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## **ARTIFICIAL INTELLIGENCE (AI) AND FOLK MUSIC: A TWENTY-FIRST CENTURY APPROACH IN MUSIC COMPOSITION AND DOCUMENTATION**

### **Abstract**

*Folk music has always been an integral part of cultural heritage, passed down through generations and reflecting the stories and traditions of different communities. This paper delves into the impact of AI on folk music composition in Nigeria, and specifically focuses on the process of documenting and disseminating it for public consumption. The paper explores how a digital approach can enhance folk music composition, documentation, and its dissemination through AI intervention. This study adopts a practice-based approach whereby creative works (compositions or arrangements) are used as primary data for descriptive analysis. It evaluates the digital process of composing or creating Igbo folksy tunes using three (3) methods of interfacing with selected digital or AI tools. These digital compositional methods include, i) the imputation method for Sibelius software, ii) the voice recording method for the Klangio tool, and iii) the prompting method for ChatGPT. This study draws on Social Change Theory to highlight the compositional process that foreshadows the interventional role of AI tools in the creation of folk music, particularly in Nigeria using Igbo thematic materials- Egbe belu, Ugo belu and Ihunanya Di Nma for the compositional process. The imputation of musical data into the selected digital / AI platforms or tools highlighted the following outcomes: i) The Sibelius software presented a more structured sheet music and audio output, ii) The Klangio AI tool, though it presented a music sheet, the final document was a bit distorted in terms of rhythmic representation. However, the audio element did come out intact. iii) The ChatGPT with more specific prompts on preferences such as title, texts/ lyrics, tonal centre, tempo, rhythm, melody and harmony, had serious inconsistencies in the representation of the aforementioned musical elements. In the final analysis, integrating AI in folk music composition and documentation meets the utmost challenge of misrepresenting cultural nuances and linguistic parameters. Despite this key challenge, the use of AI in composing folk music offers a transformative approach in enhancing creativity, preserving cultural heritage, and streamlining distribution.*

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**Keywords:** Artificial Intelligence, Folk Music, Sibelius software, ChatGPT, Klangio tool, Documenting

## Introduction

Folk music, in its traditional perspective, is a community-based music which is passed down orally through generations. It is without any known composer(s) and thus reflects the culture and daily lives of ordinary people (Encyclopaedia Britannica). It historically emanates from socio-cultural engagements and interactions, and is usually conceived within specific societal or cultural parameters, employing a common language that helps disseminate the desired messages to a homogenous group or entity (Iwu & Oraegbunam, 2016; Eze, 2023). However, within the context of this study, 'contemporary folk music' applies. By contemporary folk music, we imply a composed folk music/ song by a known composer using the traditional style that encapsulates the cultural nuances. The compositional process may be via popular culture (highlife, neo-traditional, pop, etc) or through art music.

Artificial Intelligence (AI) refers to the capability of computational systems to perform tasks typically associated with human intelligence, such as learning, reasoning, problem-solving, perception, and decision-making (Martinez, 2024). Singh and Jadhav (2025) opine that AI, as a subfield of computer science, provides the systems that accomplish the tasks that are inherent to human cognitive capabilities. Incidentally, all the sectors in Nigeria, e.g. Telecommunication, Education, ICT, Agriculture, Music & Entertainment, etc., have all been impacted in one way or another with Artificial Intelligence (AI) through digital processes of running such sectors

Presently, AI is increasingly used in music composition to assist in generating melodies, harmonies, and rhythms, offering tools for creating original music or assisting with existing compositions. Current use of AI includes film scores, music for video games, clinical music, and custom music list compilation (Wei J. and Tan, R., 2022). However, since the advent of AI, music composition has taken a new dimension and thus brought about different digital options in which musical ideas could be expressed.

