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EXPLORING THE POTENTIAL OF AI ASSISTED TOOLS IN COMPOSING NEW CHURCH HYMNS: A CASE STUDY OF KLANGIO AND ANTHEMSCORE.

Abstract

The integration of Artificial Intelligence (AI) in music composition has transformed traditional approaches to hymn writing and transcription. This study explores the application of two AI-based tools Klangio and AnthemScore to assess effectiveness, capabilities, and limitations in the composition and notation of hymns. Klangio offers instrument-specific transcription from audio to sheet music, while AnthemScore specializes in polyphonic music analysis and score generation. The study identifies key strengths of these tools, including time efficiency, accessibility, and initial transcription support, significant limitations were observed, such as poor handling of complex harmonies, limited rhythmic accuracy, lack of dynamic and articulation recognition, and the inability to integrate lyrics an essential feature in hymnody. Based on these findings, the study recommends the use of these tools as assistive technologies rather than standalone solutions, emphasizing the need for manual refinement and human musical judgment. It further calls for the development of AI features tailored to sacred music, such as lyric synchronization and real-time collaboration. This study contributes to the growing discourse on AI in creative arts and underscores the continued importance of human involvement in spiritually and musically sensitive compositions like hymns.

Keywords: Artificial Intelligence, Hymnody, Hymn, AI Tool, Klangio, AnthemScore, Composition

Introduction

Artificial Intelligence (AI) has emerged as one of the fastest-rising technological advancements of the 21st century, reshaping virtually every facet of human life. From healthcare and finance to education and entertainment, AI continues to influence how we live, work, and create. One of the more recent and intriguing applications of AI lies in the realm of music, particularly in the composition and writing of hymns. Leveraging sophisticated AI tools, individuals and institutions are now exploring new ways to generate spiritually uplifting and melodically rich hymns, blending tradition with innovation in ways previously unimaginable.

The advancement of Artificial Intelligence (AI) has significantly reshaped creative industries, including music composition. AI-assisted tools have proven particularly effective in automating tasks such as audio transcription, lyric generation, harmonic analysis, and even melodic composition (Zhang, 2024; Keskilammi, 2025). Brown (2020) asserted that these developments have opened up new possibilities for musicians, composers, and worship leaders seeking to expand the repertoire of church hymns in a rapidly evolving digital age.

Traditionally, the process of hymn composition involved skilled lyricists, composers, and musicologists working collaboratively to ensure theological soundness, musical excellence, and congregational accessibility (Jeon, 2024). However, this process faces significant practical challenges. The composition of a single hymn can take weeks or even months, as it requires multiple rounds of theological review, musical arrangement, and congregational testing before approval (Bhattarai & Lee, 2023). Additionally, many churches, particularly in smaller or rural communities, lack access to trained composers with both musical expertise and theological education. This scarcity is compounded by the aging demographic of traditional hymn composers and limited institutional support for training new ones, creating a bottleneck in the production of contextually relevant worship music that meets contemporary congregational needs while maintaining doctrinal integrity (Bhattarai & Lee, 2023).

The emergence of AI tools presents a new paradigm that could potentially be applied to hymn writing. General music AI tools such as Klangio and AnthemScore, while not specifically designed for hymn composition, offer capabilities that support the hymn creation process. Klangio enables the transcription of vocal or instrumental melodies into musical notation, while AnthemScore offers the automatic generation of sheet music from audio recordings, including multi-voice

polyphonic music (Klangio, 2023; AnthemScore, 2023). These transcription capabilities could assist hymn composers by converting melodic ideas into formal notation, though they do not address the theological, lyrical, or congregational aspects central to hymn writing. These tools have the potential to streamline the compositional process by allowing musicians to quickly convert melodic ideas into structured formats, even with limited formal training in music notation (Klangio, 2023; AnthemScore, 2023).

Despite their potentials, the application of AI in sacred music composition raises important questions. To what extent can these tools support or even enhance the role of human creativity in worship music? Furthermore, what are the limitations of such tools in handling the theological, poetic, and musical nuances required in hymn writing? This study explores the potential of AI-assisted tools in composing new church hymns, focusing on their capabilities, benefits, and limitations. By examining Klangio and AnthemScore as case studies, the research evaluate how these technologies aids hymn composers and complement traditional creative processes in the church context.

