

# AI vs. Human-Produced Music: Technical, Creative, and Ethical Dimensions

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## Abstract

AI can now instantly write and produce songs with the touch of a button. But how do these productions compare to the work of musically-trained producers? I will conduct tests on various AI tools, providing similar inputs to compare their outputs, and will use those results to determine which tools are the most useful for songwriting and music production. I will create an AI-generated song and compare it with a human-produced version of the same song, focusing on both technical and creative aspects. I will share my results with both musicians and non-musicians to gather listener perceptions of AI- and human-produced music. I will evaluate which aspects of music production AI can perform effectively and which remain uniquely human. Finally, I will explore some of the ethical implications of using AI in music, addressing concerns related to creativity, authorship, and the future of the profession, including both industry and public perspectives.

## 1. Introduction

The purpose of this research is to explore the current applications of artificial intelligence (AI) technology as they relate to music composition and production. In my opinion, the most significant innovation in the music industry in recent years is the

invention of AI music production and creation technology. Now, with just a written prompt, anyone can generate lyrics and music from their own computers. This has prompted public concern about the ethical implications of AI generated works devaluing artists and delegitimizing the work of music producers and composers. This research seeks to investigate how realistic and attainable it is for the average consumer to use these tools. To evaluate the accessibility of such technologies, all of the software used for this research was available for free.

## 1.1. Components of Pop Music

Because my objective was to create a pop song, I evaluated the AI generated song against research-backed components of pop music. A study on listener's brains showed that music that engages the most pleasure centers in the brain has a balance of predictability and surprise (McNamara, 2019). The first component I looked for was a verse-chorus-bridge structure. By following the verse-chorus-verse-chorus-bridge structure, a song is able to introduce new harmonic information through verses and the bridge while also incorporating familiarity through the repeated chorus (Summach, 2011) thus increasing positive listener reactions and feedback.

With regard to lyrics, an element of predictability is a consistent rhyme scheme, while an element of surprise is introducing new lyrical content. The next component I focused on was the presence of a hook. The hook of a song is what stays in the listener's head and allows the song to then become popular (Burns, 1987). The final component of pop music I focused on was emotional connection with listeners—specifically, the development of a narrative and emotional arc that helps audiences feel more engaged with a song. A study by Rosch and Rauch titled *“Do Songs Tell Stories? An Empirical Analysis of the Effect of Emotional Arcs on Success in a National Song Contest”* shows the prevalence of a phenomenon known as the *peak-end rule*. According to the study, people tend to judge music based on its most intense moment and its ending, rather than the song as a whole (page 13). This suggests that the emotional buildup to a climactic moment, as well as the resolution, carry more weight in shaping listener perception than individual details. I used these components to evaluate the AI outputs.

## 1.2. The Music Creation Process

In order to test the efficacy of various tools, I set out to create a pop song that was as fully AI generated as possible using free tools available to the public, and then recorded a human version of the song to compare the two processes. I broke down the process of music creation into the following steps:

1. Concept generation: Developing the central idea or theme for the song.
2. Lyric writing: Writing the words that convey the song's message.
3. Determining style and influences: Deciding on the genre, mood, and stylistic elements by drawing inspiration from existing artists.
4. Composition of instrumentation: Writing the music for each instrument.
5. Recording: Recording musicians performing in the studio.
6. Editing: Selecting the best takes and correcting performance errors.
7. Mixing: Balancing levels, adding effects and blending all the elements.

I based this breakdown on my personal music creation process to assess how AI tools could be incorporated into each step. At the present moment, the AI software capable of creating a song from start to finish did not allow for input at each step of the process, so I used a combination of tools in order to evaluate each step individually.

### 1.3. AI Tools For Music Creation

I tested various different tools, and noted my results in a spreadsheet to reference later. In doing this, I found that much of the AI music production software currently available is, in my opinion, either massively ineffective at creating realistic-sounding music, not user-friendly, and/or not useful for creating music in the genre I chose. The following table outlines the software I tested, as well as which step of the music creation process I tested and used it for.