However, the deployment of Artificial Intelligence to the composition of music has only been discussed through foreign literature and academic discourses (Zulic, 2019; Kumar Ohja, 2022;

Zhang, 2023; Chen, 2024; Vengathattil, 2025; Kharlamova, 2025; Zhao, 2025). In the recent past, little has been seen in terms of academic discourse by scholars and musicologists in Nigeria on AI intervention in music creation. It was at the last 2025 conference of the Society of Music Educators of Nigeria (SOMEN) that researchers, educators, composers and other professionals were made to engage in various research and studies on the deployment of AI in different areas of specialisation in music.

The foregoing thereby necessitated the emergence of this study, which discusses the processes by which AI, through the “machine learning system approach” (Martinez, 2024), innovates music composition or creation. It helps compose contemporary folk music by applying knowledge and generating new pieces that may be created entirely autonomously or with human participation (Singh and Jadhav, 2025).

The following research questions served as guides to this study:

1. What is a ‘machine learning system’, and how does it innovate and assist in the music compositional process, especially folk music in the twenty-first century?
2. What AI-assisted platforms can aid in the composition, documentation, and dissemination of Igbo folk music to a wider audience?
3. What are the challenges and prospects that result from AI’s intervention in folk music composition, coming from the backdrop of cultural and linguistic peculiarities?

## **Research Methods**

This study is both descriptive and interpretive, it further adopts a practice-based method in which the researcher’s creative output (compositions) serves as primary data for experimenting with AI tools for music creation. Secondary data were obtained from scholarly articles, music software documentation, and recorded Igbo folk music samples.

Given the study’s thrust-interrogating the application of AI-assisted tools in the process of composing contemporary folk songs, it adopts the following steps regarding creating audios and sheet music from the selected compositional samples *Egbe belu*, *Ugo belu* and *Ihunanya di nma*.

1. Composition by input method,
2. Composition by voice recording input, and

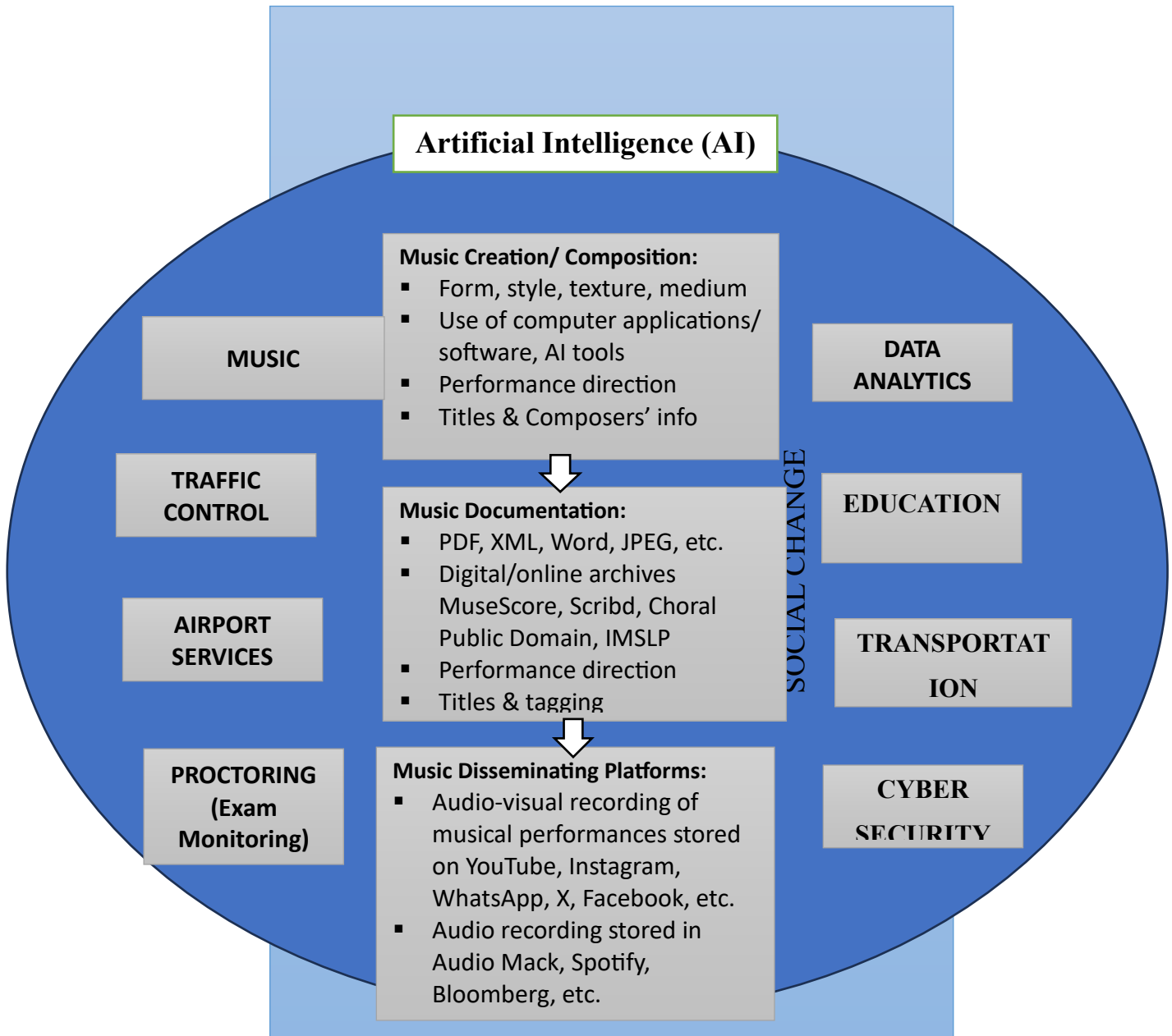
### 3. Composition by the prompt method.

