaras*), phrases (*pakad*), and emotional tenor (*rasa-bhava*). Each *raga* carries an associated *rasa*, time of performance, and spiritual connotation. The musician's creativity lies in balancing adherence to the grammar of the *raga* with personal emotional expression, a harmony between discipline and improvisation.

Each performance is unique, shaped by the artist's intuition, mood, and interaction with the audience. This ephemeral creativity embodies the aesthetic principle of recreation rather than repetition. The aesthetic experience in ICM is co-created through empathetic resonance between performer and listener. The performer aims to generate *rasa*, but its realization depends on the audience's receptivity. This reciprocal relationship transforms performance into a dialogic act, a shared spiritual journey rather than an act of entertainment.

Over different periods of history, Indian classical music has continually evolved, adopting new forms and expressions while remaining grounded in its core philosophical principles. From its early origins in the Vedic chants, where sound (*nada*) was conceived as a sacred vibration connecting the human with the divine, music gradually developed into a highly structured and aesthetic system of *raga* and *tala*. During each historical phase, ancient, medieval, and modern, the music adapted to changing cultural, social, and political contexts without losing its spiritual essence. In the medieval period, the rise of devotional movements like *bhakti* and Sufism infused music with emotive depth and lyrical expression, giving birth to new styles. The Mughal era saw the synthesis of Persian and Indian elements, enriching melodic structures and performance aesthetics, while the later colonial and post-independence periods brought new platforms such as concert halls, radio, and recordings that transformed the way music was disseminated and experienced. Despite these changes in form, instrumentation, and performance context, Indian classical music has consistently adhered to its underlying philosophy of aesthetic emotion, discipline, and spiritual bliss. Each era's innovations are not a break from tradition but a renewal of it through adaptation. Today, in the digital age, this continuity persists through new media and global audiences, demonstrating the resilience of a tradition that has never been static but always dynamic, transforming its outer forms while preserving the inner spirit that defines its identity.

Theoretical Framework

The concept of mediation in performance studies fundamentally examines how technological and social processes influence the ways in which artistic experiences are produced, transmitted, and perceived. In the context of Indian classical music (ICM), mediation operates not merely as a channel through which sound travels, but as an active participant in shaping musical meaning and aesthetic experience. Philip Auslander's (1999) idea that the boundary between "live" and "mediated" performance is increasingly blurred becomes particularly relevant here. The digital age has created performance contexts where the presence of the artist and the engagement of the audience are simultaneously real and virtual, immediate and deferred. The performance, once defined by co-presence and acoustical resonance, is now reconfigured through cameras, microphones, and streaming interfaces that alter how liveness is perceived and experienced. In traditional concert settings, the live performance of Indian classical music was embedded in an atmosphere of shared temporality, the musician and audience participated together

in an unfolding journey of *raga*, where silence, improvisation, and collective emotional energy shaped the moment. With digital mediation, this temporality becomes asynchronous, performances can be recorded, paused, replayed, and circulated endlessly across digital platforms. This shift does not simply replicate live performance, it transforms its ontology, meaning the very nature of what it means to be "live." The intimacy that once arose from physical proximity in a *baithak* or concert hall is now mediated through the camera lens, which determines the viewer's gaze and redefines closeness as a visual rather than spatial experience.

Moreover, the digital medium introduces a new set of agents that influence the ecology of performance. The term performance ecology refers to the interconnected web of human and non-human participants that co-create the performance experience. In earlier contexts, this ecology was limited to the performer, accompanists, audience, instruments, and the physical space. Today, technological agents, such as microphones, streaming algorithms, audio interfaces, and digital platforms like YouTube or Instagram, play equally significant roles. These technologies not only mediate sound but also govern visibility, engagement, and reception through algorithmic mechanisms that decide what content is amplified and to whom it is shown. Drawing from Deleuze and Guattari's notion of assemblage, the performance ecology in the digital age is seen as fluid, adaptive, and relational, constantly reorganizing itself based on new technological and social interactions. The artist's creative agency now coexists with the technical logic of digital systems, musicians must consider lighting, framing, latency, and data compression as integral to performance design. Audiences, too, become dispersed and interactive participants, commenting in real time, sending emojis, or revisiting archived performances at their convenience.