Literature Review

Artificial Intelligence (AI) refers to the ability of machines to perform tasks that typically require human intelligence, such as learning, problem-solving, and decision-making. (Korteling et al., 2021). AI uses multiple technologies that equip machines to sense, comprehend, plan, act, and learn with human-like levels of intelligence (Panagiotopoulos, 2024). Fundamentally, AI systems perceive environments, recognize objects, contribute to decision making, solve complex problems, learn from past experiences, and imitate patterns (Panagiotopoulos, 2024). Shabbir and Anwer (2018), opined that Artificial Intelligence (AI) is the development of computer systems and algorithms that are capable of performing tasks typically requiring human intelligence. These tasks include learning, reasoning, problem-solving, perception, language understanding, and even creative endeavors (Shabbir & Anwer2018). At its core, AI simulate cognitive functions that humans associate with the human mind. This broad definition captures the essence of AI as a field that blends computer science, cognitive psychology, linguistics, and neuroscience.

According to Sarker (2022), Artificial Intelligence (AI) tools refer to software applications, platforms, or systems designed to carry out tasks that mimic human intelligence through the use of algorithms, machine learning models, and data-driven decision-making. These tools are built to enhance automation, pattern recognition, and adaptive learning, thereby increasing efficiency and

reducing human error in both technical and creative processes (Chui et al., 2018). AI tools function by processing vast amounts of data, identifying patterns, and applying predictive or generative models to perform functions such as natural language processing, image recognition, speech synthesis, and autonomous decision-making (Sengar, et al., 2024). Nilsson (2010) asserted that AI tools serve as practical embodiments of AI theories and techniques, offering scalable solutions for real-world applications.

Some examples of the AI tools include ChatGPT by Open AI, A large language model capable of generating coherent, contextually relevant human-like text, which is used for tasks such as conversation, content creation, and code generation (OpenAI, 2023). DALL·E is another tool developed by OpenAI, DALL·E generates images from textual descriptions, combining natural language processing with image synthesis capabilities. IBM Watson is a suite of enterprise AI services designed for natural language understanding, data analysis, and decision support in sectors such as healthcare, business intelligence, and customer service (Ferrucci et al., 2010). In the field of music, especially hymn composition, AI tools are being employed to generate spiritually themed lyrics and melodies that align with traditional structures while introducing novel patterns (Yang et al., 2017). For musicians looking to enhance their creative process, there are several AI songwriting tools available that provides inspiration and new ideas. These tools utilize artificial intelligence to assist musicians in various aspects of songwriting, from generating lyrics to suggesting melodies and rhythms.

Amper Music and AIVA (Artificial Intelligence Virtual Artist) are tools that uses AI algorithms to compose original music. AIVA, for instance, is particularly renowned for generating classical compositions, and is increasingly used in liturgical and hymn-writing contexts (AIVA, 2021). As Artificial Intelligence continues to transform the landscape of music creation, tools such as Klangio and AnthemScore have emerged as valuable resources in the domain of hymn composition and arrangement. These tools specialize in automatic music transcription and sheet music generation, making them particularly useful for translating improvised, recorded, or digitally created melodies into traditional notation suitable for congregational use. Soundraw.io Offers AI-generated music for specific moods and genres, which can be used alongside lyric tools to complete a new hymn writing.

Methodology

This study employed a qualitative case study approach to evaluate AI-based tools in hymn composition and transcription. The case study design was selected because it allows for in-depth examination of contemporary phenomena within real-world settings, particularly appropriate for investigating how AI tools can support the hymn composition process (Yin, 2018). Given that AI applications in hymnody represent a relatively ever-evolving inquiry, the study prioritised rich, descriptive analysis over statistical generalisation, aligning with interpretivist paradigms that emphasise understanding technological phenomena through detailed observation (Creswell & Poth, 2018).

A purposive sampling strategy was employed to select two AI-based music transcription tools: Klangio and AnthemScore. This selection was justified by their direct applicability to hymn composition workflows, their representation of different technological approaches. Klangio offers instrument-specific transcription, while AnthemScore specialises in polyphonic analysis and is commercially available and widely used in music communities. The selection followed the principle of maximum variation sampling within AI transcription tools, ensuring different technological approaches and feature sets were represented.