Each method has a variety of digital/AI tools that fall under various descriptions and functionalities.

#### **Theoretical Framework**

The study adopts social change as the theoretical framework, leveraging the Technological theory as a foundation for discussion. Social change is the alteration of mechanisms within the social structure, characterised by changes in cultural symbols, rules of behaviour, social organisations, or value systems (Form and Wiltedink, 2025). In this context, the social change is driven by the technological/industrial revolution through the insurgence of Artificial Intelligence (AI) across the globe.

Music in the midst of other humanistic endeavours has passed through a series of evolutionary trends from the historic past to the present, highlighting the following areas: theories, teaching & learning, compositional styles/techniques, performance styles, documentation, distribution, and audience participation. Composition, which concept falls within the purview of musicology or ethnomusicology-especially on folk music - emphasises the cultural context of music, underscoring the importance of preserving authenticity and community values even in a technologically mediated environment.



**Diagram 1 shows the effect of Technological (AI) Advancement on key sectors of the Nigerian Economy, including the music sector (Osinigwe, C.N.)**

The diagram above shows how key sectors of the Nigerian Economy are driven by technological advancement through the instrumentality of Artificial Intelligence (AI). The music sector is not left out in the technological drive. Digitisation through AI-driven initiatives helps the process of music creation/ composition, documenting and dissemination.

## Machine Learning System in Music Composition

According to Martinez Jr (2024), “machine learning is a subset of AI which plays a significant role in the development of AI music technology”. Machine learning in music involves feeding the system with a diverse range of music, allowing it to ‘learn’ from the different styles, structures, and elements present. This data then becomes its reference point for creating original compositions (2024, online).

Martinez Jr further identifies a key concept of AI in terms of music composition, which is the *‘neural networks*. In his treatise, ‘How Artificial Intelligence is Revolutionising Music Composition’, he explains:

In a typical neural network for music composition, the first layer (input layer) receives a set of musical notes or an entire score. This data is passed through various hidden layers, each operating on it. The final layer (output layer) then generates a piece of music based on the transformations the data underwent. The beauty of neural networks is that they can be trained repeatedly, improving their music composition capabilities with each training cycle (2024, online).

On the other hand, side by side with Machine Learning (ML) in music creation, is the Natural Language Processing (NLP). This helps in understanding and generating lyrics for songs. Also, Deep Learning networks have proven successful in the automatic transcription of music, converting audio tracks into musical notes. Such capabilities allow musicians to work faster and with more precision, drastically improving their productivity (Martinez, 2024).

