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Exploring the Art of Carnatic Gamakas: A Guide to Playing on Electronic Keyboards with Computer Applications

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Abstract

Generating gamakas on an electronic music keyboard has historically been considered a challenging task. Fortunately, we can now benefit from the capabilities of computers and other technological advancements that facilitate the recreation of traditional Indian gamakas using Western instrument keyboards. This article offers a wealth of insights into the process of producing traditional Indian gamakas using music software, specifically Digital Audio Workstations (DAW), in conjunction with MIDI keyboards. It not only enhances the enjoyment and engagement for the next generation but also embodies a modern paradigm in the teaching of traditional music.

Keywords: Panchadasa Gamakas, Carnatic Music, Teaching Traditional Music, DAW (Digital Audio Workstation), MIDI Keyboard.

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Introduction:

Gamakas, a fundamental ornamentation technique, enriches both North and South Indian classical music traditions. It involves embellishing a single note or introducing melodic nuances between two notes, enhancing the depth and expressiveness of the music. In Subbarama Dikshitar's "Sangita Sampradaya Pradarsani," he meticulously organizes the 15 gamakas (Panchadasa Gamakas), originally outlined by Saranga Deva, with a specific emphasis on their execution on the veena. Subbarama Dikshitar introduces variations to certain gamakas and categorizes some based on shared characteristics. Additionally, he provides comprehensive notations and illustrative models for each, creating a valuable resource for understanding and performing these intricate musical embellishments. This work elucidates the gamakas and their symbols, offering profound insights into the art of Indian classical music.

Exploring the Panchadasa Gamakas in Sarangadeva's Sangita Ratnakara:

Sarangadeva, a distinguished musicologist of the 13th century, intricately detailed the Panchadasa Gamakas in his seminal work "Sangita Ratnakara." The term "Panchadasa" denotes fifteen, signifying a meticulously defined set of fifteen embellishments or nuances that occupy a revered position in Indian classical music. The recognition bestowed upon these Panchadasa Gamakas by Sarangadeva underscores their paramount importance in the realm of melodic music. These gamakas, described as the very essence of musical excellence, serve as indispensable elements that breathe life into the rendition of a raga. Their significance becomes particularly pronounced during the alapana, a phase in classical music where the musician delves into an explorative and detailed exposition of the melodic framework of the raga.

The Panchadasa Gamakas encompass a diverse array of musical gestures, each possessing its own intricate character and emotive quality. They are not merely embellishments but are regarded as the soulful core of a musical performance. These gamakas, in their delicate graces, subtle shades, and nuanced embellishments, contribute profoundly to the aesthetic allure of the music. In the hands of a skilled musician, the Panchadasa Gamakas become the palette with which they paint the sonic canvas, creating a rich and multifaceted musical experience. This intricate play of gamakas serves as a language of expression, conveying the deepest emotions and aesthetic nuances inherent in Indian classical music. The listener, attuned to the interplay of these embellishments, is treated to a captivating journey through the intricate tapestry of melodic artistry.

In essence, the Panchadasa Gamakas, as elucidated by Sarangadeva, stand as a testament to the profound depth and expressive potential embedded in the classical musical traditions of India, enriching the sonic landscape with their evocative presence.

“The 15 gamakas are Tripa, Sphuritha, kampita, Lina, andolita, vali, Tribhinna, kurula, Ahata, ullasita, plavitha, humphita, Mudrita, Namita and Misrita.”[1]

Indeed, Sarangadeva's "Sangita Ratnakara" goes beyond the general Panchadasa Gamakas and delves into the intricacies of gamakas that are specific to instruments and ragas. He categorizes them as "Vadhya Sambandhi Gamakas" and "Raga Sambandhi Gamakas."

1. Vadhya Sambandhi Gamakas:

Sarangadeva acknowledges the uniqueness of gamakas that find their natural expression on specific musical instruments. These gamakas are tailored to complement the inherent characteristics and capabilities of instruments. The term "Vadhya" refers to instruments, and "Sambandhi" signifies a connection or relation. Therefore, Vadhya Sambandhi Gamakas can be understood as ornamentations intricately linked to the nature and capabilities of specific musical instruments.

