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### Bridging the Gap: The Intersection of AI and Music

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Bridging the Gap: The Intersection of AI and Music

A Thesis Submitted in Partial Fulfillment of the  
Requirements of the Renée Crown University Honors Program at  
Syracuse University

Brandon X. Porter

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and Renée Crown University Honors  
May 2024

## **Abstract**

Growing Pains is a collection of songs detailing significant events, memories, and experiences from the earliest moments of my childhood through my senior year of college. The work focuses explicitly on testing, utilizing, and analyzing generative (Gen) artificial intelligence (AI) as a “co-pilot” in creative processes such as songwriting, production, mixing, and mastering. The leading Gen AI platforms used in the process include Open AI’s ChatGPT 4 and Splice. The primary objectives addressed in this paper aim to understand and analyze how transformative Gen AI is in the creative process as a tool that promotes idea stimulus and creative organization. Further, I analyze the importance of an in-home studio equipped with industry-standard tools and resources to decipher how this fusion of high-grade equipment along with the use of limited memory Gen AI, elevates the quality of music (IBM 2023). A common perception of Gen AI in musical contexts is that it potentially diminishes specific artistic and creative components of song production. I seek to challenge this narrative by creating an album with considerable implications for the music industry.

## Executive Summary

This project investigates the integration of Generative Artificial Intelligence (Gen AI) within the music creation process. Focusing on the production of the album "Growing Pains," the thesis explores how AI acts as a creative co-pilot, enhancing songwriting, production, mixing, and mastering. Utilizing Gen AI technologies like OpenAI's ChatGPT-4 and Splice, the project seeks to determine AI's role in elevating music quality and creativity.

The methodology focuses on a hands-on approach where Gen AI tools are used to stimulate creative ideas and organize the music production process. Initial experiments were conducted with various AI platforms to gauge their effectiveness in generating useful musical content. As many tools were in developmental stages, OpenAI's ChatGPT-4 was primarily used for its advanced capabilities in providing lyrical ideas and production tips. The custom GPT-4 model was tailored to align closely with personal music style and songwriting themes, ensuring the output was deeply aligned with the project's creative goals.

The thesis posits that while Gen AI is often viewed as a potential threat to creativity and artistic integrity in music, it can enhance the artistic process. Acting as a collaborative tool, Gen AI can offer new ways to approach songwriting and production that were not previously available. The project challenges the dominant skepticism surrounding AI in creative industries and demonstrates its capability to act as an augmentative force rather than a displacing one. This project underscores a significant shift in the music production landscape, where Gen AI's role is transformative rather than disruptive.

The project highlights potential avenues for artists to explore creative processes by fusing AI with human creativity. It also addresses broader implications for the music industry, including copyright issues and the ethical use of AI in artistic processes. The findings advocate for a

nuanced understanding of AI's capabilities and limitations, proposing that a balanced approach to AI integration can profoundly benefit the music industry.

## Table of Contents

Abstract.....	2
Executive Summary.....	3
Acknowledgments.....	6
Introduction.....	7
Chapter 1: Theoretical Framework .....	9
Chapter 2: Methodology.....	14
Chapter 3: Case Study– <i>Growing Pains</i> .....	19
Chapter 4: Analysis of AI’s Impact on Music Creativity.....	26
Chapter 5: Challenges.....	28
Chapter 6: Implications for the Music Industry.....	31
Chapter 7: Conclusion.....	36
Bibliography.....	38
Appendices.....	40

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## **Introduction:**

My basis for creating this project stems from my nearly six years of experience in music production and a desire to practically apply the learning outcomes from courses taken throughout my academic career at Syracuse University. My initial aim for this project was to highlight and demonstrate my undergraduate experiences where I would write and produce an album. When I began ideating for this project, I had yet to write or create my own songs; I was strictly a producer. The project served to push myself into different creative areas of music, like songwriting and melody writing. However, in completing preliminary work for the project, such as crafting instrumentals and writing lyrics, I realized my project was no different than the countless pieces of music uploaded to streaming services every day. Nothing set me apart from creatives in the industry or my peers. As such, I had to dispel my initial reservations surrounding the integration of AI in music and find a way to blend the two creatively and ethically. The premise of creating music utilizing AI as a co-pilot in my creative and organizational processes intrigued me. However, the project still needed a conceptual lift grounded in its relatability to general audiences. Structurally, each song on the project will describe sentiments or events of a certain age or age range in my life. Further, each song, from the first to the sixth, will increase in tempo as the album progresses, conveying the urgency and anxieties surrounding personal maturation.

In this essay, I examine and demonstrate how artificial intelligence (AI) and music creation work together to transform creative processes and potentially reshape the way music producers sample to create new works. I introduce AI's function in music production and song creation in Chapter 1, which lays the theoretical and legal foundation. The techniques and methodology employed are thoroughly outlined in Chapter 2, with an emphasis on how cutting-edge Gen AI technologies enhance different phases of the music creation process. In Chapter 3, I present my album *Growing Pains* as a case study to illustrate my practical application of these



theories. In Chapter 4, I examine how the use of Gen AI impacts the album's creative quality. In Chapters 5 and 6, I expand on this topic, discussing the challenges I faced along with wider ethical and legal implications. I conclude Chapter 7 by considering how Gen AI will revolutionize the music industry and advocating for modified legal frameworks to account for this technological advancement. I argue that rather than diminishing artistic integrity, Gen AI could significantly improve creative processes by functioning as a creative co-pilot. Hence, it is necessary to reevaluate current ethical and legal guidelines to accommodate this development.