Different areas or genres of music AI have been applied (or used for composition) from the historical past till the present:

1. An album titled “I AM AI” and released in 2018 had all the songs fully composed and produced by an AI tool, specifically, Amper Music’s AI. Taryn Southern carried out this innovation.
2. The use of Huawei’s AI model to analyse the timbre, pitch, and meter of Beethoven’s unfinished Symphony No. 8, which was completed based on the analyses carried out by a team of AI engineers and musicians. The final result was a harmonious extension of

Beethoven's original piece, demonstrating the potential of AI in exploring historical styles and tones.

3. Jukin Media utilised Jukin's proprietary AI, Lumen5, to compose soundtracks for its video content. The AI analyses the video's narrative, pace, and emotional tone, using these inputs to compose a compatible soundtrack.

These instances are not only revolutionary but also showcase the personalised, efficient, and cost-effective solutions offered by AI in music composition.

### **Folk Music and AI**

The performance of folk music is usually through vocal deliveries and most times accompanied by percussive or melodic instruments (Okpala, 2016). Historically, folk music is usually composed via the rote system, that is, a mechanical routine of repetitive technique for the retention and dissemination of folksy tunes. Iwu and Oraegbunam posit that Igbo folksongs are characterised by their (a) Orality – they are transmitted orally and not in any written form; (b) Simplicity – they are usually simple to learn; and (c) Communal Ownership – they belong to everyone in the community (2016:112).

Music composition, on the other hand, is an act of creating musical pieces (new or existing) using the musical elements such as melody, harmony, rhythm and form to a specific soundscape and mood. In the current digital age influenced by massive technological advancements, AI (Artificial Intelligence) has been increasingly deployed in music composition to assist in generating melodies, harmonies, and rhythms, offering tools for creating original music or assisting with existing compositions. It collaborates with human composers or musicians in the process of music creation. The task of inputting musical data into the computer software or digitised platforms can only be done by humans, while the processing of the data is done by the software/ programs.

Therefore, using AI to create or compose Igbo contemporary folk music, especially in the twenty-first century, the following methods are used to generate sheet music with the aid of AI/ digital tools:

1. **Composition by the input method** – this process involves inputting musical data (pitches/ tones, instruments, dynamics, etc.) into digital or AI tools, programs, or software, either in a computer (Microsoft Windows, Apple macOS, Linux) or mobile phone (Android and Apple IOS) environment. In this method, the composer determines

the choice of melody, harmony, and ensemble he needs for a particular composition. The function of these digital or AI tools is to process the input data and then generate the audio files (mp3, wav, aiff), midi files, video files (wmv, mp4), and sheet (xml, pdf, jpeg), respectively. Examples of sheet-generating AI/ digital tools of composed folksongs include: i) **Windows platforms:** Finale, Sibelius, MuseScore, Notion, Dorico, and Noteflight; ii) **Android platforms:** Aiva, Score creator, Musicnotes, Flat: music score, MuseScore, and Maestro.

2. **Composition by Voice Recording method** – this involves using the voice to sing any particular folksongs (new or existing) as a voice note using AI tools, which in turn processes it to generate sheet music with the appropriate key centres and desired pitch levels indicated in the recording. Audio – sheet music converting AI tools include: Klangio, Vmake AI, Anthem-score, Melody-scanner, etc.
3. **Composition by Prompt method** – prompts are used either by voice or in writing to instruct an AI tool to initiate a compositional process. These prompts carry information such as the title of the song, the choice of key, the desired medium (vocal or instrumental) and the musical texture intended. This information is processed by an AI tool and thereafter generates sheet music, which is downloadable using other associated AI tools. AI sheet music creators through chat or voice prompts include: Chat GPT, Gemini API, Neural writer, Chatx.ai, and Originality.ai.

### **Creating Igbo Contemporary Folksongs using AI**

Before engaging in the compositional process of a contemporary Igbo folk music, the composer needs to carry out the following non-technical & technical considerations:

Non-technical considerations:

Theme – religious, secular, folksy, etc.