Thus, the mediation of Indian classical music in the digital space represents not a dilution of authenticity but a recompositing of presence and participation. The performative act extends beyond the temporal boundaries of the stage and continues to live through data streams, digital archives, and algorithmic circulation (Nettle, 2015). In this expanded ecology, technology becomes both the stage and the co-performer, transforming the relationship between sound, space, and emotion, and redefining the aesthetic experience of Indian classical music in contemporary times.

Methodology

The study employs a qualitative interpretive research design, focusing on understanding how technological mediation reshapes the aesthetic and performative dimensions of Indian classical music. Data collection was carried out through multiple interrelated methods to ensure depth, contextual richness, and triangulation of findings. First, ethnographic interviews were conducted with twelve practitioners representing both the Hindustani and Carnatic traditions, including vocalists, instrumentalists, and music educators. The participants were selected through purposive sampling to capture a diverse range of experiences across different age groups, *gharanas*, and levels of digital engagement. Semi-structured interviews were held both in person and online, allowing musicians to reflect on their personal transitions from traditional performance spaces to digital platforms. The discussions explored themes such as changing notions of liveness, audience interaction, pedagogy, and authenticity in technologically mediated environments. Each interview lasted between 45 and 90 minutes and was audio-recorded with consent, later transcribed for thematic analysis.

Second, digital observation served as a key method for understanding the evolving ecology of online performance. The researcher conducted content analysis of live-streamed concerts on YouTube, Instagram, and Facebook Live, with particular attention to how artists framed performances visually and sonically in digital environments. Major online festivals and initiatives, such as *Baithak Online* and *Darbar Digital*, were closely examined to observe patterns in presentation, audience engagement, and technological adaptation. Finally, reflexive field notes were maintained throughout the study, drawing upon the researcher's own position as a trained musician and observer. These reflexive journals included detailed entries on audience responses, technological setups, rehearsal adjustments, and the sensory experience of both performing and viewing online concerts. The notes also captured spontaneous reflections during interviews and digital observations, providing insight into the emotional and philosophical negotiations musicians face in this shifting landscape.

All collected data were organized and coded using inductive thematic analysis, identifying recurring patterns and key themes such as authenticity, accessibility, pedagogy, aesthetics, and technological adaptation. Through this triangulated approach, combining lived experiences, digital ethnography, and reflexive interpretation, the study offers a comprehensive understanding of how Indian classical music performance is evolving within the expanding ecology of digital mediation.

Findings and Discussion

Across the narratives of artists and teachers, several key themes emerged, including the reconfiguration of concert spaces, shifts in pedagogical practice, transformations in aesthetic perception, and questions of authenticity and embodiment. The findings reflect how artists navigate the challenges of maintaining the philosophical and emotional depth of Indian Classical Music (ICM) while embracing the affordances of digital media. They also suggest that technology has not only altered modes of dissemination but has become a creative collaborator in shaping performance experience. Each subsection that follows explores these emergent themes in detail, demonstrating how Indian Classical Music is actively responding to the demands and possibilities of the digital era.

The New Concert Space

The findings reveal that the COVID-19 pandemic played a pivotal role in transforming the traditional concert ecosystem of Indian Classical Music (Salvaggio, 2025), giving rise to new digital performance spaces that redefined both the aesthetics and social dynamics of performance. As physical venues closed, artists adapted by streaming live concerts from home studios, often using digital *tanpura* and *tabla* applications to recreate the sonic environment of the stage. This shift reconfigured the spatial identity of performance, domestic interiors were reimaged as hybrid concert environments where the intimate and the public coexisted. Ethnographic interviews highlighted that musicians experienced a reorientation of their artistic presence in this mediated space. The conventional hierarchy between performer and audience, which had been structured around the physical distance and ritual of the concert hall, became more porous. Audience members, engaging through live chats and reaction icons, assumed a more active participatory role, influencing performance flow in real time. This immediacy of digital feedback fostered a new aesthetics of interaction, where engagement and visibility on screens partially replaced applause and audience gaze as markers of reception.

However, this transition also revealed tensions in the experiential dimension of *raga* performance. Musicians frequently noted the absence of collective energy and embodied resonance that accompanies live improvisation. The lack of shared acoustical space and synchronous audience response challenged the spontaneity central to *raga vistar* (melodic elaboration) and emotional communication. Despite these limitations, many performers perceived digital concerts as offering new forms of creative agency and accessibility, enabling them to reach global audiences and sustain artistic continuity during disruption (Gopinath, 2020). Thus, the emergence of the digital concert space represents a complex negotiation between continuity and change, where tradition encounters technology and intimacy is reconstructed through mediation.

