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MUSICOLOGY VERSUS ARTIFICIAL INTELLIGENCE (AI): CONTESTING AI IN THE ANALYSIS OF NIGERIAN POPULAR MUSIC

Abstract

In the core of musicology lies the ability to analyse music, dissecting a piece of music to reveal the various elements/components fused together to form its whole in order to offer explanations for what, how and why it is made. Artificial intelligence, on the other hand, is a ground-breaking feat in the field of computer science, offering a powerful tool that draws on extensive data across many domains, including music, but with its own limitations. This paper is a musicological effort to study selected works in Nigerian popular music to show findings that are contrary to that of AI powered chatbots, subjecting AI generated responses in musical analysis to thorough investigation and verification by a musicologist who is formerly trained to transcribe and analyse music.

Keywords: AI, Musicology, Analysis, Popular Music, Transcription, Chatbot

Introduction

Musicology can be defined as the discerning art of dissecting the very fabric of a song in terms of its melody, harmony, rhythm and form, in order to expose the structural threads that makes it a whole entity and confer meaning. Yet, in this digital age, artificial intelligence is asserting its ability to take charge of most human tasks including that of a musicologist, boasting chatbots and algorithmic engines that promise instant responses to inquiries on various aspects of music analysis. As Rudrawar (2023:1) observes, these systems “mimic human cognitive faculties—pattern recognition, problem-solving, speech processing—yet remain essentially dependent on pre-existing datasets rather than lived musical intuition”. But while they draw upon vast repositories of online metadata, are they optimised to go deeper to break down the various musical elements as heard in Nigerian popular music?

This paper, therefore examines how AI chatbots acquire information about musical works to demonstrate the praxis of musicological analysis through accurate transcription. It evaluates the credibility of AI-generated musical analyses to propose strategies to improve chatbot performance in music analysis, and ultimately to determine whether AI can supplant trained musicologists for Nigerian popular music. In addressing these interwoven objectives, the study integrates the following enquiries: How do AI chatbots gather musical data? In what manner does a musicologist conduct transcriptional and harmonic analysis? How reliable are the responses produced by chatbots? How can musicologists enhance AI’s analytical depth? And, finally, can AI replace human expertise in musicology?

To answer these questions, the study adopts a qualitative and experimental design in which AI-derived outputs are assessed via score-based investigation as the ultimate litmus test. Five tracks are selected from Spotify’s Top-10 Nigerian hits of 2024 (Spotify, 2025), they include “Higher” (Burna Boy), “Lonely at the Top” (Asake), “Egwu” (Chike & Mohbad), “Kante” (Davido feat. Fave) and “Gwagwalada” (BNXN feat. Kizz Daniel & Seyi Vibe). These works, released between late 2023 and early 2024 yet ranking among the platform’s most-streamed segments, provide a representative snapshot of contemporary Nigerian popular music.

I transcribed and analysed the selected tracks based on my training in the Department of Music, Lagos State University. Studying music at both undergraduate and postgraduate levels involved transcription and analysis of Western and indigenous African musical works. All the parts in the selected tracks are notated on the musical staff using MuseScore, then played-back to establish the approximate tempi. I proceeded to study the music scores to find our tonal centres, chord progressions, scale structures and vocal ranges.

Three AI chatbots are interrogated in this study, and they were selected on the basis of their popularity and accessibility:

- Copilot – a generative AI chatbot launched by Microsoft; runs on GPT4, the same Large Language Model used in OpenAI’s ChatGPT; it is pre-installed into Windows 10 and later versions of the windows operating system. I access it on a Windows 10 PC.

- Meta AI – a virtual assistant developed by the Meta team; available as a subscription-based stand-alone app; also integrated as a chatbot into Meta's social networking products (Facebook, Instagram and WhatsApp). I accessed it on WhatsApp.
- Aria – a built-in browser AI developed by Opera; designed to provide real-time web assistance, content generation, and image processing directly within the browser interface; uses a multi-model engine which integrates technologies from OpenAI (GPT) and Google (Gemini/Imagen models). I access it on the Opera browser.

The interrogation¹ unfolds in three phases. In the first phase, I asked each chatbot for basic track metadata (duration, tempo and key). The second phase probes harmonic and melodic parameters, requesting chord progressions, scale classification and vocal range. The third phase addresses formal terminology, with a spontaneous query regarding the vi–V–I progression in “Higher.” Aria is consulted twice (2 January 2025 and 30 March 2025), whereas Copilot and Meta AI are engaged on 30 March 2025. The AI-generated responses are then juxtaposed with musicologist-derived findings to gauge accuracy, specificity and analytical depth. This paper therefore illuminates both the potential and the limitations of AI in musicological practice through an integrated methodology.