Language & Texts – certain ethnic dialect, mixed codes

Medium – voices only or voices with instrumental accompaniment

Tune – new or existing tunes

Audience – local, elites, religious/secular

Technical considerations:

Musical form/ structure – AA, AB, ABA, ABACADA, etc.

Musical textures – solo, solo & accompaniment, mixed voices (SATB)

Key centers/ modes – tonal (major/ minor), modal or atonal

Beat structure/ Rhythm – duple, triple, quadruple; simple or syncopated rhythm

Compositional techniques – contrapuntal, antiphonal, fugal, etc.

Melodic structure – simple & short, stepwise/conjunct, chromatic, skips & leaps

Harmonic structure – triads, seventh, ninth, eleventh, and thirteenth chords

Performance instructions – mood/ dynamics, speed, and articulations.

In this study, AI/ digital tools are selected from the three (3) compositional methods mentioned above for experimentation using simple composed folk tunes in the Igbo language. This attempt is to verify the authenticity and functionalities of these aforementioned AI/ digital tools in creating music, especially Igbo contemporary folk music. The selected AI/ digital tools are:

- a. Digital tool for imputation and generation of sheet music – Sibelius music software
- b. AI tool for voice recording and generation of sheet music – Klangio AI Tool
- c. AI tool for chat prompts and creation of sheet music – ChatGPT

### **Sibelius Music Software**

This is a computer-based music sheet software/ programs used for notation, scoring, layout, and publishing. Like other music sheet software/programs (Finale, MuseScore), Sibelius has a better playback feature for hearing input scores.

A simple Igbo folksong (*Egbe belu, Ugo belu*) was re-arranged with the Sibelius Ultimate music program for a male solo section with accompanying instruments such as guitars (lead, rhythm, and bass), drum sets, and keyboard, indicating a pop style of music. The Sibelius interface of the song is shown below:

The screenshot displays the Sibelius music software interface. The main window shows a score for the piece "EGBE BELU, UGO BELU" by C.N. OSINIGWE. The score is arranged in a full score view, showing parts for Lead Vocals, Lead Guitar, Rhythm Guitar, Bass Guitar, Drum Set, and Keyboard. The tempo is marked "Andante" with a quarter note equal to 100 beats per minute. The interface includes various toolbars and a keypad on the right side.

**Diagram 2 shows the interface of the Sibelius Ultimate music program with the sample re-arrangement titled: “Egbe belu, Ugo belu”**

The song (which is an excerpt of an original song) was exported into downloadable files: Sheet music – graphics, pdf, xml; audio -midi, wav, mp3; and video – mp4, YouTube; for easy documentation and dissemination, especially using online platforms. The music sheet (PDF) version of the song is shown below:

**EGBE BELU, UGO BELU**

O FOLK C.N. OSINIG

Andante ♩ = 100

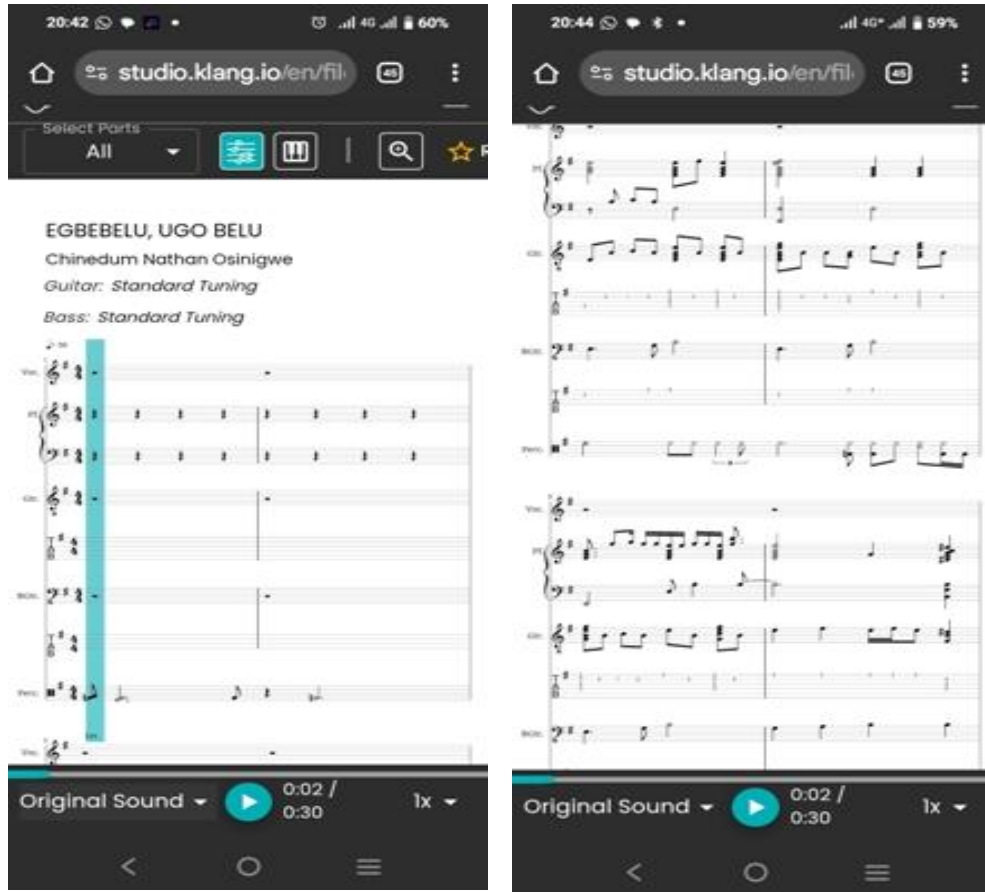
The musical score is arranged in six staves. The top staff is for Lead Vocals in bass clef, with lyrics 'E - gbe be - lu, u - go be - lu,'. The second staff is Lead Guitar in treble clef. The third staff is Rhythm Guitar in treble clef. The fourth staff is Bass Guitar in bass clef. The fifth staff is Drum Set in a drum notation style. The bottom staff is Keyboard in grand staff (treble and bass clefs). The tempo is marked 'Andante ♩ = 100' and the time signature is 4/8.

**Diagram 3** shows the music sheet (PDF) version of the folk song re-arrangement titled: *“Egbe belu, Ugo belu”*

### Klangio AI Tool

This is an AI music software that houses other developed AI tools for music transcription purposes. Associated with the Klangio AI software are the following subsidiary tools such as transcription studio, transcription plugin, Piano2Notes, Guitar2Notes, Sing2Notes, Scan2Notes, Melody Scanner, and klangio API. This AI initiative operates on the Android Operating System of sophisticated mobile phones.

In order to experiment on the use of the software, the video file of *“Egbe belu, Ugo belu,”* (from which a score video file was created in Sibelius and uploaded to the YouTube platform) was uploaded into the Klangio platform via the video link, for further transcription. There were prompts to select instruments and add lyrics (if any) during the transcription process. The software equally ascertains the correctness of the song title and the composer’s name before the transcription process. Shown below is the interface of the demo version of Klangio AI software with the transcribed song:



**Diagram 4 shows the transcribed version of “Egbe belu, Ugo belu” on klangio AI platform**

After transcription of the song on Klangio, different downloadable options were available: audio – midi; sheet – MusicXML, Lilypond, PDF, and more. Below is the sheet music (PDF) version of the transcription:

# EGBEBELU, UGO BELU

Chinedum Nathan Osinigwe

The first system of the musical score is for the first three measures. It features four staves: Piano, Guitar, Bass, and Drums. The tempo is marked as quarter note = 98. The key signature has one sharp (F#) and the time signature is 4/4. The piano part has a treble and bass staff with a series of chords and a melodic line. The guitar part has a treble staff with a melodic line and a bass staff with fret numbers (0, 1, 0, 0, 0, 0, 0, 0). The bass part has a bass staff with fret numbers (2, 0, 4). The drums part has a single staff with a drum set icon and a rhythmic pattern.