## Chapter 1: Theoretical Framework

Before starting my research for this project, I had limited fluency with any form of AI. However, my lack of knowledge provided the perfect opportunity to teach myself a new skill while improving my technical expertise in other areas. AI's increasing prevalence in the music industry signals a seismic shift in the music business, and I could not let this turning point in technology pass me by without learning how to utilize it to my advantage. Over the last year, there has been an influx of Gen AI music and generative platforms to assist in the creation and ideation of music, such as Boomy, Voicestars, MusicFX, Splice's "Create" feature, LANDR audio mastering, Suno, Udio and many, many more (Sandzer-Bell 2024).

While those platforms vary significantly in their intended uses and function, it is imperative to underscore the issues some companies face when discussing creative integrity and the ability for users to claim protections for the music created by/with these products. In a master's thesis for The City University of New York, Achim Koh speaks to the recent developments in AI music and how certain automatically generated audio tracks "question what counts as creativity" (Koh, n.d., 37). For many, the most pertinent questions of Gen AI's integration hinge on the nature of use and whether the use is both morally and legally ethical. For platforms such as Boomy, MusicFX, and Voicestars, being able to prompt a model with text or audio to generate quality music samples or vocal tracks that replicate artists who many know and love feels somewhat cheap and distasteful. It is also imperative to note the U.S. Copyright Office's existing policy surrounding generative content's eligibility for protection. As of March 2023, "Works created using artificial intelligence may be eligible for copyright registration, provided that there is sufficient human authorship" (Setty 2023). Subsequently, given text-to-audio generative platforms, one may ask what defines "sufficient human authorship?" The U.S.

Copyright Office outlines its policy for claiming protection of works created with AI assistance, saying:

If a work’s traditional elements of authorship were produced by a machine, the work lacks human authorship and the Office will not register it. For example, when an AI technology [i.e., Boomy, MusicFX, ChatGPT, Suno, or Udio] receives solely a prompt from a human and produces complex written, visual, or musical works in response, the ‘traditional elements of authorship’ are determined and executed by the technology—not the human user. Based on the Office’s understanding of the generative AI technologies currently available, users do not exercise ultimate creative control over how such systems interpret prompts and generate material. Instead, these prompts function more like instructions to a commissioned artist—they identify what the prompter wishes to have depicted, but the machine determines how those instructions are implemented in its output (Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, 2023).

With this policy outlined, the Court of Justice of the European Union (CJEU) simplifies the framework for creators wishing to integrate Gen AI technology, saying an original work is the expression of the author’s intellectual creation, meaning an author must imbue their free creative choices, their personality, or their personal touch (Sturm et al. 2019, 4). And “While some prompts may be sufficiently creative to be protected by copyright, that does not mean that material generated from a copyrightable prompt is itself copyrightable” (Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, 2023).

In April 2023, a music creator named Ghostwriter created two songs using AI vocal models impersonating Drake and The Weeknd and Travis Scott and 21 Savage, respectively. He wrote both songs’ lyrics and produced and recorded the vocal elements using models to “match

the content, delivery, tone, and phrasing of the established stars” (Coscarelli 2023). The songs quickly rose to prominence on platforms like Instagram, TikTok, and X. They soon became the center of discussion regarding ethics and the legality of said use based on their direct impersonation of four RIAA-certified diamond recording artists (Fitzgerald 2024). The songs were expeditiously removed from streaming platforms by Sony Music Entertainment and Universal Music Group as they infringed on their artists’ rights. From a consumer perspective, the songs themselves are solid pieces of work as they are well-written and produced, and many fans of the artists generally enjoy the songs. However, opponents of the works cited their inherent lack of integrity and respect on both Ghostwriter’s part and potential consumers. When listening to the songs, as Coscarelli mentions, they match the content, delivery, and tone of the impersonated artists. Still, there are apparent misrepresentations in the lyrical content and pronunciation of the stars, as certain words reflect Ghostwriter’s accent and vocal tone.

In this example alone, at least a handful of questions arise, probing the legality of Ghostwriter’s actions, assessing his level of creativity in the process, and how this model could potentially harm artists in the future. The platform Voicestars allows users to create vocal reproductions of their favorite artists by paying \$8.99 for 25 conversion credits. However, a user’s permissions with the generated audio file after its conversion are separate legal conversations that Voicestars outlines in its terms and conditions. The broader implication for artists and creatives fueled hysteria and calamity within the music industry as consumers, executives, and creatives feared the damage vocal models would cause.

Opponents of AI vocal generation agreed that it would likely force “the industry to reckon with the limitations of existing ‘right of publicity’ laws that protect artists from having their voices and likenesses commercially exploited without their authorization” (Robinson). This issue is currently under resolution as Rep. María Elvira Salazar introduced the No Artificial

Intelligence Fake Replicas and Unauthorized Duplications Act (“No AI FRAUD” Act) in January 2024. The bill, backed by nearly 300 artists, songwriters, actors, and other creators, would federally regulate the use of AI voice clones. Given the current right of publicity laws in the United States, an artist’s voice, image, or likeness is typically covered, but these laws vary from state to state. The “No AI FRAUD” Act would plug “a hole in the law,” giving “artists and U.S. citizens the power to protect their rights, their creative work, and their fundamental individuality online” (Salazar as cited by Eggertsen 2024). Although federal regulation is under review, Tennessee, as of March 2024, became “the first state to protect musicians and other artists against AI,” creating the ELVIS Act or Ensuring Likeness Voice and Image Security Act, which is an amendment to the Personal Rights Protection Act of 1984 to “protect musicians from unauthorized artificial intelligence impersonation” (Rosman 2024). The law will go into effect on July 1 and prohibits anyone from using AI to mimic an artist’s voice.