The digital turn in Indian Classical Music has introduced a new dimension to performance practice, namely algorithmic visibility, where artists navigate not only musical aesthetics but also the logic of digital platforms that determine audience reach and engagement. The study reveals that social media algorithms, recommendation systems, and platform analytics have become silent yet powerful mediators in shaping artistic exposure, performance format, and aesthetic choices. Platforms such as YouTube, Instagram, and Facebook are not merely distribution tools, they function as curators of visibility, privileging content that aligns with trends of watch time, interactivity, and visual appeal. Musicians today consciously adapt their presentation styles to meet these algorithmic expectations. Performances once lasting hours are now frequently condensed into shorter, visually engaging segments designed for digital consumption. The traditional *aalaap*, a slow, meditative exploration of the *raga*, often faces abbreviation to sustain audience retention in the attention economy. Artists have also begun integrating aesthetic elements that appeal to online audiences, such as cinematic lighting, high-

definition visuals, and personalized storytelling, giving rise to a new aesthetic of engagement that fuses musical depth with digital performativity.

Digital observation of platforms like YouTube revealed that algorithms tend to amplify artists who maintain consistent posting schedules, use trending keywords, and engage actively with followers (Roy, 2017). Consequently, visibility becomes partly dependent on an artist's digital literacy and ability to manage their online persona. This shift blurs the boundaries between artistic authenticity and performative self-promotion, as musicians must balance their creative integrity with algorithmic demands. Several younger artists interviewed expressed ambivalence, recognizing that while algorithms democratize exposure and audience reach, they also risk standardizing aesthetic expression and rewarding formulaic content. Yet, this algorithmic environment also encourages innovation. Many artists experiment with hybrid formats, combining classical performance with multimedia storytelling, collaborations, or educational snippets, to engage audiences beyond the confines of traditional concert structures. Such adaptations represent not a departure from classical aesthetics but an evolution toward a digitally contextualized artistry, where visibility itself becomes a creative parameter. The findings suggest that the aesthetics of Indian Classical Music in the digital age are increasingly co-authored by technological systems. The interplay between *raga*, performer, and algorithm forms a new ecology of engagement, one where artistry is mediated through data-driven visibility and the success of a performance is measured not only in *rasānubhava* (emotional experience) but also in views, likes, and digital resonance (Paul, 2016).

Digital Pedagogies and the Guru–Shishya Parampara

The study reveals that one of the most significant transformations in Indian Classical Music during the digital era has occurred within the realm of pedagogy. The *guru–shishya parampara*, traditionally rooted in the intimate and immersive space of the *gurukul*, has found new manifestations in online teaching environments (Sundar, 2019). As physical proximity between teacher and disciple diminished during the pandemic, digital platforms such as Zoom, Skype, and specialized music-learning portals like the Shankar Mahadevan Academy and Raga Labs became central to the continuity of musical transmission. Ethnographic interviews with teachers and students indicate that while digital tools initially appeared as substitutes for in-person instruction, they have evolved into integral pedagogical mediums. Teachers adapted by using multiple camera angles, high-quality microphones, and digital *tampura* applications to approximate the experiential quality of traditional lessons. Students, in turn, gained unprecedented access to gurus across geographical boundaries, democratizing learning opportunities that were once limited to those in close physical proximity to a teacher (Vedabala, 2016). This expansion of access represents a profound shift in the cultural geography of Indian Classical Music education.

However, this digital turn also introduced new challenges that question the essence of the *guru–shishya* relationship. Participants repeatedly emphasized that subtle aspects of *riyaz* (practice), body posture, and microtonal precision are difficult to communicate through screens. The transmission of *bhaava* (emotion) and *saanidhya* (spiritual presence), which traditionally relies on shared physical and emotional resonance, often felt diminished in virtual settings. Teachers reported that while digital media enable broader reach, they also fragment attention and disrupt the immersive continuity essential to deep musical learning.