The second system of the musical score covers measures 4 through 7. It continues with the same four staves: Piano, Guitar, Bass, and Drums. The piano part has a treble and bass staff with a series of chords and a melodic line. The guitar part has a treble staff with a melodic line and a bass staff with fret numbers (0, 0, 0, 0, 0, 3, 0, 3, 0, 1, 0, 0, 3, 0, 0, 2, 0, 2, 0, 4). The bass part has a bass staff with fret numbers (2, 0, 4, 2, 0, 4, 0, 2, 4, 4). The drums part has a single staff with a drum set icon and a rhythmic pattern.

Diagram 5 shows the transcribed pdf version of “Egbe belu, Ugo belu” on klangio AI platform

Comparing the two sheets from both Sibelius and Klangio, it is observed that the one generated by Klangio looks less structured in terms of the arrangement of different instruments available

within the song. Though the audio file created through the Klangio platform sounds the same as that of the Sibelius audio-visual sound.

### **ChatGPT**

This is a powerful AI chatbot developed by OpenAI that can generate human-like texts, answer questions, and perform various language-based tasks. It is trained on a massive dataset of text and code, allowing it to understand and respond to a wide range of prompts and instructions (Roumeliotis and Tselikas, 2023).

The researcher, in having a chat with ChatGPT, gave a prompt that it should help in composing a folksong in the Igbo language for a choir. In response, ChatGPT requested more information on the following musical elements:

1. Lyrics (Texts) generation in Igbo – ChatGPT needed the researcher to describe the theme, mood, and traditional elements to generate the lyrics.
2. Melody & Harmony creation – information on the type of scale and key centre for melody generation, and choral arrangement (SATB), and musical texture intended by the researcher to create the harmonic structure of the song.
3. Rhythm and Instrumentation – it suggested the use of rhythmic patterns inspired by traditional Igbo music (e.g. *ogene*, *udu*, *ichaka*). It further suggested the notation of the rhythmic parts for conventional percussion.
4. Notation and Audio Tools – it offers to write the song in ABC notation, Lilypond, or MusicXML, which can then be imported into MuseScore, Sibelius, or Finale. It also offers a rough MIDI mockup of the melody/ harmony to appreciate the overall output of the newly composed song.

The response to the above queries from the researcher states:

1. Theme – Love
2. Mood – gayly
3. Speed – moderate
4. Texture – SATB
5. Lyrics – in Igbo

Based on the response above, ChatGPT came up with the following suggestions:

1. Title: “Ihunanya Di Mma”
2. Lyrics in Igbo:

**Verse 1:** Ihunanya di ka Anyanwu  
Na-enwu n'obi mmadu  
O na-eto dika ifuru  
N'ubi nke Ihunanya.

**Chorus (Call & Response style)**

Call (Sop&Alto): Ihunanya!  
Response (All): O di nma, o di uto!  
Call (Sop&Alto): Ihunanya!  
Response (All): Na-eme ka obi ma nma!

**Verse 2:** Mgbe m huru gi n'anya  
Obi m zuru-ike  
Anyi ga-ebi n'odo  
N'ime Ihunanya anyi.

3. **Key:** F Major (bright, natural-sounding)
4. **Tempo:** 96-104 BPM (Moderato)
5. **Rhythmic Feel:** Light danceable 6/8 or 4/4 with syncopation common in folk rhythms
6. **Texture:** SATB (Verse and Chorus)

After much time processing the information shared with ChatGPT, it was able to generate a Lilypond code for the intended composition. The code was pasted on <https://lilybin.com> to generate downloadable (PDF) sheet music and the MIDI file. Shown below is the sheet music (PDF) of '*Ihunanya Di Nma*' created by ChatGPT:

**Ihụnanya Dị Mma**

Composed with AI Assistance

Moderato e gioioso (♩ = 100)

The musical score is presented in two systems. The first system contains four staves: a vocal line (treble clef), a piano accompaniment line (treble clef), a vocal line (treble clef), and a piano accompaniment line (bass clef). The second system also contains four staves: a vocal line (treble clef), a piano accompaniment line (treble clef), a vocal line (treble clef), and a piano accompaniment line (bass clef). The lyrics are written below the vocal staves.