2. Raga Sambandhi Gamakas:

The term "Raga Sambandhi Gamakas" refers to gamakas that have a close association with specific ragas. In Indian classical music, each raga has its own unique set of melodic phrases, tonal nuances, and aesthetic character. Sarangadeva recognizes that certain gamakas are intimately tied to the expression of ragas. These gamakas enhance the beauty and emotive impact of the raga, serving as a means of reinforcing the distinctive identity of each musical mode.

Saragadeva, a luminary in the realm of Indian classical music, elucidated Panchadasa Gamakas[2] (15 gamakas) with charm. These techniques function as musical embellishments, elevating the overall allure of the music.

1. **Tiripa (Nokku)**: Playing a single note within a phrase with added emphasis, as exemplified in expressions like "N S R S," accentuating the "R" note.

2. **Sphurita**: Granting heightened importance to the second note in a "janta svara" phrase while allowing the lower note to be subtly audible.

3. **Kampita**: Infusing a robust shake into a note without any suggestion of neighboring notes, resembling the vigorous shaking of the "ga" note in specific melodies.

4. **Lina**: Gently melding one note into another, crafting a seamless transition.

5. **Andolita**: Swinging freely between notes, briefly anchoring on one note before smoothly gliding to a higher note.

6. **Vali**: Eliciting nuanced shades in notes by delicately moving the string in a circular fashion, a technique frequently employed in fretted instruments like the Vina.

7. **Tribhinna**: Orienting left-hand fingers horizontally to touch three strings (Sarani, Panchama, and Mandaram) and subsequently plucking them with the right-hand fingers, resulting in harmonious resonance when all three notes are played together.

8. **Kurula**: Vigorously producing a note from one position to another.

9. **Ahata**: Creating a novel note seamlessly, a technique predominantly utilized in the Vina.

10. **Ullasita**: Gliding from one note to another, either ascending (Ekku jaru) or descending (Digu jaru), effortlessly traversing the notes in between.

11. **Plavita**: A modification of the "Kampita" technique, introducing a shaking effect.

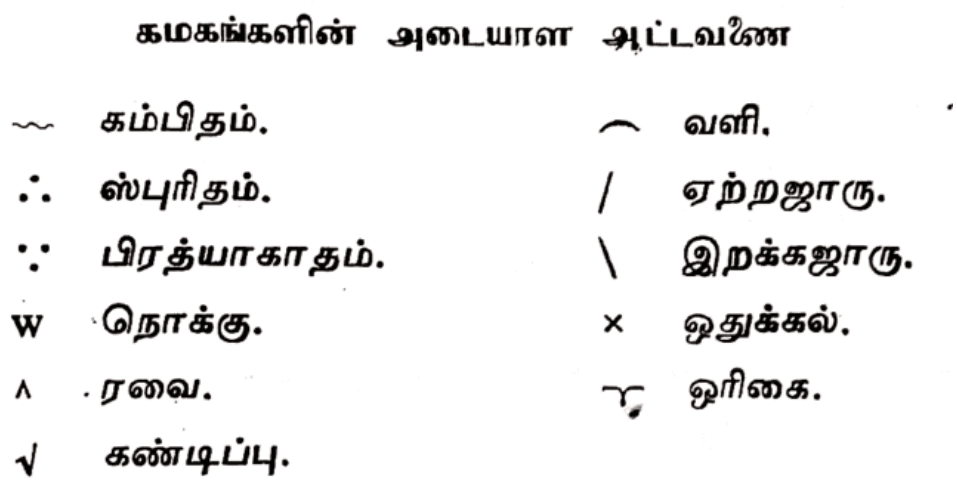
12. **Gumpita (Humpita)**: Employed in vocal music, this technique initiates with a slender tone that progressively amplifies and ascends, akin to the notes of wind instruments.