Alternatively, on a less damaging scale, AI music company Boomy was created with the intent, described by CEO Alex Mitchell, to “draw creativity out of people who do not necessarily have the prerequisite skills,” allowing hobbyists to create and monetize music. With Boomy, users can “claim their place...in the music economy and break down [traditional] barriers” (Mitchell as cited by Herstand 2023). Mitchell believes that outside of “capital ‘M’ musicians,” everyone should have the right to express themselves within music, and his company allows people to do so. While the premise of the platform centers on creative inclusion, Achim Koh’s question of what counts as creativity still stands in this example.

The assessment of creativity regarding Boomy also introduces a query of whether “artists” on the platform can claim protections, which Boomy answers in their terms of service, saying “all Tracks [defined as track, recording, stem or song generated by or in connection with your use of the Service] shall, from the inception of creation, be the sole property of Boomy and

its designees throughout the world.” Further, “Boomy and its designees shall have the exclusive right to copyright each such Track in its name as the sole owner and author,” deeming each Track created by users “‘work for hire’ owned by Boomy or its designee” (Boomy - Make Generative Music With Artificial Intelligence, n.d.). However, this clause in the terms of service fails to acknowledge critical components of the previously outlined AI copyright policy and existing copyright law.

Diving deeper into the legal framework regarding Boomy, the inconsistencies in their terms of service obscure the potential copyright protections for users. For one, the tracks created by users on Boomy’s platform are not protectable in the first place, given that a machine produced the “work’s traditional elements of authorship.” Two, work for hire outlines a work or service executed by an individual under the scope of employment where the created work’s protections are the property of the employer. In Boomy’s terms of service, they do not outline that they are users’ employers, and even if that were the case, they still cannot claim protections on the “Tracks” because they are prompt-generated. According to Boomy’s terms, even if a user subscribes to the highest tier service, the user is granted a non-exclusive, royalty-free license. This means a user owns the Track and is not required to pay royalties. However, another user could input the same or similar prompt as the initial user did, and Boomy can license the same Track to another user. Because the copyright belongs to Boomy for any samples or songs created, neither of the two users can utilize it in public performances, motion pictures, television production, advertisements, video games, or even in the background of a personal live stream. The Tracks created on Boomy’s platform, even if modified to create a derivative work, are not technically owned by anyone because they are unprotectable without substantial modification by copyright law. Yet, Boomy still retains ownership and the ability to withhold licenses from users who wish to “claim their place” if Tracks are modified and created for commercial use.

## **Chapter 2: Methodology**

I uniquely designed the methodology for this project to ensure that authenticity and integrity were at the forefront of my creative processes. When I began experimenting with Gen AI platforms to execute my primary objective, many platforms could not facilitate well-crafted content. For instance, Google's MusicFX is a Gen AI service where a user inputs a combination or list of keywords to generate a short sample of music based on the keywords. When using Music FX, I discovered successful methods of inputting keywords that would provide me with positive results. However, the results were rarely anything I would consider using for this project or otherwise, given the underwhelming quality as the platform was still in its initial stages. Instead, given the infancy of many music-based generative AI platforms, I utilized Open AI's ChatGPT 4 as a writing and organizational co-pilot and Splice Create for my production development.

I began experimenting with ChatGPT 4 in a musical context around September 2023, and it was marginally effective in helping me create a song by offering production tips and lyric

ideas. In the preliminary stages of executing this project, I provided ChatGPT with a batch of information regarding the task and information about my background or a particular experience about the song I was creating. The generated responses regarding lyric ideas and production tips were very surface-level, and the lyrics often lacked depth or personality. I had to create a way where it stored certain information, essentially working for me. While navigating this obstacle, Open AI released a new function within ChatGPT that allows users to create custom GPTs, which enable “anyone to create a tailored version of ChatGPT to be more helpful in their daily life, at specific tasks, at work, or at home—and then share that creation with others” (“Introducing GPTs,” n.d.). I designed my custom GPT specifically for my needs regarding this album and its creation, training it with information on almost everything I have in writing related to myself, such as background information, professional and personal aspirations, past experiences, and most importantly, in this case, song lyrics I’ve previously written. After I compiled that information into a document for its reference, I needed detailed steps for the model to follow to assist in creating and ideating for a given song.

To reiterate, each song on this album is grounded in a specific age/age range and has a corresponding tempo/range for me to use so that the project can function as a vehicle to tell my life story. The instructions are as follows:

#### 1. Initiating Song Development:

- Start by asking Brandon which song number (1-6) from the album “Growing Pains” he would like to work on.

#### 2. Reference Album Structure:



- Upon receiving the song number, access the “Album Structure for ‘Growing Pains’ by Brandon Porter (SONG/TRACKLIST)” section in the provided document.

Determine the BPM and corresponding age range for the selected song.

### 3. Background Research:

- Refer to the “BACKGROUND ON BRANDON PORTER:” section in the document. Focus on the life events and experiences that correspond to the identified age range, gathering content that might inspire the song’s lyrics.

### 4. Information Presentation and Additional Input:

- Present the gathered information (BPM, age range, relevant background details) to Brandon. Ask for any additional ideas, thoughts, or specific guiding information he might have for the song.

### 5. Seeking External Inspiration:

- Inquire if Brandon has any specific artists or songs in mind for inspiration. Use web browsing to research these references and gather relevant insights.

### 6. Web Research and Synthesis:

- Conduct web searches based on Brandon’s provided references, compiling information and insights for the song.

### 7. Synthesis and Verification:

- Combine all gathered information, including song number, BPM, age range, Brandon’s background, his additional notes, and external inspirations. Present this synthesis to Brandon for verification.

### 8. Brandon’s Verification:

- Await Brandon’s verification of the synthesized information.

### 9. Production Style Consideration:

- Review the “Producer Bio: Brandon Porter (BP Got That Gas)” section for insights on the production style suitable for the song, considering all previously gathered information.