The Rise of Artificial Intelligence

Since its coining at the Dartmouth Workshop in 1956, artificial intelligence has undergone successive waves of innovation, symbolic “good old-fashioned AI” in the 1960s and 1970s; expert systems in the 1980s; and, from the 2010s onward, the deep-learning revolution underpinned by neural architectures and massive data sets (Rudrawar, 2023). Rudrawar charts this historical evolution, emphasising how leaps in computational power and algorithmic sophistication have enabled machines to perform pattern recognition, natural-language processing and decision-making tasks once thought the exclusive province of human cognition (pp. 5–12). More recently, Padmaja et al. (2024) note that the advent of transformer models marked a turning point, allowing AI systems to ingest and generate coherent text at scale, thereby broadening AI’s applicability across domains from healthcare diagnostics to creative arts.

Applications of AI have proliferated in virtually every sector. Ratnaparkhi (2023, pp. 45–67) outlines how recommendation engines in e-commerce, predictive analytics in finance and image-recognition tools in medicine all derive from a shared core of machine-learning techniques. In the realm of musicology, for instance, Eko and Ikibe (2024) demonstrate the capacity of AI-powered software to automate tasks such as beat-tracking, tempo estimation and rudimentary chord-labelling functions that once required laborious manual effort. Equally important are AI-driven chatbots and search engines, which not only retrieve metadata (e.g. track length, release date, key signatures) but also parse uploaded documents such as scores, lyrics and analytical essays to furnish instant summaries and even rudimentary harmonic analyses.

¹ AI responses to these interrogations are italicized all through this paper for distinction from the authors writing.

Among these tools, conversational agents like OpenAI's ChatGPT that is based on GPT-3 (Brown et al., 2020), and Microsoft's Copilot represent a defining moment in user-friendly AI. Underlying them are transformer architectures (Vaswani et al., 2017) capable of attending to long-range dependencies in text, which permits chatbots to answer music-theoretical queries, suggest chord progressions or outline melodic ranges on demand. Such systems democratise access to analytical insights, yet their reliance on pattern-extraction from massive text corpora means they rarely "listen" to music directly; instead, they synthesise responses from pre-existing web content and inferred probability distributions.

Notwithstanding these advances, there is growing awareness of AI's limitations, particularly its tendency to hallucinate or propagate inaccuracies. Bender et al. (2021) warn of "stochastic parrots," language models that regurgitate plausible-sounding but unverified statements, while Ji et al. (2023) catalogue instances of factual errors and unsupported inferences in generated text. In the specific context of music analysis, chatbots may misidentify keys, oversimplify chord progressions or neglect stylistic nuances such as Amapiano groove inflections or culturally coded cadences. Such shortcomings underscore the necessity for rigorous verification by trained musicologists and highlight the ongoing challenge of aligning AI's data-driven outputs with the subtleties of embodied musical interpretation.

First Phase of AI Interrogation: Duration, Tempo and Key of the Selected Musical Works

Author's Prompt:

I need the track information of 'Higher' by Burna Boy, 'Lonely at the top' by Asake, 'Egwu' by Chike, 'Kante' by Davido, and 'Gwagwalada' by BNXXN. Include the performers, Tempo, key, duration, and any other details you think necessary.

Aria's Response 1 (02/01/2025):

Track Title	Performers	Date Released	Duration	Tempo (BPM)	Key
<i>Higher</i>	<i>Burna Boy</i>	<i>June 27, 2024</i>	<i>2:17</i>	<i>~130</i>	<i>Not specified</i>
<i>Lonely at the top</i>	<i>Asake</i>	<i>June 16, 2023</i>	<i>2:37</i>	<i>~120</i>	<i>C# Minor</i>
<i>Egwu</i>	<i>Chike, Mohbad</i>	<i>Dec. 15, 2023</i>	<i>2:16</i>	<i>~118</i>	<i>A Major</i>
<i>Kante</i>	<i>Davido, Fave</i>	<i>May 8, 2024</i>	<i>(Not given)</i>	<i>~120</i>	<i>Ab Minor</i>
<i>Gwagwalada</i>	<i>BNXXN, Kizz Daniel, Seyi Vbez</i>	<i>February 16, 2023</i>	<i>3:15</i>	<i>~120</i>	<i>F# Major</i>

Sources cited: www.youtube.com, en.wikipedia.org, www.tiktok.com, www.instagram.com, grammy.com, music.apple.com, genius.com, www.premiumtimes.com, www.jiosaavn.com,

www.vanguardngr.com, www.amazon.com, www.boomplay.com, tunebat.com, songbpm.com, tendybeatz.com, www.chosic.com, www.imdb.com, www.facebook.com

Aria's Response 2 (30/03/2025):