Data collection employed a multi-source evidence approach characteristic of robust case study research (Stake, 1995). This included systematic review of official documentation and technical specifications from both tools to understand their intended functionalities and design parameters. Practical functional testing was conducted using various audio inputs relevant to hymn composition scenarios, including monophonic vocal recordings of solo hymn melodies, simple instrumental accompaniments on piano and organ, polyphonic choral arrangements, and recordings with varying audio quality conditions. A comprehensive literature review of peer-reviewed studies on AI music tools and sacred music composition was conducted. Literature was sourced from academic databases including Google Scholar, JSTOR, and IEEE Xplore, with preference for publications from the last five years to ensure currency.

Data analysis followed a thematic analytical framework combined with evaluative synthesis. The tools' outputs were assessed across multiple dimensions including pitch accuracy, rhythmic precision, harmonic complexity handling, and notational quality. Findings from functional testing were triangulated with software documentation and validated against empirical studies (Gowrishankar & Bharadwaj, 2021; Huang et al., 2020). Visual documentation through screenshots enhanced verifiability. Methodological limitations include restricted generalizability beyond the two selected tools and temporal constraints of rapidly evolving AI technology.

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Evaluation of Klangio and AnthemScore as Potential AI Assisted Tools in Composing New Church Hymns



Klangio is an AI-powered software designed to convert audio recordings (such as piano, guitar, or vocal performances) into accurate sheet music. It supports instruments like piano (with Piano2Notes), guitar (Guitar2Tabs), and voice (Sing2Notes) (Klangio, 2023). The AI analyzes the audio file, identifies pitch, rhythm, and dynamics, and generates a notated score that can be exported and edited. The AI analyzes the audio file, identifies pitch, rhythm, and dynamics, and generates a notated score that can be exported and edited. In hymn writing, Klangio is particularly useful for transcribing improvised hymn melodies or harmonies into readable scores. Capturing vocal compositions in real-time, which can later be harmonized and arranged. Assisting non-notating musicians or composers who create music by ear or performance. A worship leader sings a spontaneously composed hymn into a mobile recorder. Using Sing2Notes by Klangio, the melody can be transcribed into sheet music and harmonized for choral or congregational singing (Klangio, 2023).

Figure 1: Klangio Software

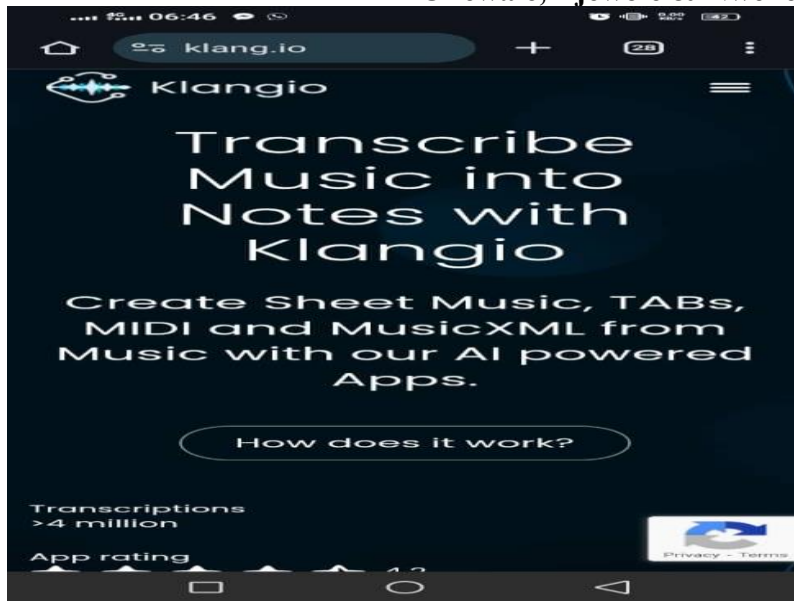
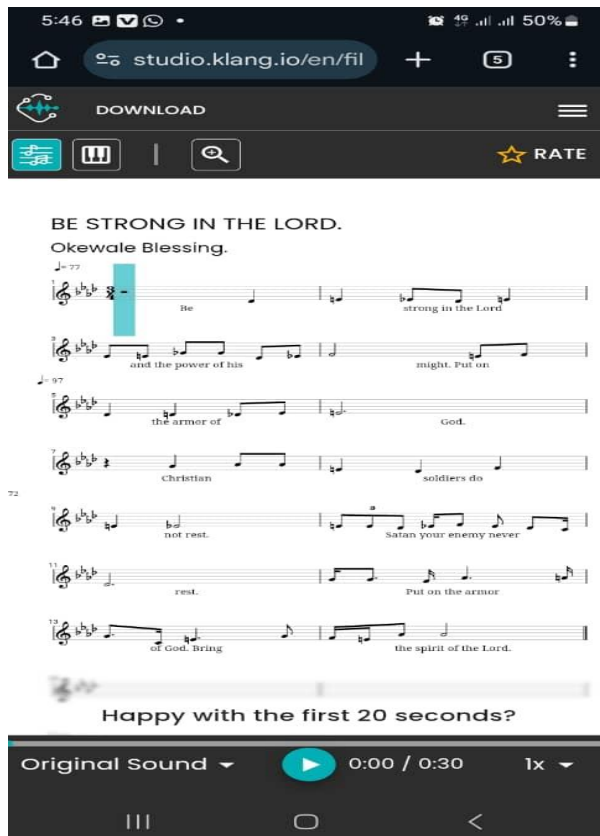