#### 10. Request for Additional Production Notes:

- Ask Brandon for any further notes or preferences regarding the song’s production.

#### 11. Lyric Style Analysis:

- Delve into the “GRADING RUBRIC & LYRICS: Brandon Porter” document and navigate to the ‘Lyric Sheets:’ section, thoroughly analyzing Brandon’s lyrical style and past works to inform the songwriting process.

#### 12. Preparation for Songwriting:

- Synthesize all information, focusing on incorporating elements of Brandon’s life and background into the lyrics. Confirm with Brandon if the model can proceed with writing the song.

#### 13. Brandon’s Confirmation for Songwriting:

- Wait for Brandon’s go-ahead to start the songwriting process.

#### 14. Songwriting Execution:

- Craft the song, ensuring it aligns with Brandon’s unique perspective, tone, writing style, and background, making it a perfect fit for the “Growing Pains” album.

With that information in the model’s instructions, I was ready to start testing the model and assessing its quality and effectiveness. I first prompted the model to tell me about the process of writing a song with its assistance. The GPT would then generate a response detailing the steps of the process as described above, and in the following prompt, I tell it which song on the album I would like to start ideating and writing lyrics for. In the next chapter, I explore a case

study on its effectiveness, but this is the foundation of how I created the custom GPT “Brandon’s Chat.”

One aspect that was absent from Brandon’s Chat was its ability to analyze and assess the lyrics it generated. Although I input my lyrics from past songs for reference to draw upon my style, rhyme scheme, and lyrical content, I was not receiving enough depth to provide me with any creative spark, which was the primary goal for its creation. My next step was to prompt a separate chat to create a grading rubric based on concepts it used to analyze my previous songs. This step was used at the end of the drafting process to ensure the lyrics were aligned with my style, introducing the last step in the process:

#### 15. Grade Song Draft Using Grading Rubric:

- After the draft of the song is generated, you should ask if you should grade the song draft using the ‘Grading Rubric for Brandon Porter’s Lyric Style’ that is in the ‘GRADING RUBRIC & LYRICS: Brandon Porter document.’
- After utilizing the ‘Grading Rubric for Brandon Porter’s Lyric Style,’ you should ask if the song should be improved using insights gathered from grading the song’s previous step.

The custom chat gave me the ability to visualize everything as I worked on and built songs, making this process pivotal in the construction of the album. Often, I would create an instrumental track with a particular song in mind before I started writing lyrics, which aided my lyric ideation and the responses from Brandon’s Chat. Additionally, I found in my research that the GPT often worked better as a co-pilot if I already had a general theme for the song before I entered the process—and even better if I had a few lines for a verse or a chorus for the model to build upon.

### **Chapter 3: Case Study - *Growing Pains***

In this section, I outline the process of creating the first two songs on the album, “Backseat Memories” and “Show Me the Way.” I created “Backseat Memories” using the custom GPT as my collaborative partner, and elements of the instrumental for “Show Me the Way” were made with Splice Create.

I started the process of the first song with an audio sample I found on a sampling service called Tracklib, which sonically supported the theme I was trying to capture and fit into the tempo range. After finding the sample, I played it on repeat as I began the collaborative process with Brandon’s Chat to start thinking of melodic ideas. My second step was to ask Brandon’s Chat for the details of the first song to provide context. The response is as follows:

The first song on the “Growing Pains” album by Brandon Porter, titled TRACK/SONG 1, is characterized by the following details:

Age Range: 3-8 Years

BPM (Beats Per Minute): 65-80

This track is the slowest on the album, designed to be gentle and observational. It aims to capture the wide-eyed curiosity of early childhood, reflecting inquisitiveness and curiosity.

Much of this process involved strategic thinking, functioning similarly to a game of chess. I had to think two to three moves ahead basing my current prompts on subsequent actions. Next, I began describing the nature of the sample I previously found from Tracklib, how I wanted to build the song, and how I wanted it to sound and feel. The two artist references I mentioned to guide its lyrical and melodic stimulus were Tame Impala and Lil Yachty, specifically Lil Yachty's most recent album, *Let's Start Here*, to ground the GPT's understanding of the task. I also provided it with information about my experiences during those years of listening to music in the car with my parents and how their musical influences shaped my current interests. Lastly, I told the GPT to utilize a songwriting tip where a writer will start with the song's title and use it as a roadmap to guide the direction of the first verse or chorus. The title at the time was "Distant Memories." Brandon's Chat synthesized my entry and generated this chorus:

In the backseat, melodies float through the air,

"Distant Memories," we're going everywhere.

Voices blend in tunes we share, lost in songs without a care.

Dad's old tracks, Mom's soft hums, to those beats, my heart drums.

With every verse, we travel time, where chords and words beautifully rhyme.

"Distant Memories," in echoes find the songs of youth, forever intertwined.

Singing loud, though words I miss, wrapped in music's timeless bliss.

Through life's journey, these notes reminisce, "Distant Memories," my soul's kiss.

Its output surprised me, giving me exactly what I needed to act. I rewrote the chorus to say tentatively:

I'm in the backseat, melodies floating through my ear,  
Distant Memories, yeah, we're going everywhere,  
Voices blend in tunes we share, lost in songs without a care.  
Dad's old tracks, Mom's soft hums, to those beats, my heart drums.

Although the last two lines of the chorus were not up to my standard or anywhere near my writing style, I still wanted to progress with the writing, so I asked the model to use this as a base to develop the first verse of the song. The following response was moderately helpful, and this was because I gave it a moderately descriptive prompt. When using ChatGPT, the output is highly reflective of the input, so in the next step, I refined my prompt for detail and clarity, which reads, "You're an expert in songwriting and all things Brandon Porter as it relates to his writing style and tone; as such, harshly grade this verse with a critical songwriting lens against the grading rubric, and then give feedback about how to improve the verse."