I - hu - na - nya di ka a - nya - nwu, na - e - nwu  
 I - hu - na - nya! I - hu - na - nya!

O di mma, o di u - to! Na - e - me ka o -  
 n'o - bi m. Mgbe m hụrụ gi n'a - nya, o - bi m  
 bi maa mma!

Diagram 6 displays the transcribed sheet music (PDF) version of “*Ihynanya Di Nma*” as generated by ChatGPT.

Examining the music sheet of the composed Igbo folksong generated by ChatGPT reveals several inconsistencies between the intended result and the outcome. Firstly, the musical texture (SATB) and antiphonal exchanges were not well represented in the score sheet. The music sheet came out scanty and fell short of the expected end. Secondly, the music and texts did not align properly in terms of the tonal inflexion of the language being respected. This, however, indicates one of the shortcomings of using AI-assisted tools in contemporary folk music composition.

## Discussion of Findings

AI has revolutionized the way music is created, produced, and distributed. In this study, the possibility of using a machine learning system to compose folk music using AI-assisted tools has been established. AI algorithms can analyze and categorize different folk music genres, as was done in the song *Ihunanya Di Nma*, created by ChatGPT.

This study has also identified various AI tools and platforms that can assist in musical composition, especially that of Igbo contemporary folk music. Three methods of using AI-assisting tools and digital software in music composition were equally discussed. Bringing to the fore methods such as input, audio recording, and chat prompts. The different digital or AI tools used under each method were presented and discussed.

Lastly, the basic functions of AI in the composition of folk music have been highlighted as melody generation, harmonization, form structuring, and hybridization, in the course of this study. However, it is observed that there are some fundamental challenges in the use of AI system in composing Igbo contemporary folk music. This has to do with the cultural customization of the AI system. Some of the challenges envisaged are:

1. **Authenticity:** AI may misrepresent cultural nuances if not properly guided.
2. **Data Limitations:** AI models require large datasets, which are scarce for African music traditions.
3. **Accessibility:** Many AI tools are expensive or require high computational resources.
4. **Ethics:** Questions around authorship, cultural ownership, and originality arise when AI is involved.

The prospects of this new technological advancement called Artificial Intelligence (AI), especially in the Nigerian cultural space, cannot be overlooked. Some of the prospects include:

1. **Digital Archiving:** Composed works can be stored and shared through platforms like IMSLP or MuseScore.
2. **Wider Reach:** Digital platforms enable global distribution of culturally rooted compositions.
3. **Education:** AI can serve as a teaching aid for composition and music theory with indigenous content.
4. **Collaborative Composition:** AI-human partnerships foster innovative music-making approaches.

## Conclusion

Having attempted creating or composing Igbo contemporary folksongs using the digital platforms powered by AI, it is evident that one out of the three methods applied did not give the desired outcome in terms of maintaining the cultural features of the selected folk material. Like in the case of the prompt method of the ChatGPT, the outcome showcased lack of integrity with the melodic lines created. It negates the tonal inflection of the chosen texts, thereby giving it a different contextual meaning derivable from a typical contemporary Igbo folksong. The use of music software such as Sibelius, MuseScore, Notion, Dorico, and Noteflight, among others software are agelong and quite adaptive to creating desired soundscape intended by the composer. The study recommends the aforementioned music software for the composition and documentation of folksongs, especially the contemporary ones.

Artificial Intelligence (AI) presents both challenges and equally opportunities for composers of Igbo art music. It is advised that AI should be seen as complementary design to support the artistic invention of composers, especially in Nigeria. AI compositional tools can assist in preserving and reimagining traditional and contemporary folksongs within a modern compositional framework. This paper advocates for interdisciplinary collaborations that combine cultural knowledge with technological expertise to ensure that Igbo musical heritage evolves without eroding its essence.

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