13. **Mudrita**: Singing with the mouth closed, primarily employed in vocal music.

14. **Namita**: Singing in a gentle and slender tone, a practice commonly found in vocal music.

15. **Misrita**: Blending two or more of the techniques to create innovative and captivating musical expressions. For instance, amalgamating "Kampita" with "Mudrita" exemplifies a form of "Misrita."

The shift from 15 gamakas to 10 gamakas, known as **Dasavida Gamakas**, poses risks to traditional Indian classical music. Firstly, the reduction may lead to a loss of subtle nuances that added richness to the music. Secondly, it could limit the emotional expressiveness of the music, impacting the ability to capture the intended mood of a piece. Additionally, changes in teaching methods may result in the omission of essential techniques, affecting the authenticity of the musical tradition. The trend may also contribute to a more standardized and less diverse musical style. Lastly, it might stifle innovation by limiting the creative possibilities for musicians. In essence, the shift raises concerns about losing the intricate beauty and diversity that has defined classical music.



SYMBOLS OF GAMAKAS

This captivating image[3] is sourced from Sri Subbarama Dikshitar's 'Sangita Sampradaya Pradarsini.' The profound significance and rich musical heritage captured in this work by Dikshitar provide a unique insight into the classical traditions of Indian music.

THE HISTORY AND EVOLUTION OF THE ELECTRONIC KEYBOARD

The harpsichord has a fascinating history dating back to the 15th century, where it was first described by Arnaut of Zwolle, influenced by the visionary minds of medical astrologers. While artworks from that time depicted the instrument, it's the surviving 16th-century Italian harpsichords that show changes in design, featuring thinner cases.

These modifications in craftsmanship suggest a kind of artistic evolution. It's like the harpsichord adapted and changed alongside the intellectual trends of the Renaissance. Fast forward to today, and the harpsichord has transformed into the modern keyboard, showcasing how musical instruments continue to evolve with the times[4].

1. Early Keyboard Instruments:

The evolution of the electronic keyboard is rooted in traditional keyboard instruments such as the harpsichord and pipe organ. These instruments laid the foundation for the arrangement of keys and the concept of producing sound by pressing keys.

2. Electric Pianos and Organs (1930s-1940s):

The first significant steps towards electronic keyboards were electric pianos and organs. In the 1930s and 1940s, inventors like Laurens Hammond developed the Hammond organ and companies like Rhodes introduced electric pianos. These instruments used mechanical means and amplification to produce sound.

3. Transistor Technology (1950s):

The advent of transistor technology in the 1950s played a pivotal role. Transistors allowed for the miniaturization of electronic components, making keyboards more compact and portable. This era saw the emergence of transistor organs.

4. Synthesizers (1960s-1970s):

The 1960s and 1970s witnessed the rise of synthesizers. Robert Moog's synthesizer, introduced in the mid-1960s, marked a significant turning point. Synthesizers allowed musicians to create a wide range of sounds through electronic manipulation, paving the way for electronic keyboards with versatile timbral possibilities.

5. Digital Technology (1980s-1990s):

The 1980s and 1990s saw a shift towards digital technology. Digital synthesizers and digital sampling became prevalent. This era brought about the development of digital pianos and keyboards that could accurately replicate the sound of acoustic instruments.

6. MIDI (1980s):

The introduction of the Musical Instrument Digital Interface (MIDI)[5] in the 1980s revolutionized the electronic keyboard industry. MIDI enabled keyboards to communicate with other electronic devices, computers, and synthesizers, opening new possibilities for music creation, recording, and performance.

7. Workstations and Arranger Keyboards (1990s-2000s):

In the late 20th century and early 21st century, electronic keyboards evolved into sophisticated workstations and arranger keyboards. These instruments integrated advanced features, including built-in rhythms, accompaniment styles, and recording capabilities.