This step was vital in obtaining the best results from ChatGPT in any capacity. With any limited memory model, you must instruct the model of its role and task and provide detailed instructions about the response format or presentation.

Here, I had to think creatively about how I wanted the GPT to achieve my preferred results. However, I needed the model to have context for my desires to reach the outcome. I typically used the grading rubric to generate feedback I could then prompt the model with to improve previous responses, making the model work for me. After prompting the model with more detail, a concrete request, along with context to complete the task, it gave me a significantly better result that I could use in my song. This is the revised verse:

Cruising down memory's lane, in our family cocoon,  
Echoes of Marvin's soul under a crescent moon.  
Mama's voice, a melody, dancing with Dad's tune,

Sade's smooth love, our car's serenading cartoon.  
Steering through the streets, Dad's jazz and rock fusion,  
Queen's beats meet Ella's scat, a harmonious illusion.  
Lost in the lyrics, my young voice in confusion,  
Yet every misheard word, a joyful inclusion.

I had a solid idea of the chorus and verse's direction at this point, and my ability to think melodically and rhythmically on the fly about how I wanted the song to flow was crucial in this process. The GPT does not work unless I do, and I made sure not to rely on it as a ghostwriter. From the initial chorus example it generated, I copied the first two lines almost exactly. The third line in the example ended with "without a care," which I took and rebuilt to say, "No apologies, cause I don't have a care." I came up with the last line in the first part of the chorus as I was recording the previous lines. The process undoubtedly lent itself to speed and accuracy, which was my initial hope in creating it. Next, I had to finish the chorus, typically eight measures long, and I only had four lines, which read:

I'm in the backseat, melodies floating through my ear  
Distant Memories, yeah, we're going everywhere  
No apologies, cause I don't have a care  
Going through the motions slower.

To continue building the chorus, I referred to the examples the GPT generated to see if I could draw from anything. The line "Dad's old tracks, Mom's soft hums," helped me proceed writing. My next move was to rework it to have more rhythm in its cadence. So instead of "Dad's old tracks, Mom's soft hums," I changed it to "Mom's old tracks, Pops humming in the background," which led me to the following line, "Sonics on surround sound." From there, I formulated the rest to further the scene I wanted to depict. The finalized chorus is as follows:

I'm in the backseat, melodies floating through my ear

Distant Memories, yeah, going everywhere

No apologies, cause I don't have a care

Going through the motions slower

Mom's old tracks Pops humming in the background

Sonics on surround sound,

Driving through the town now

Don't try to turn me down now.

The next step was to continue leveraging the verse ideas Brandon's Chat provided as sources of inspiration. Referring to the revised verse the GPT gave me, the first line was "cruising down memory's lane, in our family cocoon," which starts well and fits the song's theme, but the second half does not make much sense. However, by modifying the second half of the line, I came up with a variation that worked and allowed me to maintain my pace.

I started recording my vocals for the song once I had the first four lines of the chorus solidified, which allowed me to hear how I would sound over the instrumental and how one line would flow into another. This process of writing and recording simultaneously created opportunities where I could produce lines on the spot. With the help of the custom chat, I wrote and recorded the chorus and the verse in a matter of forty-five minutes, which, for me, was a much shorter amount of time than it has taken in the past. The most compelling aspect was the writing's consistency in its narrative, effectively telling a story from my life. This is the finalized verse that follows and precedes the chorus:

Cruising down memory lane, I'm in the coupe

Sade in my eardrums Sweetest of the Taboo

Marvin Gaye, Alicia Keys, and some Stevie too



All these inspirations, I don't know what to do

See my Momma looking through the rearview

Smiling and nodding, watch her baby groove

Entering dimensions on my way to school

Almost said a swear word, hold up. Play it cool

Swerving through the verses

Looking out the window thinking, what is this immersion?

Driving with a purpose

Don't distract me, please

I hear piano keys and harmonies

While I'm...

After I had the verse and chorus written and recorded, I asked the model for additional production tips to supplement the story and ground the song in this period of my life. One suggestion I implemented was the sound of kids playing in the background. Another suggestion was adding vintage sound effects, such as vinyl crackles or tape hiss, to give a sense of nostalgia, which I also added. These aspects came together to help cement the themes and create a realm of escape and reflection.

Another instance where I used Gen AI in this project was in the second song, "Show Me the Way," which represents ages 9-12 years old. In this song, I used Splice Create to make the foundation for the instrumental track, comprised of a bassline and a synth pad. I generated the samples by selecting R&B as the target genre and browsed through about 7 sample creations before landing on the one I moved forward with. I attempted to write this song with the custom

GPT on two other occasions, along with instrumental tracks I made without Gen AI. However, the tracks and lyrics lacked a sense of nostalgia and digestibility in their delivery. While I maintained the general theme of looking up to my brother from past drafts, starting fresh with Splice Create gave me a blank canvas to write on. Much like the previous song I discussed, I wanted to create another song where the listener could picture themselves in the moment described, which I achieved. I began to use the GPT in the writing process, but I realized my personal attachment and emotional proximity to the event described would supersede the custom GPT capabilities. That said, once I had the bones of the instrumental created, I was able to begin the writing process, which took me about an hour to complete. While I opted against using the GPT in the writing process, it was well worth the sacrifice, given the story's detail encapsulated in the song.

I used one method or the other in creating the songs for the rest of the album, and whether I was using ChatGPT or Splice Create, my writing and creative process was undoubtedly faster once the ideas were present.