AI Software Name	Steps of the Music Creation Process
Ecrett Music	Composition / Instrumentation
WavTool	Editing, Mixing
Distrokid's Music Match	Lyric Writing, Composition/ Instrumentation, Editing
Endless	Style and Influences, Composition/ Instrumentation
JukeBox	Composition / Instrumentation
Boomy	Concept Generation, Style and Influences
Magenta Studio	Composition / Instrumentation
TopMediai	Lyric Writing, Composition / Instrumentation, Mixing, Editing

AI Software Name	Steps of the Music Creation Process
Aiva	Editing, Mixing, Composition / Instrumentation
ChatGPT	Concept Generation, Lyric Writing, Style and Influences
Jamhook	Instrumentation / Composition
Audoir	Lyric Writing, Composition / Instrumentation
SoundDraw	Instrumentation / Composition, Concept Generation
eMastered	Editing, Mixing
landr	Mixing
apps.kits.ai	Editing, Mixing
fadr	Editing, Mixing
Mubert	Composition / Instrumentation
lalal.ai	Editing
voice.ai	Editing

**Table 1. AI Software Tested.** This table shows which stages of the music creation process each AI tool was tested on.

For the first step, concept generation, I found tools such as Boomy, that allowed me to generate concepts by prompting for the instruments I wanted to use, the genre, the song topic, and the style. However, my objective was to put most of the creative burden on AI and not make creative decisions myself. I ended up using ChatGPT for concept generation and lyric writing because I was able to ask for ideas directly rather than the software prompting for my ideas. The same applied when determining the song's style and influences. ChatGPT required the least creative input from me, making it the most accessible tool for that step.

I chose TopMediai for composition because it delivered the most complete final product, where the instruments also sounded realistic. TopMediai generated a track with piano, synth, drums, bass, and vocals and was able to incorporate lyrics that I provided. AIVA,

the next best option, allowed me to choose chord progressions and instrumentation, unlike TopMediai. However, this application could only generate vocals using neutral syllables, not actual lyrics. SoundDraw and Audoir had lyric incorporation capabilities but very low sound quality and did not allow for the addition of as many instrument tracks as AIVA and TopMediai did.

I used Fadr for editing and mixing because it produced the highest quality stems of the mixing and editing software I tested. Voice.ai and Lalal.ai both dramatically lowered the sound quality when creating stems, and Lalal.ai did not fully separate each instrument when creating stems.

## 2. AI Song Creation

### 2.1. Concept Generation and Lyric Writing

The concept generation phase involved deciding on the song's topic and mood, as well as some general phrases or lyrical ideas to be used. I used ChatGPT for this step. I began by asking for compelling song ideas. After reading through its suggestions, I determined that many lacked substance and involved a lot of description, with little conflict or emotional depth. I wanted the AI song to feel as human as possible, and a key component of successful popular music is its emotional effect. I then reconfigured my question to ChatGPT and asked instead for song topic ideas that were socially relevant and a little bit dark. This yielded several more promising results. For example, one of the given options was titled "The Divide" and focused on the sociopolitical divides in society and critiqued the "us vs them" mentality. Another was "Tomorrow's Burning", which was about the existential fears of this generation surrounding climate change and the current political instability. The one I selected, titled "Artificial Suns", was about feeling nostalgia for when things felt more genuine before technology took over our social lives, and sought to critique surface level interactions through online personas. This one was most interesting to me, as it was ChatGPT essentially writing about itself and the problems it is potentially perpetuating.

The lyric writing phase went similarly. I asked ChatGPT to write lyrics based on the theme I had selected. Most of its early attempts were, in my opinion, cliché and cheesy, and felt emotionally empty. I had to ask it to rewrite certain lines several times, and prompted it to make the lyrics darker and more emotional. ChatGPT struggled to generate a chorus with a memorable hook, despite asking for one outright. Early iterations also lacked a rhyme scheme, but this was easily amended when I asked for the lyrics to rhyme better. The software created lyrics for a song with two complete verses and a chorus. I had to ask it specifically to create a bridge. I continued prompting

ChatGPT until it yielded a verse-chorus-verse-chorus-bridge structure. The lyrics created as a result of my prompts were as follows:

**(Verse 1)**

I remember when the stars could speak,  
When the moon would chase the sun to sleep.  
But now I search for warmth outside,  
Chasing lights that never guide

**(Pre-Chorus)**

I reach for something I can't find,  
Chasing shadows in my mind.  
The world is lit, but I don't see,  
The warmth they promise isn't free.

