AI in the Music Industry: The Rise of AI Generated Songs in Music Production

In recent years, the phenomenon of AI generated music has made headlines more than once. One example of this is Canadian pop artist Drake's use of an AI deep fake. Recently, AI generated songs were given a sample clearance and the popular Christmas song: *Rocking Around the Christmas Tree* was translated into Spanish using AI. On top of that, the Recording Academy, responsible for the Grammy Awards, recently issued new rules that "allow music with AI generated elements to be nominated for awards but only if there's a meaningful human contribution." It's easy to see the impact the current AI ecosystem is having on the music industry.

As far as can be seen, artificial intelligence made its debut in the music industry in the form of "music generators." These are AI algorithms that use Deep Learning to analyze songs and create new songs based on that analysis. This allows artists to "create entire tracks using AI generated music." This seemingly inauspicious debut has led us to the examples in the previous paragraph. This has created uncertainty about AI and the future of the music industry.

While AI generated songs offer exciting possibilities for music production, they also raise critical concerns regarding creativity, authorship and industry impact. We will explore the various ways AI has impacted and will impact the music industry in this essay.

Understanding AI Generated Music

AI generated music can be defined as music created by Deep Learning models as well as generative models. The Deep Learning models analyze existing songs and learn from them while the generative models generate new songs based on prompts. Examples of these models are Recurrent Neural Networks which are Deep Learning models able to process "sequential data like time series data, text or speech," in other words, the sort of data that prioritizes "order of elements." It goes without saying that the lyrics to a song fall into this category.

Generative Adversarial Networks use "two neural networks to generate new data samples that resembled the training data." The "generator network" creates fake data while the "discriminator network" tries to distinguish between the generated data and the real data from the training set. These two networks continue to compete until the new data is as accurate as possible. Naturally, these models play a role in ensuring that an AI generated song seems authentically human.

A third machine learning network that can be used in the music industry is what's known as a transformer. This is a "neural network architecture that excels in converting input sequences to output sequences." An example of this is translating text or generating new text which naturally makes it useful for generating songs.

There are several notable AI tools and platforms used in the music industry. Among them is Open AI's Jukebox. This is a neural network model that "generates music including vocals as raw audio." It is trained on a data set of millions of songs and can produce "complete coherent songs with lyrics."

Also, the Amper Music Platform allows users to "create and customize original royalty free music." It has a vast library of audio samples and instruments at its disposal which allows it to generate music tailored to the user's preferences such as style and mood. This platform is mostly used for things like video games, corporate clients or online content creation.

It is important to recognize the difference between collaborations between humans and AI and fully autonomous music generation. It is a difficult to distinguish between music composed by real musicians and music generated by AI. However, it has been shown that if listeners know a piece of music is AI generated, they are less likely to enjoy it. This may be due to an inherent suspicion we have that artificial intelligence cannot create emotional art in the same way humans can. Given this, it is safe to assume that a piece of music generated solely by AI would make us emote less than a piece that is the work of both humans and AI. Time will tell if this is true, but it seems this is a realistic way to distinguish between the two.

Challenges and Criticisms

The increasing use of AI in the music industry brings with it serious challenges and is therefore subject to valid criticisms. The opportunities AI offers must, therefore, be considered in balance with these challenges and criticisms posed. One of the most significant ways AI is influencing the music industry is through its role in music composition. The question that begs asking however, is, can AI be creative and original in the music making process or is it just offering remixes of collections in its acquired dataset? As already seen, Deep Learning techniques enable models like MuseNet and Magenta to craft original compositions, either imitating the styles of renowned artists or producing entirely new music. These tools can be invaluable for musicians who wish to experiment with innovative ideas and get inspiration.

However, while these AI tools are a valuable resource for artists, they are only complementary to the musician's creativity. AI cannot replace the musician's creativity

because it lacks the emotion, personal experience and cultural depth brought to it by human expression. The personal meaning and storytelling that gives music meaning and emotive connectedness is difficult if not impossible for AI to replicate. While AI can help generate melodies, harmonies, and rhythms, it cannot express the same depth of meaning as human written music.

Clearly, AI's growing potential and role in music production raises significant ethical and economic concerns. One of the biggest issues is the question of "authorship and ownership". When it comes to AI generated music, who holds the rights, the developer of the AI, the user who guides its composition, or is it the AI itself? Currant copyright laws do not address these complexities, leading to uncertainty in legal frameworks. Demands are being made for more stringent laws to be devised that ensure artists are compensated fairly and their rights are not being compromised.

Similarly, as AI tools' ability to replicate the styles of established artists improves, the whole issue of plagiarism must be considered. Tools like Amper Music and Jukedeck that can analyse vast amounts of data may unintentionally plagiarize artist's work without their consent or compensation. This blurred line between inspiration and unauthorized copying, poses vital risks to the protection of intellectual property.

Prominent musicians such as, Billie Eilish and Jon Bon Jovi, have expressed concern that AI-generated works could diminish royalty pools and reduce opportunities for human musicians. Furthermore, they fear that human musicians are at risk of being replaced by AI leading to the devalue of human creativity. This could further undermine the economic stability of the music industry.