#### **Chapter 4: Analysis of AI's Impact on Music Quality and Creativity**

The custom GPT served as a creative amplifier in lyric generation, ideation, and conceptualization of songs. The most consequential way Gen AI assisted me in this process, and one that I did not anticipate entering the creation of the project, was in guiding the thematic coherence of the album. Given that this was only the second project I have produced as an artist, I cannot speak in detail comparatively about the process of creating a full-length album without AI. Understanding this notion, it is important to note my previous project was intended to be a collection of various songs without a theme or concept. However, understanding my creative process and how I organize tasks, I would have been tremendously disadvantaged without the help of Gen AI, given the ability to document my thoughts, concepts, and ideas along with feedback to push my creativity along. Another way this process assisted my creativity was in reverse engineering songs or certain parts within a track. For instance, if I had an idea for a verse, I could follow the steps to complete the verse, then prompt Brandon's Chat to take the verse and analyze the lyrical content and themes to build the chorus, working backward to complete the song. Comparatively, I could use the same technique for creating titles by prompting ChatGPT with the song's lyrics and asking for title ideas that align with the theme.

I was uncertain of Gen AI's potential impact on the overall music quality, but thankfully, while it did not necessarily improve the quality; it did improve my thinking and forced me to

make better decisions. The growth I experienced as a songwriter and producer during this process wasn't a product of using Gen AI, but the contrast between this project and my last stems from the concept and execution. If I compare this body of work with past songs or projects I made without AI, the previous works were predictable in that they reflect my style and are influenced by songs I like. However, the songs in this project are marginally experimental compared to my other works given the difference in my songwriting approach. With Gen AI, I had the freedom to create anything I wanted and was more inclined to try different styles and genres. One note about the creative process using AI was that it sped up my process, but it was not always in the best manner. I would move so quickly during the songwriting process that my decision-making was occasionally clouded by ease, and the results of this barrier showed in draft ideas. Although ChatGPT helped me reach lyric ideas faster, they did not always feel authentic. Additionally, there came a point where I was using ChatGPT to write so much that I would sometimes start by asking ChatGPT what I should write about for a particular song, which often led to a dead end because I lacked inspiration due to my approach. This drawback could manifest itself in a multitude of ways, but the most harmful could be relating to an influx of works created with Gen AI that lack quality or character.

With my ability to utilize digital audio workstations (DAWs) and industry-standard tools, plugins, and equipment, I was uniquely positioned to leverage techniques used in recording studios worldwide, contributing to the overall quality of the product. Combining this advantage with my use of Gen AI, many of the songs I made were close to completion after recording the vocals because the vocal quality was excellent. Additionally, the production quality of songs stands above those I have made in the past because of my ability to modify melodic components with different effects to create space within the songs.

## **Chapter 5: Challenges**

I take pride in my skills in music production and music creation. However, this project marks the first time I merged my academic studies with my interests, which was a challenge. Music has always been my escape from school, work, or whatever is going on in my life, and challenging myself to create a musical project under an academic scope came with setbacks and hurdles I had not yet faced. Many of the hurdles I faced during the process were personal hurdles that then bled into my work on the music. The most challenging barrier in this respect was dividing my time and headspace to ensure that I was creating music for my enjoyment while maintaining my progress with this project. The creation of this project functioned much like drafting an academic essay where I would empty my thoughts on the subject and then organize and formulate the argument. Thankfully, concerning the music, there was no argument I had to make, but I first had to outline my topic and then gather the materials to execute my idea. In this case, the materials mentioned were loops from Splice Create, pieces of song lyrics or ideas, and samples from Tracklib, which allowed me to create the foundation of my production, either using my Music Production Center (MPC) or digital audio workstation FL Studio, I also had to write lyrics for each song, ensuring they fit within the project's scope according to each song. After that, I edited and mixed the songs to ensure they were complete. And the most significant challenge throughout the process was juggling my academic studies with this project.

At the project's onset, I understood what I wanted the songs to sound like and the general ideas I hoped to address, but I did not give much thought to how emotionally taxing specific

points would be. In the fourth song, I describe my relationship with my father, and while I am currently content with my relationship with him, that was not always the case. As I detail in the song, I used to butt heads with my father almost daily, and having to revisit the feelings and memories surrounding that period of my life took a lot out of me emotionally—an interesting juxtaposition to writing the lyrics with AI. I spent about a month working to complete the first draft of the project, and by that point, I was truthfully tired of the project and did not want much to do with music in general. However, I did not have much time to remove myself from the process because I had a deadline to meet, introducing another challenge I had to overcome. I envisioned my senior thesis as a moment of reflection and a source of pride upon submission. On the other hand, this was a school project that created an emotional barrier between “have to” and “get to.” One says I have a burden I need to address, and the other speaks of an opportunity. I do not believe that this obstacle compromised my attachment to, or effort given to the music; it was simply a source of difficulty that I learned from. There also came a point in the process where I had to reduce the number of songs included on the album because I did not want to sacrifice quality over quantity. However, I would classify this as a “good challenge.” I have alluded to this previously, but the most significant obstacle was the fact that I had a deadline to meet. As much as I tried to remove the idea from my mind, there was always a little voice in my head reminding me of the date and amount of time I had left to work. And though ChatGPT and Splice helped accelerate the process, I have never believed in or wanted to rush my process because the results show the difference.

On the technical side, I had to learn to craft the custom GPT to my liking, which required immense tinkering and prompting. Introducing the custom GPT into my writing process created another learning opportunity. While it shined in certain areas, its powerful capabilities occasionally failed to meet my standards, which was a source of frustration.

During the songwriting process, I had to lower my expectations of what it was capable of and figure out how it would best integrate into my workflow. Another technical obstacle I faced was learning about and using several new technologies that would contribute to the quality of my music, such as Auto-Tune, various vocal and instrument compressors, delay and reverb effects, and many others. Again, I classify these as good challenges that I am thankful to have had the opportunity to experience.