8. Advancements in Sampling and Modelling (2000s-2010s):

Advancements in sampling technology and physical modelling allowed electronic keyboards to replicate a wide range of instrument sounds with greater realism. High-quality samples and advanced modelling techniques enhanced the expressive capabilities of electronic keyboards.

9. Integration with Software (2010s-Present):

In recent years, electronic keyboards have become increasingly integrated with software applications and DAWs (Digital Audio Workstations). Many keyboards now offer seamless connectivity and control options for music production software.

10. Advancements in Touch and Feel (Present):

Contemporary electronic keyboards continue to see advancements in key action, touch sensitivity, and feel, aiming to replicate the experience of acoustic instruments more closely.

In the ever-evolving landscape of electronic keyboards, the intricate challenge persists in seamlessly integrating them into the domain of Carnatic music concerts. Despite their remarkable versatility and ability to produce an array of sounds, electronic keyboards grapple with authentically replicating the nuanced intricacies of Carnatic music, particularly the elusive gamakas. These subtle and expressive elements, integral to the rich tradition of Carnatic music, pose a formidable obstacle for electronic keyboards.

This challenge becomes pronounced when one considers the inherent distinctiveness and subtleties of Carnatic music deeply rooted in traditional instruments. The limitations of electronic keyboards become evident as they strive to capture the essence of Carnatic musical performances in their entirety. However, amidst this challenge, artists such as

K. Sathyanarayanan[6], widely known as Keyboard Sathya, emerge as pivotal figures. As a versatile Carnatic keyboard artist and the recipient of the prestigious 'KALAIMAMANI' Award, Sathya has devoted over two decades to pioneering the adaptation of Indian Classical Music on the keyboard.

Through a harmonious blend of technology and dynamic playing techniques, Sathya has actively worked towards establishing the keyboard as a leading melodic instrument in the realm of Indian classical music. His efforts not only highlight the ongoing dialogue between tradition and innovation but also underscore the potential for electronic keyboards to carve their own niche in the intricate tapestry of Carnatic musical expression.

FL Studio 20

Developed by Image-Line is a powerful digital audio workstation (DAW) known for its user-friendly interface, advanced MIDI editing capabilities, step sequencer, and extensive plugin compatibility. Building on its predecessors, FL Studio 20 maintains features such as audio recording, MIDI support, and a regularly updated platform. Widely used in electronic and various music genres, FL Studio 20 continues to be a popular choice for music producers, offering a versatile and evolving environment for music composition and production[6]. Obtain this software by downloading it from FL Studio[7].

The process to achieve Gamakas on an electronic keyboard using FL Studio involves the following six steps:

1. Installation:

Install FL Studio along with the USB driver for Yamaha I455 to ensure compatibility and proper functioning.

2. FL Studio Setup:

Open FL Studio and access the Channel Rack. Press the "+" add button, choose Morphine, and enable Delay while turning on Sustain. Adjust the levels as specified.

3. MIDI Settings:

Navigate to Options and select MIDI settings. Enable the Digital Keyboard option to facilitate communication between the electronic keyboard and FL Studio.

4. Channel Selection:

Within the Channel Rack, choose Morphine to designate it as the active channel for producing Gamakas.

- **Morphine Vst Plugin**

5. Play Gamakas:

Utilize the electronic keyboard to play Gamakas, taking advantage of the configured settings in FL Studio.