Track Title	Performers	Date Released	Duration	Tempo (BPM)	Key
<i>Higher</i>	<i>Burna Boy</i>	<i>June 27, 2024</i>	<i>Not Specified</i>	<i>Not Specified</i>	<i>Not Specified</i>
<i>Lonely at the top</i>	<i>Asake</i>	<i>June 16, 2023</i>	<i>Not Specified</i>	<i>Not Specified</i>	<i>Not Specified</i>
<i>Egwu</i>	<i>Chike, Mohbad</i>	<i>December 15, 2023</i>	<i>Not Specified</i>	<i>Not specified</i>	<i>Not Specified</i>
<i>Kante</i>	<i>Davido, Fave</i>	<i>March 2023</i>	<i>3:14</i>	<i>99</i>	<i>Not Specified</i>
<i>Gwagwalada</i>	<i>BNXN, Kizz Daniel, Seyi Vibe</i>	<i>February 16, 2023</i>	<i>Not Specified</i>	<i>Not Specified</i>	<i>Not Specified</i>

Sources cited: mystreamcount.com, spotify.com, volt.fm, whosampled.com, 1001tracklists.com, mdundo.com, www.youtube.com, en.wikipedia.org, grammy.com, grammy.com, www.premiumtimes.com, songbpm.com, grmdaily.com, saeedahwits.com

Copilot's Response (30/03/2025):

Track Title	Performers	Date Released	Duration	Tempo (BPM)	Key
<i>Higher</i>	<i>Burna Boy</i>	<i>June 27, 2024</i>	<i>2:17</i>	<i>116</i>	<i>C Major</i>
<i>Lonely at the top</i>	<i>Asake</i>	<i>June 16, 2023</i>	<i>2:37</i>	<i>105</i>	<i>F# Minor</i>
<i>Egwu</i>	<i>Chike</i>	<i>February 2024</i>	<i>Not specified</i>	<i>Not specified</i>	<i>A Major</i>
<i>Kante</i>	<i>Davido, featuring Fave</i>	<i>2023</i>	<i>3:14</i>	<i>99</i>	<i>F# Minor</i>
<i>Gwagwalada</i>	<i>BNXN, Kizz Daniel, Seyi Vibe</i>	<i>February 16, 2023</i>	<i>3:08</i>	<i>111</i>	<i>A Major</i>

Sources cited:

Meta AI's Response (30/03/2025):

Track Title	Performers	Date Released	Duration	Tempo (BPM)	Key
<i>Lonely at the</i>	<i>Asake</i>	<i>August 16, 2023</i>	<i>Not specified</i>	<i>(No response)</i>	

<i>top</i>				
<i>Higher</i>	<i>Unfortunately, I couldn't find the track information for the other songs you requested.</i>			
<i>Egwu</i>				
<i>Kante</i>				
<i>Gwagwalada</i>				

Sources cited: mvmyrics.com, www.naijaloaded.com.ng, tooexclusive.com, www.bellannaija.com

Author's Result on Duration, Tempo and Key

The table that follows shows the outcome of using the Piano, transcription on score-writers and playback across 3 music software to determine the Duration, Tempo and Key of the selected songs. (The subsequent discussion on harmony and scale provides justification on the key or tonal centre).

Track Title	Duration	Tempo	Key
Lonely at the top	2:37	105BPM	A Major
Higher	2:37	105BPM	C Major
Egwu	2:16	115BPM	A Major
Kante	3:14	100BPM	A Major
Gwagwalada	3:15	115BPM	A Major

Second Phase of AI Interrogation: Chord Progression, Melody, Range and Scale of the Selected Songs

From the results of the first phase, the response of the chatbots on 'Egwu' and 'Kante' are outrightly wrong and if there is already contradiction on the key or tonal centre of the songs, the response on chord progression would be also faulty, hence it is needless to keep interrogating the chatbots about the two songs. This phase therefore presents AI chatbot interrogation and the author's analysis on the remaining three songs.

Author's Prompt:

Describe the chord progression, melody and range. Put to consideration that some of the songs have multiple singers/artistes.

Response from Aria 30/03/2025):

'Lonely at the top'

*The main chord progression used is a common and versatile one in contemporary music: F#m - Bm - D - A. The song features a catchy and rhythmic **melody** that blends Afrobeat*

with contemporary R&B influences. Asake's vocal delivery includes melismatic phrases and emotional nuances, enhancing the song's relatability and depth. The track is primarily in the *F# Minor scale*, which contributes to its introspective and slightly melancholic vibe. Asake's vocal **range** typically spans about an octave, allowing him to express both smooth lower notes and soaring highs, which adds to the song's emotional impact.

‘Egwu’

The main **chords** used in ‘Egwu’ are: **D - E – A**. The song features a blend of vocal styles from Chike and the late Mohbad, creating a rich tapestry of sound. The **melody** is characterized by catchy hooks and vibrant rhythms, typical of the Amapiano genre, enhanced by the interplay between the two vocalists. Primarily in the *A Major scale*, which contributes to its bright and uplifting feel. The combined vocal **range** of Chike and Mohbad spans about an octave and a fifth, allowing for expressive highs and engaging lows, which is common in Afrobeat music.