I advise young creatives or musicians hoping to integrate Gen AI into their workflow to have a strong understanding of their personal sound, the intricacies of their preferred digital audio workstation, and what they hope to achieve with the combination. I am thankful that these tools emerged when they did because had they existed earlier in my musical career, I would not have known what to do with the plethora of tools and how to maximize their capabilities. Having a firm understanding of my taste and how these tools can best serve my creative process made an immeasurable difference in my approach with Splice and ChatGPT, and this advice is even more pertinent when addressing Suno, Boomy, and Udio.

## Chapter 6: Implications for the Music Industry

When discussing the larger implications of Gen AI for the music industry, major record labels play a significant role both in how they will utilize Gen AI and how they prevent misuse against artists. As mentioned with the example of Ghostwriter, Sony Music Entertainment and Universal Music Group swiftly intervened, removing the song “Heart on My Sleeve” from streaming platforms. However, one aspect record labels cannot control is how platforms such as Voicestars, Suno, Udio, and others train their models. Take Voicestars, for example; their platform trains models to mimic specific artists’ vocals when receiving audio content. For the sake of argument, let’s assume this is how Ghostwriter created the vocal tracks for the song.

At the time, there were no legal repercussions resulting from the song. Such action would have violated the right of publicity laws in the United States, which grant individuals a right to profit from their name, image, and likeness, including their voice. However, “there is a clear distinction between using a person’s actual voice versus a voice that only sounds like the person’s voice. The First Amendment allows one to imitate the sound of another even when they specifically intend to do so—think cover artists” (Black 2023). Additionally, given that there are no definitive laws against AI vocal models federally, all the labels could do was remove the songs from streaming platforms. Further, Voicestars claims in their terms of service, that “the AI models developed on our site are created using royalty-free publicly available data” (“Terms and Conditions - Voicestars,” n.d.). The company “explicitly disclaim[s] any and all liability for any direct, indirect, incidental, consequential, or any other damages arising from the use or interaction with the AI models.” However, just because Voicestars has a disclaimer does not relieve them from a right of publicity claim. It is important to note that Ghostwriter claimed he



had no financial motive. Instead, it was to demonstrate the power producers and songwriters now hold to create their own works without the necessity of a traditional artist or performer.

Given the legal framework outlined in Chapter 1, Gen AI music introduces numerous implications regarding the creative process in songwriting and music production. As I concluded my research in the project, I came to a point where I could not imagine how I used Gen AI, specifically ChatGPT, breaking a barrier and becoming the perennial songwriting tool due to the construction of the model. Without the steps and background information I provided in its instructions, I would have had to constantly remind the program of the task and context. Granted, a user can store this information in a prompt that they refer back to, but I think I speak for many musicians and creators that when inspiration strikes, the last thing I want to do is to organize my thoughts and articulate them in text form, rather than simply flowing with the work based on my emotions. Many areas within songwriting and music production are instinctual, and, at times, writing with Chat GPT felt like I was sharing or even sacrificing my freedom of creative decision-making due to the amount of time it took to articulate my thoughts. However, once I had the foundational ideas present in the writing process, it was an immense help in advancing my progress when I hit inevitable roadblocks.

Introduced in January 2024, Splice's "Create" feature is a considerable step for creators to utilize AI technology. As a music producer, I have used Splice since I began producing music, and it was integral in developing my taste and personal sound and understanding my likes and dislikes. The platform's new tool gives users "a way to create musical ideas comprising up to eight layers (a.k.a. Stacks) using sounds from our immense catalog" (Splice 2023). Users select a genre they want to create in or begin the stacking process directly from a sample they like, and the program "will comprise a handful of layers in a range of different keys and tempos, matched by our AI to sound great together." The ease of sifting through "Stacks" by genre was a much

faster way to use Splice as a creative tool in the production process because of the speed at which users can create new loops. It proved to be the most valuable case of seamless integration of AI and music. Additionally, and most importantly, when acknowledging the current copyright policy surrounding AI-generated content, all of Splice's samples are royalty-free, so users maintain full ownership over what they create. Moreover, the samples sound remarkably more polished and professional than Suno and Udio, so creators have more freedom to utilize and manipulate the samples they find.

The clear advantage of integrating Gen AI in music production over standard software and techniques is the creative freedom Gen AI platforms afford users. As mentioned, in Boomy's terms of service, users are not allowed to make derivative works of Tracks in part or whole, but what if they never knew their tracks were being used?

In hip hop, sampling is described as taking the content of preexisting music, whether in part or whole, to create a derivative work, which can be as similar or as distinctive as the artist/producer wishes. This technique emerged in the 1970s when Disk Jockeys "would isolate instrumental breaks in funk and soul songs and loop them to create new beats...popularized by DJs such as Kool Herc, Grandmaster Flash, and Afrika Bambaataa," which is now a staple in hip-hop ("CULTURE: A Walk Down the History of Sampling in Hip-Hop Music Production" 2023). That technique was then developed by creators using preexisting material to create derivative works commercially in studios, such as "Rapper's Delight," which samples Chic's "Good Times." This innovation and recontextualization of music were so refreshing that it earned The Sugarhill Gang "the first classified hip-hop single to grace the Billboard Top 40." Although the song was widely successful, members of Chic threatened to sue Sugar Hill Records for copyright infringement because they did not clear the sample before releasing it. Given this technical example used in hip-hop music production that has transcended the last 50 years, I have

significant reason to believe hip-hop production will continue to leverage sampling via Gen AI, which will effectively broaden and redefine the licenses necessary for prompt-generated samples and the concept and role of a music producer.