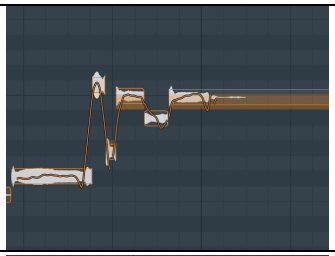
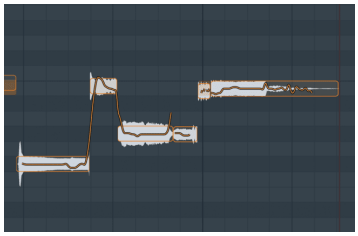
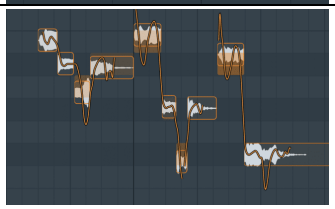
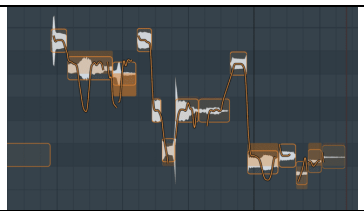
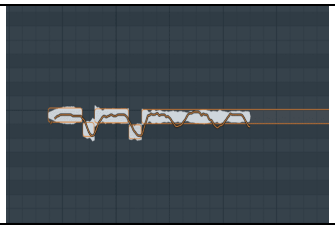
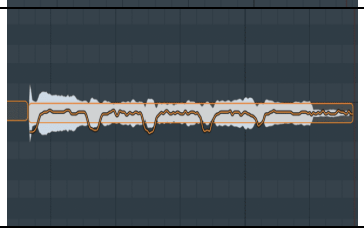
6. Audio Output:

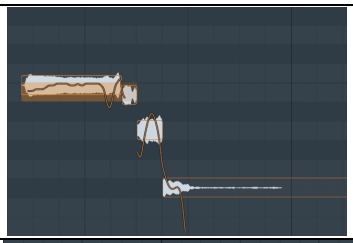
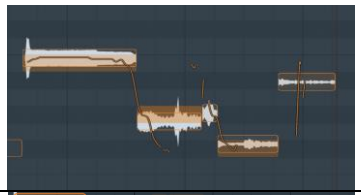
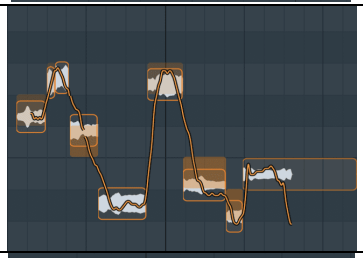
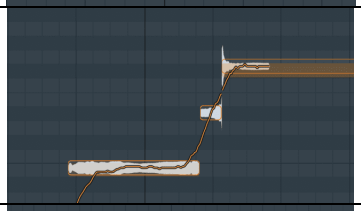
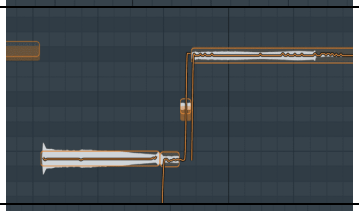
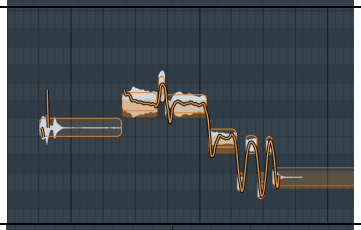
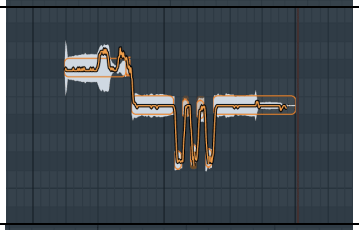
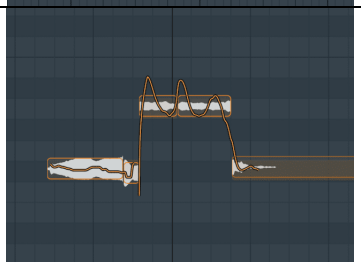
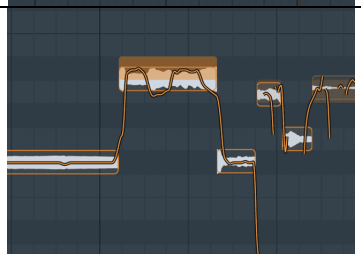
Ensure that the sound is routed through the PC speakers, allowing for the audible output of the Gamakas played on the electronic keyboard.

By following these steps, users can effectively generate Gamakas on an electronic keyboard using FL Studio and the specified software tools and configurations.