‘Gwagwalada’

The **chords** are: **Bm, F#m - D – A**. Alternatively, another common progression includes: **F#m - D - A – E**. This track showcases a smooth, flowing **melody** with a blend of R&B and Afrobeat influences from BNXXN, Kizz Daniel, and Seyi Vibe. The use of melismatic phrases and varied vocal textures adds emotional depth and a dynamic feel to the song. Primarily in *F# Minor scale*, which gives it a slightly darker, more introspective vibe, contrasting with the upbeat nature of ‘Egwu’. The vocal **range** across the three artists typically spans about an octave, with each artist exploring different registers, enhancing the song's smoothness and emotional resonance.

Sources cited: chordify.net, youtube.com, coundcloud.com, officialcharts.com, mychords.net, ultimatetguitar.com

Response from Copilot (30/03/2025):

‘Lonely at the Top’ – Asake

- **Chord Progression:** The song is in *F# minor*, with a progression that includes *F#m, Bm, E, and A*. This creates a melancholic yet smooth harmonic flow.
- **Melody:** The melody is simple and repetitive, making it easy to sing along. Asake's vocal delivery is relaxed, blending Afrobeat and Amapiano influences.
- **Range:** Asake's vocal range in this song stays within a comfortable mid-range, with slight variations for emotional emphasis.
- **Scale:** *F# Minor (Natural Minor Scale)*. This gives the song an emotional, melancholic vibe, with smooth transitions in the melody.

Egwu – Chike & Mohbad

- **Chord Progression:** The song is in *A major*, with a progression that includes *E, A, D, and C#*. This gives it a bright and uplifting feel.

- *Melody: The melody is energetic, with a rhythmic bounce that complements the Afrobeat groove. Chike's smooth delivery contrasts with Mohbad's street-style vocals.*
- *Range: The vocal range varies between the two artists, with Chike maintaining a melodic mid-range while Mohbad adds a grittier, lower tone.*
- *Scale: A Major. This scale provides a bright, uplifting tone, contributing to the energetic feel of the song.*

Gwagwalada – BNXXN, Seyi VibeZ & Kizz Daniel

- **Chord Progression:** The song features a dynamic Afrobeat progression, though specific chords aren't readily available. However, it follows a typical Afro-fusion structure with rich harmonies.
- **Melody:** The melody is catchy and rhythmic, with BNXXN's smooth delivery, Seyi VibeZ's raw energy, and Kizz Daniel's polished vocals blending seamlessly.
- **Range:** The vocal range varies across the three artists, with BNXXN and Kizz Daniel maintaining mid-to-high tones, while Seyi VibeZ adds a deeper, more textured vocal layer.
- **Scale:** Likely C# Minor or a related Afrobeat scale

Given the Afro-fusion influences, the melody might involve pentatonic elements commonly used in Afrobeat compositions.

Sources cited: tabs.ultimate-guitar.com, www.chordzone.com, chordu.com, chordify.net, tooexclusive.com, music.apple.com

Response from Meta AI (30/03/2025):

Track Title	Chord Progression	Melody	Range
Lonely at the top	Unfortunately, I couldn't find the specific chord progression for the song	The melody is a mix of Afrobeats and Fuji, with a focus on Asake's vocal delivery	Asake's vocal range in this song is not explicitly stated...
Higher	Unfortunately, I couldn't find the track information for the other songs you requested.		
Gwagwalada			

Sources cited: mvmlyrics.com, www.zikoko.com,

Author's Analysis of Chord Progression, Melodic Movement, Scale and Range

From the transcription of the songs, their chord progression, melodic motion, scale structure and pitch range are examined in this section.

- **'Lonely at The Top'**

The figure shows a musical score for three instruments: Electric Piano, Strings, and Bass Guitar. The key signature is two sharps (F# and C#), and the time signature is 4/4. The Electric Piano part consists of four chords: F#m, Bm, E, and A, each held for one measure. The Strings part also consists of four chords: F#m, Bm, E, and A, each held for one measure. The Bass Guitar part consists of four measures of eighth notes: F# (labeled vi), B (labeled ii), E (labeled V), and A (labeled I). The labels vi, ii, V, and I are placed below the Bass Guitar part.

Fig.1: Recurring chord progression in Asake's 'Lonely at the top'

As shown in fig.1 above, the recurring chords in the track is F#m, Bm, E & A (vi-ii-V-I). It is an even combination of major and minor triads (primary and secondary chords). The melody proceeds in mostly conjunct motion, usually sloping downwards, having unitary and stepwise intervals. At the verses, the melody becomes undulating with repetitive phrase. There is a transverse movement between the lead vocal and the chorus. The former builds from high to low while the latter does the exact opposite, starting on a lower note to move upwards. Generally, there is ample use of melodic repetitions with subtle rhythmic adjustments across various sections.