**(Chorus)**

We reach for artificial suns,  
Chasing warmth that never comes.  
They burn so bright but fade so fast,  
A fleeting light that never lasts.  
We reach for the sky, but we're still cold,  
Running in circles, searching for gold.

**(Verse 2)**

I walk through streets that seem the same,  
Each face a mask, each step a game.  
I search for meaning in the noise,  
But it's a hollow, empty voice.

**(Pre-Chorus)**

I trade my heart for something fake,  
But in the dark, the choices break.  
I reach for warmth, but it's too far—  
A distant dream, a dying star.

**(Chorus)**

We reach for artificial suns,  
Chasing warmth that never comes.  
They burn so bright but fade so fast,  
A fleeting light that never lasts.  
We reach for the sky, but we're still cold,  
Running in circles, searching for gold.

**(Bridge)**

And when I look up, all I see,  
Are suns that fade, that never be.  
I've chased the light, but now I know,  
I've been running from the truth below.

**(Build-Up)**

No more reaching for what's not mine,  
I'll find my strength, I'll redefine.  
The light I seek was always here,  
It's time to trust, it's time to clear.

**(Chorus)**

We reach for artificial suns,  
Chasing warmth that never comes.  
They burn so bright but fade so fast,  
A fleeting light that never lasts.  
We reach for the sky, but we're still cold,  
Running in circles, searching for gold.

**(Outro)**

No more waiting for a fleeting flame,  
I've been burning through my own name.  
The light I need, I've come to find,  
Was always in this heart of mine.

The addition of the bridge, outro, and build-up made space for new melodic and harmonic material to keep listeners engaged, while the repeated choruses and verse structures maintained enough familiarity. I was hoping for more repetition in the chorus of the song, but ChatGPT did not produce that. The final component was the presence of an emotional journey. There is an emotional arc in the song. The subject begins by feeling uncertain and unfulfilled and ends by recognizing that the meaning they seek is within themselves. However, the lyrics feel vague and lack the personal touch often found in pop songs.

The next phase, determining style and influences, presented some challenges. While getting AI suggestions for the song's style was straightforward, getting AI suggestions for musical influences proved more difficult. I asked ChatGPT to suggest a style and genre for the song lyrics, and it chose a synth pop ballad. Despite asking in several ways, I could not get the application to provide concrete musical influences, such as artist references.

## 2.2. Vocal Melody and Instrumental Arrangement

To compose the vocal melody and instrumental arrangement of the song, I used a website called TopMediai. I asked for a pop-synth genre and for a female vocalist singing a ballad. A female vocalist was chosen simply because I wanted to sing the human version myself, and I am female. I then entered the ChatGPT generated lyrics and gave it the title “Artificial Suns”. TopMediai rendered a basic arrangement with bass, piano, drums, and vocals. The instruments sounded realistic, although electronic, and the vocals were shockingly human-like.

### Audio 1. [Fleeting Flame AI Version](#)

TopMediai used all of the lyrics I provided, with a couple exceptions where a word or two were missed. The vocal melody was memorable and came to a modest climax in intensity during the bridge. The vocals were consistent, clear, and accurate except for two places. In the bridge (timestamp: 3:13 in the AI version of Fleeting Flame), the AI vocalist sings “I’ve been through my own name” instead of the provided lyric “I’ve been burning through my own name”, which makes the line confusing. Also, in the word “clear” from the line “it’s time to trust, it’s time to clear” (timestamp: 2:38 in the AI version of Fleeting Flame) the vocals trail off and the note being sung sounds off key and out of place. With the free version, I did not have the ability to edit the song after it was created, so this remains in the final AI version. The application retitled the song “Fleeting Flame”.