Disk Jockeys' creative innovation subsequently changed how hip-hop music was consumed and created. The same is true for producers in the early 1980s, as drum machines such as the Roland TR-808 rose to prominence, which "quickly became the hip-hop drum machine. Instead of relying on breakbeats, producers could write original drum patterns, speeding up the production process" (Dixon 2018). Fast forward to 1988, the first MPC (Music Production Center) was released and gained massive popularity "due to its long sample time [13 seconds], unique sonic character, and real-time programming capabilities." The technological advancement stemming from these two machines set the stage for drum programming and sampling to shape hip-hop production. Artists like Kanye West based their artistic sound on sampling content, providing "near-orchestral versatility and total creative control to its user" (Aciman 2018). In recontextualizing songs audiences already loved, Kanye West's use etched his name as a creative genius in music history.

Grounding this example in the current context, I question the difference between using a sample from a Gen AI music company I created with my prompting skills and a 1970s soul record. Truthfully, there is no difference other than the ethical component of how the Gen AI platforms were trained and the legal obligation of clearing a preexisting sample with sound recording owners. Am I considered less creative in this vein because I am using external audio that a human did not technically create? Furthermore, I can uniquely modify an AI-generated sample to hide it among other melodic and rhythmic elements as many samples throughout hip-hop history have been so companies would not know it was theirs. And even still, how would

they know where I got the sample from if they have not heard the breadth of content their platform is capable of?

The hip-hop genre is predicated on originality yet still favors creators' innovative uses of preexisting material, taking inspiration from past works to make something new. By utilizing this tool to my advantage, I can make samples faster and more accurately than it would take to go to a record store or sift through hundreds or thousands of records using a service such as Tracklib. The best part of it all is that, in my eyes, it is more original than using music everyone has equal access to.

With the invention of drum programming machines, music production became more accessible for anyone with the time, money, and desire to create. And I see the advancement of Gen AI no differently. The progression of digital technology, specifically DAWs (Digital Audio Workstations) and "in the box" music production over the last twenty years, has allowed producers to create music exponentially faster from their bedroom, basement, or wherever. Adding more tools as sources of inspiration in the creative workflow means that music production will look and sound different as time progresses. Gen AI music platforms will only become more advanced and more prevalent, as we have seen with Chat GPT and other generative models, so there will come a point where we, in fact, cannot demarcate what is AI generated and what is 100% human authorship.

Along with minimizing the time it takes to create music with Gen AI, specifically with platforms such as Suno and Udio, I tested Udio's platform myself to see how much faster that process would be. Logging into Udio, which is currently in the beta stages, I navigated to the create bar and typed in "1970s soul" to see what it would output, and the results were shocking. My first reaction after hearing the sample was how polished it sounded. Another compelling aspect of the sample is that the lyrics were unintelligible, and at points, the program combined

words to create the semblance of an actual vocal track. Nevertheless, I downloaded the sample and imported it into my MPC to make a beat. My first step was altering the sample's pitch to differentiate it from its original state; then, I used a function within the MPC to chop the sample into 32 regions, allowing me to play each section across the sixteen pads. After sorting through the sample chops, I could not find a melodic pattern that worked, so instead, I started working on a simple drum pattern to ease the process of finding chops that would fit melodically within a specific tempo. Once I completed the drum pattern, I returned to the sample chops and found playable sections that fit with my created drum pattern. Sure enough, after working with the sample, I had a loop that I could theoretically use to create a song, and the process astonishingly took me 19 minutes from creating the sample to having the initial components of a song. In theory, the speed of this process would allow me to create various drafts far more efficiently, providing additional opportunities to execute my creative vision in less time.

## **Chapter 7: Conclusion**

Gen AI is not only here; it is here to stay for the indefinite future and will be integrated into our lives in ways we cannot imagine. In the context of my album, Gen AI repeatedly proved

its importance and powerful capabilities, which I am immensely proud of and grateful to have had the opportunity to explore. However, given the legal implications discussed, there is tremendous uncertainty surrounding ownership claims. Creatives using Gen AI should be able to protect their work created with AI platforms. While I did not use Suno or Udio in crafting the music for this project, the instance I demonstrated working with Udio shows how baseless the companies' terms are that I cannot protect the work because they are works for hire. That example, while brief, shows how much creative control producers have in their ability to modify samples to create new, unheard-of works that reframe the idea of what music production encapsulates. I believe users must substantially alter the generated sample before they can call it their own, but the speed of the process shows just how innovative and potentially revolutionary this technology can be if utilized ethically. And though I do not know what constitutes sufficient transformation to claim protection, this presents another issue for copyright policy regarding Gen AI.

My use of ChatGPT in creating a custom songwriting co-pilot could be a way that artists and songwriters transform the way they write and ideate songs from the titles to structure, to lyrics, and everything in between let alone being utilized as a tool for creating full-length projects. Given the discussion of how Gen AI platforms train their models, I believe that there will be considerable changes to copyright policy surrounding Gen AI products and companies within the next three to five years. The implications will force major record labels to evaluate how they protect artists and their recordings, which has already begun. It will also affect the development of new and existing generative platforms, resulting in unprecedented transparency regarding their models.

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### **Appendix:**

Link to *Growing Pains* by Brandon Porter:

[https://www.dropbox.com/scl/fo/t7i5fgya5iuz20sb7tzar/AG\\_BAU5HiF7U1PsyOVJrZfI?rlkey=3ttqor9wni2nf3uowyy78ohuq&st=8w15c4tx&dl=0](https://www.dropbox.com/scl/fo/t7i5fgya5iuz20sb7tzar/AG_BAU5HiF7U1PsyOVJrZfI?rlkey=3ttqor9wni2nf3uowyy78ohuq&st=8w15c4tx&dl=0)

Link to "Brandon's Chat" Custom GPT: <https://chat.openai.com/g/g-5sFTgMdfN-brandon-s-chat>