Figure 2: Hymn composed using Klangio AI Software



AnthemScore is another AI-based tool that automatically converts audio files (MP3, WAV, etc.) into sheet music using advanced algorithms. It is particularly effective at recognizing polyphonic (multi-note) audio, making it ideal for piano hymns, organ preludes, and full choral pieces

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(AnthemScore, 2023). The key features include: Spectrogram-based pitch detection and note classification. Support for time signature and key detection. Easy export to MusicXML, MIDI, and PDF formats for use in notation software like Sibelius, Finale or MuseScore. In hymn composition, AnthemScore Assist composers in generating sheet music from recorded worship sessions. Support choir directors and organists in quickly notating harmonies and accompaniments. Enable historical hymn digitization by transcribing older audio recordings. For instance, A pianist records a new hymn tune. AnthemScore processes the audio and generates a printable score for church distribution (AnthemScore, 2023).

Figure 2: Musical Piece created by Anthemscore AI Software



Limitations of Klangio and AnthemScore in Hymn Composition and Music Transcription

Artificial Intelligence (AI) tools such as Klangio and AnthemScore have advanced the field of music transcription by enabling the conversion of audio inputs into digital sheet music. These technologies offer considerable potential for composers and musicians, particularly in religious and liturgical contexts such as hymn writing. However, despite their practical benefits, these tools

are subject to several limitations that can hinder their effectiveness, especially in complex musical or congregational settings.

Klangio offers a suite of AI-powered applications, including Piano2Notes, Guitar2Tabs, and Sing2Notes, each designed to convert monophonic or lightly polyphonic audio recordings into notated sheet music. While these applications are user-friendly and accessible to both amateur and professional musicians, they are constrained in several significant ways. Klangio demonstrates limited accuracy when dealing with complex polyphonic audio or densely layered harmonic structures, which are often characteristic of hymns composed for choral or organ accompaniment. The tool performs optimally with single-instrument or solo vocal recordings, and its accuracy diminishes when background noise, reverberation, or instrumental overlaps are present. Klangio's rhythm transcription capabilities are often imprecise, particularly with syncopated rhythms, dotted note values, or expressive tempo variations such as rubato. This leads to errors in note durations and rhythmic groupings, which subsequently require manual correction in external notation software. Klangio lacks support for expressive musical elements such as dynamics (e.g., crescendo, diminuendo), articulations (e.g., staccato, legato), and phrasing marks. These elements are vital in hymn composition, where emotional and spiritual expression is conveyed through both melodic and interpretive nuances.