At this stage of the process, I felt the AI tools had effectively delivered the pop music elements I was aiming for, striking a balance between familiarity and surprise, and including a memorable hook. While AI’s attempt at a buildup was apparent, I found myself wanting more dynamic contrast to heighten the song’s emotional effect.

## 2.3. The Editing and Mixing Process

The editing phase includes solving problems, selecting different takes, trying new or different instrumentation, and experimenting with instrumental and vocal layers and texture. This step was nearly impossible with the current free software that I tested. I tested the splitter feature on Voice.ai and Lalal.ai to isolate the vocals, so I could add doubles and harmonies. These tools dramatically reduced the quality of the split tracks, and often failed to distinguish between vocal and piano parts.

The application Fadr was the best free splitter, providing stems, some MIDI, and accurate detection of the song's meter and key. The stems were only useful to hear instruments individually when recording the human version. It wasn’t possible to amend



parts of the AI-generated version, since anything added didn't match the existing timbre and texture of the song. When I tried to use Fadr to double or harmonize the vocals, the result was unrealistic and robotic. It could not match the tone of the AI voice, and it generated incorrect harmonies. The song, in my opinion, sounded better without the robotic background vocals, so I left it as it was. I was also unable to fix the vocal mistake on the word "clear" because I could not generate a voice that matched the rest of the song.

For the mixing process, I felt that the vocals needed to be brought down in the mix and the bass needed to be brought up. I tested eMastered first, and it made no discernible changes. I tried other mixing tools, including WavTool, [apps.kits.ai](https://www.apps.kits.ai/), and LANDR, but they significantly reduced audio quality and placed more advanced features, like compression and EQ, behind a paywall. These elements of the music production process seem to still require a human producer.

### 3. Human Recording of AI Generated Music

The next stage of this process was to record a human version of the same song to compare with the AI version.

#### **Audio 2.** [Fleeting Flame Human Version](#)

The first problem I encountered was that the vocal line is very difficult to actually sing, even for a classically trained vocalist. AI did not account for the need to breathe between phrases, and several parts were very wordy and difficult to enunciate at the tempo of the song. The high and low notes of the vocal melody seemed disconnected from the emotional highs and lows of the song. For example, the chorus leaned heavily on high notes, but no particular phrase stood out melodically. This resulted in a lack of the balance between surprise and familiarity that I was looking for.

When recording the song with human performers and real instruments, we were able to shape its emotional contour by gradually building up the arrangement. We achieved this by adding in backing vocals and harmonies to thicken the texture in certain moments, and by giving the drums a more dynamic role. In the AI generated song, the drums function more like a sound effect than a performed instrument contributing to an artistic vision. Incorporating them more organically gave the song more energy.

Overall, the piano and bass lines were very easy to replicate by humans, and seemed to add to the emotional buildup as written, so we did not make many changes to those

parts, aside from bringing up the bass presence in the mix because it was buried in the AI version.

Another obvious difference between the two processes was the time commitment. Once I had determined which software I would be using, the process of creating the final AI product was almost immediate. In contrast, the human version took four different studio sessions lasting 3-4 hours each, as well as several more hours spent mixing by a mix engineer.

## 4. Conclusion

To conclude my research, I played the AI generated song to music technology students, music faculty, and non-musicians to gather feedback. My peers compared it to royalty free jingles or the type of music used in action movie trailers where instruments are treated as artifacts or dramatic effects, rather than used for artistic expression. One of my peers in the music technology department noted that the melody “felt like it was trying to hit a perfect ratio of exactly one high note for every one low note”. Both musicians and non-musicians who listened to the song agreed that the lyrics were wordy and convoluted, and that the message of the song was difficult to understand. The initial topic suggested by ChatGPT got lost in the lyrics, despite both being generated by the same software.

From others' perspectives and my own findings, I came to the conclusion that the AI software and emerging technology is useful for idea generation and for some basic composition, however, it lacks emotional depth. Humans, unlike AI, do not create melodic and harmonic content based on algorithms or through analyzing patterns from existing songs (Cottrell & Meiselwitz, 2024). As a result, human creators are better able to introduce elements of surprise, leading to a more compelling emotional trajectory than AI software can achieve.