The figure shows a musical score for a single instrument, likely a vocal line, in the key of A major. The scale is written as a sequence of notes: A, B, C#, E, F, G. The notes are placed on a five-line staff with a key signature of two sharps (F# and C#). The notes are labeled A, B, C#, E, F, G below the staff.

Fig.2: The scale of A major as heard in Asakes's 'Lonely at the top'

Based upon the number of tones of pitch class heard, the scale of A major is well established.: All the 7 degrees of the Major scale are heard with no chromatic note. The pitch range is fairly wide, spanning C#3-E4 (Compound minor third). This wide range counts for expressiveness in the melody.

The figure shows a musical score for a single instrument, likely a vocal line, illustrating the pitch range. The scale is written as a sequence of notes: C#3 and E4. The notes are placed on a five-line staff with a key signature of two sharps (F# and C#). The notes are labeled C#3 and E4 below the staff.

Fig.3: Pitch range of the voice in Asakes's 'Lonely at the top'

Based upon the number of tones of pitch class heard, the scale of A major is well established. All the 7 degrees of the Major scale are heard with no chromatic note. The pitch range is fairly wide, spanning C#3-E4 (Compound minor third). This wide range counts for expressiveness in the melody.

• 'Egwu'

Mu-sic no need per-mi-sion to en-ter your spi-rit a-ny way a-ny-how you know say you go feel me

Chord progression: I, V, IV, IV, V, I

Fig.4: Recurring Chord progression in 'Egwu' against a section of Mohbad's part

As seen in *fig.4* above, there are only three chords that are used in the track. They continuously recur throughout the work, progressing in a symmetrical and asymmetrical fashion from D-E-A and then in reverse from A-E-D. The three chords are major triads that forms the primary chords in the diatonic tonal makes the harmony simple and yet, aesthetically pleasing. The melodic phrases in the song are always descending and frequently repetitive. The melody is seen to frequently revolve around 'A', and then 'F' less frequently.

Scale wise, absolute pentatonism is heard in Mohbad's parts as shown in *fig.6*. His melodies exclusively feature five tones (A, B, C[#], E and F[#]), and since the melody mostly revolves around, and resolves to 'A' from which the third has the quality of major, it can be concluded that the scale is the 'major pentatonic of A'. In Chike's part, the melody is also based on the major pentatonic scale but there is a one-time use of 'D' which is the perfect fourth from the established tonal centre. This scale structure resonates with traditional African music, it is simple, less dissonance or harmonic tension against the chord progression. It is without a chromatic note, evoking feelings alongside the harmony.

I noneed talk am you go know, fee - ling good pa - ran - ran

Fig.5: Chike's melody showing one-time use of the subdominant (f) in circle

Mohbad's Pentatonic scale in A Major

A B C# E F#
d r m s l

Chike's Pentatonic scale in A Major with an added Subdominant

A B C# D E F#
d r m f s l

Fig.6: The scales used by Mohbad and Egwu respectively in 'Egwu'

The range covered by Mohbad in 'Egwu' is a compound minor third or minor tenth (m10), spanning from F[#]3 to A4. Chike's range is rather short, reaching a minor seventh (m7) from F[#]3 to E4.

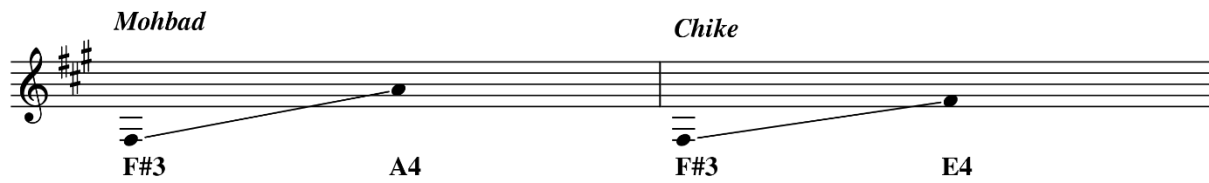


Fig.7: The range covered by Mohbad and Egwu respectively in 'Egwu'

• 'Gwagwalada'

studies from the transcription of the songs, the chord progressions are studied.