Despite these constraints, the findings suggest that digital pedagogies have not displaced the *parampara* but rather redefined it in contemporary contexts. Many teachers now employ a hybrid model, combining periodic in-person sessions with regular online follow-ups, to balance immediacy with accessibility. Students and teachers alike view technology as an adaptive medium rather than an obstacle, emphasizing that the *parampara* is sustained not merely through proximity but through dedication, repetition, and shared intent. In this reimagined ecology, the digital space becomes an extension of the *gurukul*, where tradition and innovation coexist (Vedabala, 2017). The *guru–shishya parampara* thus evolves as a living continuum, maintaining its philosophical core while expanding its spatial and temporal boundaries through technological mediation.

Reconfiguring Intimacy, Presence, and Authenticity

In the digital mediation of Indian Classical Music, the notions of intimacy, presence, and authenticity undergo profound transformation. Traditionally, the live performance environment fostered a deeply embodied and affective exchange between the performer and audience, an intimacy rooted in shared space, acoustic resonance, and the unrepeatable temporality of improvisation. The physical proximity of the *guru–shishya* relationship or the concert hall's immersive soundscape formed the core of musical authenticity. However, in digital ecologies, this immediacy is translated through the screen, where the performer's presence becomes mediated by cameras, microphones, and networked interfaces. The intimacy once experienced through spatial closeness is now reframed through digital aesthetics, close-up visuals, direct eye contact with the camera, and real-time chat interactions simulate emotional proximity across distances.

Yet, this technological intimacy brings ambivalence (Tomasi, 2005). While audiences gain unprecedented access to performances and pedagogical sessions globally, the sensory depth and shared temporality of live experience often give way to asynchronous engagement and algorithmic visibility. Authenticity, once tied to embodied performance and acoustic purity, now emerges as a negotiated construct shaped by mediation, editing, and digital sound quality. Performers must continually navigate between technological enhancement and fidelity to *raga* grammar, crafting a new kind of “authenticity of experience” that transcends physical co-presence. Thus, in the contemporary performance ecology of Indian Classical Music, intimacy and authenticity are no longer fixed essences but dynamic relations, reconfigured through digital mediation, audience participation, and the evolving aesthetics of virtual presence.

Digital performance challenges the notion of presence fundamental to classical aesthetics. The *rasa* experience, once dependent on collective vibration within physical space, becomes mediated through headphones and screens. Yet, many listeners report heightened intimacy, feeling closer to artists via direct camera gaze or personalized livestreams (Kumar, 2024). Thus, digital presence emerges as an affective construct where technology becomes an extension of human connectivity rather than its replacement (Coleman, 2018). Performers cultivate “virtual empathy” by addressing audiences directly, sharing behind-the-scenes moments, and invoking shared temporality even across distance.

Conclusion

The digital transformation of Indian classical music marks a profound cultural reconfiguration rather than a mere technological shift. Performance ecologies today are hybrid, distributed, and mediated, requiring musicians to navigate new aesthetic, pedagogical, and ethical terrains. Technology, far from eroding tradition, opens a plural space (Kirsch, 1995) where the classical interacts with the contemporary. The negotiation between preservation and innovation defines the vitality of this living tradition. As the digital ecology expands, the challenge for artists and scholars is to sustain the experiential depth of *rasa* and the sanctity of the *guru–shishya* bond within mediated realities.

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Biography

Dr Samidha Vedabala is an accomplished Indian classical musician, scholar, and educator, currently serving as assistant professor in the Department of Music at Sikkim University, Gangtok. A distinguished sitar player and researcher, she holds her PhD and Master's degrees from Rabindra Bharati University, Kolkata, specialising in instrumental music (sitar). Her research focuses on the stylistic evolution of sitar performance, the interdisciplinary convergence of music, culture, and technology, and the role of gender and women's perspectives in the performing arts. Dr Vedabala's work often intersects music and women's studies, examining how gendered experiences shape artistic identity, pedagogy, and performance aesthetics. She advocates for greater recognition of women musicians and researchers in Indian classical music, exploring how social structures and cultural narratives influence their creative expression and visibility. She has published widely on youth participation in music, live performance challenges in Northeast India, and interdisciplinary methods in music research. Her notable books include *Sitar Music: Dynamics of Structure and Its Playing Techniques* and *Simplifying Research in Music*, both of which integrate feminist perspectives into the broader discourse on musical knowledge and practice.