A 2024 article authored by economics professor Dr. Oliver Hauser explores the effect of AI tools on individual productivity and creativity. While his research focuses on written work, I found that my results from creating music using these tools yielded similar outcomes. Using the AI software boosted my creative productivity, but the resulting song feels generic and lacks the expressive depth of music created by humans. I also found that the AI generated topics and lyric ideas were very similar to each other, which aligns with Dr. Hauser's assertion that “with generative AI, writers are individually better off, but collectively a narrower scope of novel content is produced”. Even though the process of writing and composing a creative work is faster with AI, the results lack

originality. To summarize, while these tools facilitate high-volume content creation, the results are more similar to each other than those created by humans (Hauser, 2024).

This project brings up several questions regarding the ethics behind the use of AI for artistic and creative purposes. Should I be able to copyright and release this song under my name, even though it is almost entirely AI generated? If not, who owns it? Does the growing availability and popularity of these software reduce the value of art? And finally, what does this mean for music producers and songwriters? Will AI replace those human jobs in a few years? That remains to be seen, but at present, AI tools cannot replicate the human expression essential in music.

Copyright laws are ever changing. Some software tools, especially when using the free versions, retain ownership of all music created using them. Others, such as ChatGPT, grant ownership to the human whose “creative spark” is used to create them (Wellet Potter, 2025). As far as the role of humans in creating and producing music and other art, AI software still has many shortcomings that the human touch needs to remedy. From my testing, AI struggles to make anything emotionally charged, which leaves the music it creates feeling empty. The current tools are still awkward and not user-friendly, in my opinion, and often require several tries to create something usable. Perhaps this will change as they advance, but based on my findings, human producers and songwriters continue to play an essential role in music creation.

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## References

- 10 Ai Music Generators for creators in 2025. DigitalOcean. (n.d.).  
<https://www.digitalocean.com/resources/articles/ai-music-generators>  
Ai Music: What musicians need to know. Berklee Online Take Note. (2024, January 30).

<https://online.berklee.edu/takenote/ai-music-what-musicians-need-to-know/>

Burns, G. (1987). A typology of 'hooks' in popular records. *Popular Music*, 6(1), 1–20.  
<https://doi.org/10.1017/S0261143000006627>

Chow, A. R. (2023, December 4). How ai is Transforming Music. *Time*.  
<https://time.com/6340294/ai-transform-music-2023/>

Cottrell, J., & Meiselwitz, G. (2024). The impact of artificial intelligence on musicians. *Issues in Information Systems*, 25(1), 267–276.

Hauser, Oliver. Generative AI enhances individual creativity but reduces the collective diversity of novel content | science advances. (2024, July).

<https://www.science.org/doi/10.1126/sciadv.adn5290>

McNamara, A. (2019, November 8). 'Uncertainty and surprise' the scientific secret to good pop music. *BBC Science Focus Magazine*.

<https://www.sciencefocus.com/news/uncertainty-and-surprise-the-scientific-secret-to-good-pop-music>

Rösch, J., & Rauch, M.-J. (2025). 'Do songs tell stories?' An empirical analysis of the effect of emotional arcs on success in a national song contest. *Journal of Cultural Economics*. <https://doi.org/10.1007/s10824-025-09532-6>

Summach, J. (2011). *Form in Top-20 Rock Music, 1955–89* [Doctoral dissertation, Yale University]. ProQuest Dissertations Publishing.

The Yale Law Journal - Forum: Ai and the sound of music. (n.d.-b).

<https://www.yalelawjournal.org/forum/ai-and-the-sound-of-music>

Wellett Potter, Lecturer in Law. (2025, March 5). AI can make up songs now, but who owns the copyright? The answer is complicated. *The Conversation*.

<https://theconversation.com/ai-can-make-up-songs-now-but-who-owns-the-copyright-the-answer-is-complicated-229714>