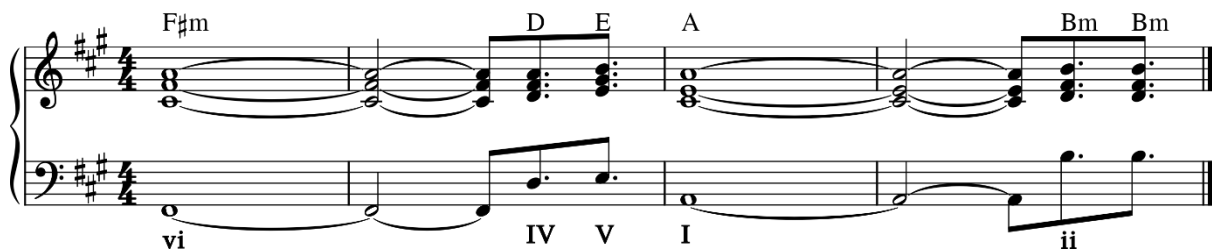


Fig.8: Recurring chord progression in 'Gwagwalada'

The recurring chord progression in 'Gwagwalada' features F[#]m, D, E, A and Bm. Essentially, the harmonic structure that defines the music is based on the movement from F[#]m and A, while D, E & Bm are deployed as passing chords. This movement from F[#]m and A is unique because of the relationship that exists between diatonically. There is possibility that they are both tonal centres for minor and major keys respectively within the same musical context. So, it becomes a bit delicate to determine the tonal centre of the music since it could be in a major or minor key, however, the author's justification for deeming it as 'A Major' is that the progression from D - E - A gives us IV-V-I which is a standard harmonic movement that involves a perfect/authentic cadence. F[#]m on the other hand is approached by Bm which is plagal (iv-i) and rarely seen in the ending of a piece in minor key. Perhaps a C[#] (III) chord before F[#]m would have changed the narrative.

The melodies in the track are undulating and conjunct, hovering around the mediant (m), then resolving downwards to the tonic (d) at the end of each section. There many of repeated phrases across various sections. There is a well-established predominance of pentatonic scale in 'Gwagwalada', almost absolutely but Seyi Vibe used the subdominant (f) a number of times in his own verse (shown with a smaller notehead in *fig.9*). It is also noteworthy that there is a transverse movement between the lead vocal melodies and that of the chorus.

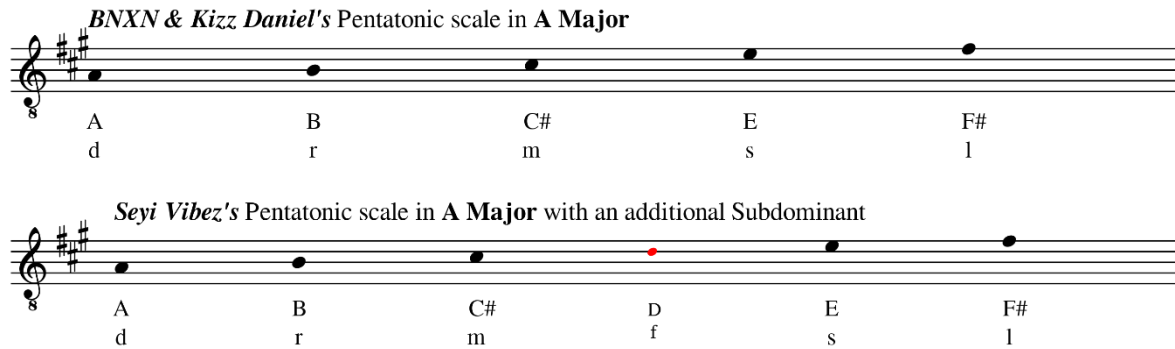


Fig.9: The scales used by artists in 'Gwagwalada'

Each of the singers featured in this track maintained a moderate range (less than 2 octaves) in their respective parts. BNXX and Kizz Daniel used a perfect eleventh (P11) from E3 to A4 while Seyi Vibez stayed within an octave from E3 to E4. This fact accounts for the compactness of the melody.



Fig.10: The ranges covered by artists in 'Gwagwalada'

Third Phase

This phase is borne out of the author's need to determine the appropriate musical term that can be used to describe the *vi – V – I* progression used in Burna Boy's 'Higher' track. He decided to ask Aria to check if its response would be useful. The dialogue between the author shows is presented and the implications are mentioned in the discussion of findings.

Author's Prompt 1:

What is *vi – V – I* progression called in music?

Aria's Response 1 (02/01/2025):

A vi-V-I progression in music is commonly referred to as a "deceptive cadence."
Breakdown:

vi: Represents the minor chord built on the sixth degree of the scale.

V: Represents the dominant chord built on the fifth degree of the scale.

I: Represents the tonic chord, which is the home chord of the key.

Characteristics:

This progression creates a sense of tension and release, leading the listener from the minor chord to the dominant chord before resolving to the tonic. It's often used in various genres to add emotional depth and complexity.

Sources cited: none

Author's Prompt 2:

I thought deceptive cadence ends with chords *V – vi*?