COMPARATIVE ANALYSIS OF FAMOUS VOCAL GAMAKAS VS. KEYBOARD-GENERATED GAMAKAS

Audio from saayujya.com[8] has been utilized for a comparative analysis of Gamakas produced by an electronic keyboard. This comparison aims to assess the fidelity and accuracy of the electronic keyboard's rendition in comparison to the reference audio available on the website.

Gamakas Name	Vocal Illustration	Keyboard Illustration	Audio Reference
Nokku			Play Audio
Spurita			Play Audio
Kampita			Play Audio

Kandippu			Play Audio
Vali			Play Audio
Etra Jaaru			Play Audio
Iraku Jaaru			Play Audio
Odhukal			Play Audio
Orikai			Play Audio

Analysis of audio graphs reveals accurate replication of gamakas in vocal and electronic renditions, showcasing technology's role in advancing Carnatic music preservation.

Merits and Demerits of the New Approach to Gamakas Production:

Merits:

1. Innovative Ideology:
- Introduction of a novel ideology for gamakas production.

2. Preservation of Tradition:
- Maintenance of traditional gamakas styles without compromising their authenticity.

3. Modern Techniques in Traditional Ornaments:
- Integration of modern techniques to enhance traditional ornaments.

4. Exploration of Ragas:
- Opportunities for exploring ragas through innovative gamakas approaches.

5. Nuanced Understanding:
- Facilitation of a nuanced understanding of gamakas in Carnatic music.

6. Transmission to New Generations:
- Leveraging various gamakas types for the benefit of the new generation.

Demerits:

1. Diminishing Role of Traditional Performers:
- Reduction in opportunities for traditional instrumental performers.

2. Challenges in Reproduction:
- Difficulty in reproducing or convincingly representing the original art form.

3. Technical Constraints:
- Imposition of high-level technical constraints.

4. Technology Dominance over Artistry:
- Risk of technology overshadowing artistic expression.

5. High-Cost Involvement:
- Inherent high cost and financial implications associated with the new approach.

Conclusion: Nurturing Tradition through Technological Symphony:

In the pursuit of harmonizing tradition with technology, this exploration unfolds a promising chapter in the world of Carnatic music. The convergence of vocal and electronic keyboard audio graphs unveils a compelling similarity, affirming the potential to faithfully replicate the intricate gamakas on keyboards using advanced software applications. The symbiosis of tradition and technology, exemplified by the integration of FL Studio and the Yamaha I455 keyboard, presents a novel paradigm for both preservation and evolution.

As we navigate this juncture where classical melodies meet digital precision, the merits of this approach shine through. The innovative ideology preserves traditional gamakas, seamlessly integrating modern techniques to enrich the sonic tapestry. Opportunities to explore ragas and transmit nuanced understanding to new generations align with the spirit of musical evolution. Yet, it is crucial to acknowledge the demerits – the risk of overshadowing artistic expression with technology and the potential reduction of opportunities for traditional performers.

The journey from Sarangadeva's Panchadasa Gamakas to the digital realm emphasizes the enduring nature of Indian classical music. The 15 gamakas, intricately detailed by Sarangadeva, not only serve as the soulful core of musical expression but also reflect the profound depth of classical traditions. The shift to Dasavida Gamakas raises concerns about losing the intricate beauty that defines classical music, emphasizing the need for a delicate balance between innovation and preservation.

In the evolution of the electronic keyboard, from early instruments to contemporary marvels, we witness not just technological progression but a quest to replicate the nuanced artistry of traditional instruments. However, the limitations in capturing the subtleties of gamakas in Carnatic music underscore the importance of preserving the essence of this classical genre.

In this digital age, where FL Studio and MIDI keyboards open new avenues, the comparative analysis of vocal and keyboard-generated gamakas serves as a testament to the adaptability of modern technology. The merits and demerits of this approach prompt reflection on the delicate interplay between tradition and innovation. As we tread this musical journey, let us strive to preserve the soul of classical art while embracing the transformative potential of technology.

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