AnthemScore is another AI-based tool designed to convert audio files into sheet music, with a focus on polyphonic transcription. While it performs better than Klangio in handling complex textures, it is not without its limitations. One of the primary constraints of AnthemScore is its reliance on clean, high-quality audio input. Audio recordings with background noise, overlapping voices, or environmental interference such as those captured during live church services can significantly impair the accuracy of transcription. Mis-identification of notes, incorrect pitch detection, and inclusion of ghost notes are common challenges in such contexts. Moreover, although AnthemScore is capable of detecting harmony and chordal structures, it struggles with highly polyphonic or contrapuntal music, which is often used in traditional hymns. This can result in inaccurate harmonic analysis or the omission of inner voices essential to the integrity of the composition. Like Klangio, AnthemScore also lacks the ability to detect and integrate lyrics. This limitation is particularly problematic in hymn writing, where the alignment of poetic text with musical phrasing is fundamental to both theological meaning and congregational singability.

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Empirical research has demonstrated the growing effectiveness of AI-powered music tools in creative and transcription tasks. Grachten et al. (2019) highlight the ability of machine learning models to analyze and generate symbolic music representations, showing high accuracy in pitch recognition but ongoing challenges in rhythm and expressive features. This supports the finding that tools such as Klangio and AnthemScore are reliable for initial transcription, especially for melodies and basic harmonic structures, but require manual correction for complex or expressive passages.

A study by Gowrishankar and Bharadwaj (2021) tested AI transcription software on various genres, including religious music, and found that monophonic inputs achieved transcription accuracies above 80%, while polyphonic and rhythmically complex compositions fell below 60% accuracy. These findings align with the limitations observed in AnthemScore's ability to transcribe choral hymns and Klangio's struggle with accompaniment-heavy inputs.

Additionally, Huang et al. (2020) demonstrated in an experimental study that AI tools like AIVA and MuseNet could generate music that was stylistically consistent with human compositions, but participants rated AI-generated sacred music as less emotionally expressive and textually coherent than human-composed hymns. This supports the conclusion that while AI tools contribute to structural composition, they lack the theological and emotional depth necessary for liturgical music, thus requiring human oversight. In a practical application, Yang and Lerch (2021) used AI tools to support music education and composition. Their study revealed that students using AI transcription software were able to complete notation tasks 40% faster but still required 25–35% manual correction in pitch, rhythm, and formatting evidence that AI significantly aids productivity but does not eliminate the need for musical expertise.

Conclusion

The integration of Artificial Intelligence in music transcription and composition has opened new frontiers in creative and liturgical music production. Tools such as Klangio and AnthemScore exemplify how AI facilitates the transformation of raw audio inputs into structured musical notation, thereby supporting the hymn composition process. Klangio, with its instrument-specific transcription models, and AnthemScore, with its polyphonic transcription capabilities, offer valuable functionalities that assist musicians in capturing and preserving musical ideas.

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However, the case study analysis reveals that both tools exhibit notable limitations. Klangio is more suited to monophonic inputs and lacks support for nuanced rhythmic structures, dynamic expression, and lyric integration. Similarly, while AnthemScore handles polyphonic audio more effectively, it is sensitive to audio quality and also does not support lyrical transcription or real-time interaction. These limitations indicate that while AI tools have made significant contributions to music creation, particularly in the sacred music genre, they are not yet fully capable of replacing the nuanced interpretive and contextual understanding of human composers. Klangio and AnthemScore serve best as assistive technologies in the hymn composition process. Their effectiveness is maximized when they are used in conjunction with human oversight, musical judgment, and traditional editing tools to ensure accuracy, expressiveness, and liturgical appropriateness.

Recommendation

Given the limitations identified in Klangio and AnthemScore, it is recommended that hymn composers use these tools as supportive aids rather than standalone solutions. While they offer valuable assistance in transcribing melodies and harmonies, their lack of precision in rhythm, dynamics, and lyric integration necessitates further manual refinement. To enhance their effectiveness, composers should ensure high-quality, isolated recordings and pair these tools with traditional notation software for editing. Developers are encouraged to improve transcription accuracy for polyphonic music and introduce features such as lyric alignment and real-time collaboration. Educators and researchers should promote the responsible use of AI tools in music curricula and conduct further studies to explore their application in hymn composition. Overall, AI should complement not replace human creativity and theological sensitivity in sacred music creation.

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