Aria's Response 2 (02/01/2025):

You're correct! I appreciate your attention to detail. Let's clarify the terms: Deceptive Cadence: A deceptive cadence typically resolves from V (dominant) to vi (submediant), creating a surprise instead of the expected resolution to the tonic (I).

vi-V-I Progression: The vi-V-I progression does not constitute a deceptive cadence. Instead, it can be viewed as a harmonic progression that moves from vi to V and then resolves to I. This creates a more straightforward resolution rather than the deceptive quality.

Summary: Deceptive Cadence = $V \rightarrow vi$

vi-V-I Progression = Moves through vi and V before resolving to I.

Sources cited: none

Author's Prompt 3:

So why did you refer to vi – V – I as a deceptive cadence before?

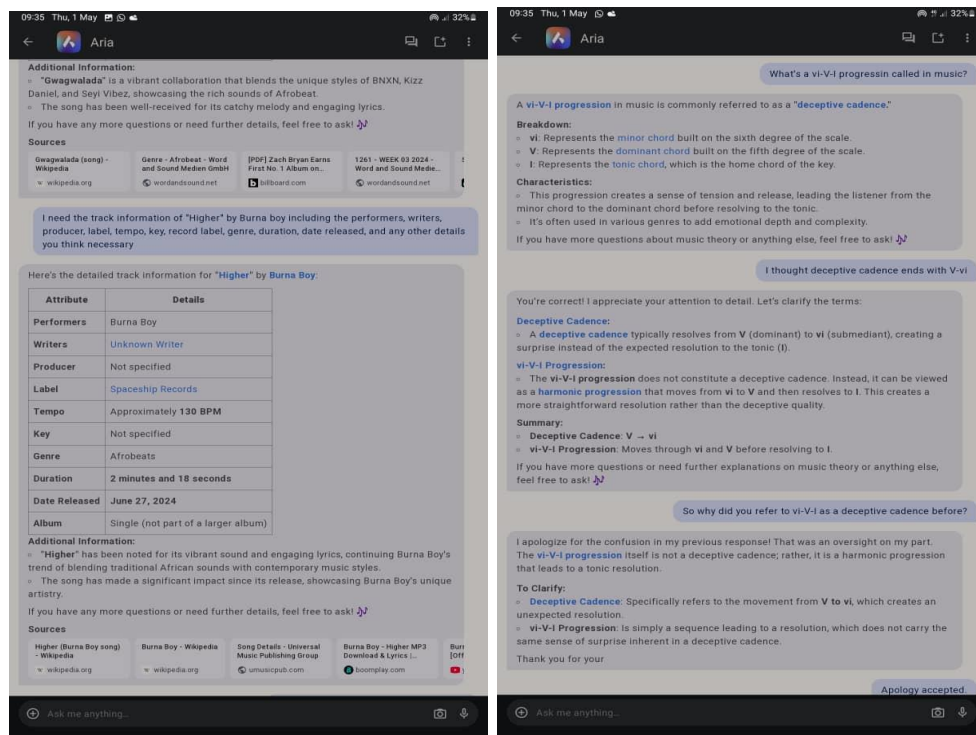
Aria's response (02/01/2025):

I apologize for the confusion in my previous response! That was an oversight on my part. The vi-V-I progression itself is not a deceptive cadence; rather, it is a harmonic progression that leads to a tonic resolution.

To Clarify: Deceptive Cadence: Specifically refers to the movement from V to vi, which creates an unexpected resolution.

vi-V-I Progression: Is simply a sequence leading to a resolution, which does not carry the same sense of surprise inherent in a deceptive cadence.

Sources cited: none



Figs. 11&12: Screenshot of Authors's interrogation of Meta's Aria

Discussion of Findings

Juxtaposing responses from the chatbots with the authors analysis/results reveals that only a handful of the AI responses are absolutely correct, while the rest are either inadequate, not precise, generic, not specified or outrightly wrong. The correct responses in the first phase are minimal, with Copilot managing to get the key of three songs correctly and their duration. The rest has of them did not fare as well. In the second phase, only responses relating to chord progressions are correct and a few from scale. This may be due to the fact that they are musical aspects that have specific definition or description, unlike melody which has several parameters to describe it and there is a tendency for omitting some important points since the chatbots are not required to be exhaustive about the topic. However, the aspect of range is also supposed to be a specific one, but none of the chatbots gave any precise pitch range for the songs.

Outrightly wrong responses are seen in the interrogation on key, duration, and tempo in the first phase. Meta AI and Aria had more of these wrong responses than Copilot. As seen in the third phase where Aria was quizzed about cadence, it is obvious that the chatbot is clueless about the type of cadence asked, and instead of acknowledging this, it gave an erroneous reply.

Inadequate or non-specific responses are also recorded in the chatbots' responses. These are answers that were either not comprehensive enough to capture the essence of the prompt, or literally given as "unspecified". While Meta AI has most of the "unspecified" response, the inadequate ones are found across all three chatbots especially in the second phase where they were unable to astutely delineate the melody, range and scale of the songs, instead are describing it on the surface level. It is worthy of note that Meta AI simply "couldn't find" anything to say on the chord progression, melody, scale and range of the selected songs when probed.

The table below presents a summary of the AI-chatbot responses across all three phases of interrogation, classified by response type and benchmarked against the author's musicological findings. The "Accuracy" column is simply the percentage of responses judged fully correct when compared to the author's transcriptional analysis.

Table 1. AI Chatbot Response Accuracy in Musical Analysis

Chatbot	Total Queries	Correct	Incorrect	Non-specific/ Unspecified	No Response ("couldn't find")	Percentage Accuracy
Copilot	29	9 (31 %)	10 (34 %)	8 (27 %)	2 (7 %)	31(%)
Meta AI	29	5 (17 %)	8 (28 %)	10 (34 %)	6 (21 %)	17(%)
Aria	21	4 (19 %)	9 (43 %)	6 (29 %)	2 (10 %)	19(%)
Overall	79	18(23%)	27 (34 %)	24 (30 %)	10 (13 %)	23 (%)

Notes to the table:

- Total Queries: number of individual data-points requested (e.g. tempo, key, chord progression, etc.) across the three phases.
- Correct: AI response fully matched the author's verified transcriptional analysis.
- Incorrect: AI response directly contradicts the author's findings.
- Non-specific/Unspecified: AI gave an answer ("Not specified", generic descriptions) but without verifiable detail.
- No Response: AI explicitly declined or said it could not find the information.
- Accuracy: $(\text{Correct} \div \text{Total Queries}) \times 100$; reflects reliability against the author's ground-truth.

Overall, the three chatbots achieved only a 23 percent success rate when measured against detailed, score-based musicological analysis.

Checking the sources cited by the various chatbots also exposed that the AI technology in them has a fundamental limitation in that it is not capable of analysing the song by itself, rather, it excavates published websites for relevant information to aspects of the music it is required to analyse. It then aggregates these streams of information, articulates them and presents them as analytical findings, hence the need to reference the sources in the first place. The sources cited include websites that provide chord sheets (e.g. chordify.net, mychords.net and ultimatoguitar.com), streaming platforms that displays the metadata of songs (e.g. tooexclusive.com, soundcloud.com, and music.apple.com), those that ranks music based on number of streams and audience engagement (e.g. officialcharts.com), and lastly video sites that offer a wide range of musical contents that may include analysis of the selected songs as well as interviews from the artist among other audio-visual reports on the works (Youtube.com).

The findings of this study therefore reinforce the proposition that AI-generated musical analyses lack the analytical depth attainable through human-mediated transcription and interpretation. Chatbots access an assortment of tertiary sources including chord databases, streaming metadata and user-generated annotations, and then compile responses by pattern matching rather than by scoring the sonic material itself. Consequently, AI explanations often resort to layman terminology – describing a progression simply as “common” or a melody as “catchy” – without engaging with nuanced parameters of establishing the tonal centre, chord progressions, melodic movement, scale structure or vocal range that a practising musicologist would foreground.

Conclusion and Recommendation

This study has demonstrated that, despite their technological sophistication, AI chatbots remain fundamentally aggregators of online sources rather than autonomous agents of musical insight. Their analyses are frequently characterised by subjectivity inherited from unevenly documented web materials, vulnerability to factual errors, and a pervasive non-specificity that falls short of the precision achievable through human-led transcription. Moreover, without a mechanism for presenting quantified sonic data such as annotated scores

or cadence graphs, chatbot outputs offer at best a superficial account of harmonic progressions and melodic contours.

The average accuracy metrics being about a quarter of total queries, underscore the gulf between algorithmic approximation and rigorous musicological scrutiny. Far from displacing the expert analyst, these findings affirm the irreplaceable value of the musicologist's trained ear, culturally grounded intuition and familiarity with indigenous idioms. Hence, it is implausible that AI replace musicologists anytime soon.

To bridge this divide, I recommend a two-fold strategy. First, the corpus of analytical studies on Nigerian popular and indigenous music must be expanded and made accessible to AI developers. Annotated scores, genre-specific cadential analyses and normative performance practices should be integrated into training datasets so that chatbots can learn from expert-validated sources. Second, music students and emerging scholars should be cautioned against uncritical reliance on AI for analytical assignments; instead, they ought to employ these tools as preliminary aids, and endeavor always to subject ideas from them to verification through accurate transcription and reflective critique.

Finally, future research might undertake a counter-comparative study in the realm of Western classical music, where AI's accuracy is likely bolstered by a richer repository of scholarly analysis, in order to test the hypothesis that under-documented repertoires yield poorer chatbot performance. Such a study would not only further validate the present findings but also chart a roadmap for the co-evolution of AI and musicology, ensuring that algorithmic tools augment rather than undermine the interpretive authority of the human scholar.

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