Another challenge AI presents in the music industry is the potential for job displacement. Human composers and producers are already being replaced by AI to generate background scores in advertising, television, and film. The use of AI can offer efficiencies and cost reductions, but it is at the risk of people who typically held these jobs. As an example, AI-generated stock music may replace human-composed music for commercial projects, threatening employment for musicians, sound engineers, and composers. As AI technology progresses, it is more likely that tasks relying on repetition or structured formulas—such as composing music for advertisements and video games—will be automated, reducing the need for human workers.

Ethical and Legal Considerations

The challenges facing the music industry as discussed in the previous section pose serious ethical and legal implications that are currently being debated but still lack clarity. As stated, copyright issues remain unresolved because it is unclear whether it is legal to use existing, copyrighted work to train, or input AI models. Similarly, it is unclear if AI generated music, based on existing music or output, can be said to be derivative work. Usually, the original copyright holder has exclusive control over derivative works. However, under standard copyright law, creating music that merely resembles another artist's style does not qualify as a derivative work, meaning it is legitimate. Navigating the complexities of the ownership of intellectual and creative property with AI in the music industry, for now, continues to be vague and subjective.

Compounding these ethical concerns is AI's capability, through deepfake technology, to replicate or imitate the voices of artists, including those who have died. An incident exemplifying this took place in May of 2023 when a new collaborative song, *Heart on my Sleeve*, came out on platforms like TicToc and Spotify under the name of Drake and The Weeknd. It had more than nine million views before it was discovered that it had not been released by Drake and The Weeknd at all. TicToc user, Ghostwriter977, had trained AI on the artists voices, styles and lyrics and generated an impeccable new song. Once discovered, Universal Music quickly removed the song from the internet.

This incident brings to light the ease with which anyone with a bit of technological know-how can accomplish this, as well as the critical issues surrounding rights of the artists. The question is, how can they protect themselves and their music? And, what about AI generated music, can it also be eligible for copyright protection? Intellectual property expert Louis Tompros, a lecturer on law at Harvard and partner at WilmerHale, says these questions will need immanent consideration by the courts.

Tompros anticipates regulatory actions from both the Copyright Office and the courts that will provide greater clarity in coming months and years. First, case law needs to either affirm or challenge the Copyright Office's stance on whether AI qualifies as an author. Secondly, judicial consensus on whether using copyrighted material to train AI constitutes fair use, is necessary. Finally, the music industry needs clear guidance on whether AI-generated works that imitate artists should be classified as derivative works.

In a recent survey by the British Phonographic Industry (BPI) music fans came out with a strong voice for greater transparency of AI-generated music. This survey clearly demonstrates that music listeners are demanding clearer distinctions between human-created and AI-generated content. This demand carries with it implications for artists,

producers, and record labels to establish new standards and guidelines. Disclosing the use of AI in music production could help maintain trust between artists and their audiences, preserving the integrity of the music industry.

Benefits and Opportunities in Music Production

Even though artificial intelligence has caused divisions among creators and executives in the music industry, there are undeniable benefits that come along with it. First, it speeds up the production process. One of the ways algorithms can do this is by arranging and mixing tracks. This allows producers to concentrate on things like "fine tuning and making creative decisions." AI can also analyse audio and "make real time suggestions for its improvement".

AI also has great potential to empower independent artists and producers. Recently, for example, Warner Music celebrated the launch of its first ever "AI enhanced artist" Noonoonuri. Her debut single, Dominos, took a team of songwriters and producers two years to complete. However, if AI keeps progressing the way it is, it will soon take much less time and cost much less money to create virtual artists.

This means that solo independent singers will be able to produce songs, bands, music videos and live performances with tools like generative writing, composing, instrumentation and visual arts. Both have the potential to significantly reduce the amount of time and energy it takes to launch the career of an independent solo artist, like Noonnoonuri. However, it remains to be seen how many artists will choose to take this route. It seems that most artists would prefer to do things the old-fashioned way rather than make everything virtual despite the ease of the process. I would imagine most people would prefer to work hard and reap the rewards rather than doing things virtually and not having satisfaction of accomplishing a hard task.

Another capacity that music generating AI has, is to create custom music for film, games and advertising at scale. As previously discussed, AI generators use algorithms and machine learning to create music. These generators derive knowledge from databases of compositions and "customize new music based on selected genres moods and instruments." Many of these generators allow users to make customized music that fits their specific needs and desires.

Given the fact that AI models can be trained to perform several tasks at once, it follows that they would be able to generate several different songs for different purposes at once, greatly reducing the time involved. This could be a benefit to marketers and game designers alike.

The Future of AI in Music Production

As with all implementations of artificial intelligence, there are many innovations we should be on the lookout for. Firstly, Ai can serve as a co-creator, making hybrid workflows possible. To demonstrate this, a songwriter might write the lyrics to a song but then have an AI model compose or select the music. This would be the ideal collaboration of humans and AI in the music industry. The speed of the process would dramatically increase. In fact, it's been shown that humans in collaboration with AI can complete tasks "73 per cent faster and to a higher quality then humans working alone."

AI also brings the potential for new genres and experimental forms of music to be introduced into the music industry. Its capacity to analyze "vast datasets of existing music" gives it the capacity to identify and combine unique characteristics and patterns, creating new genres of music. This potential could result in genres mutating and evolving according to listener preference, feedback and engagement. Many people might view this as a step in the right direction for corporate music.

Naturally, the music industry has had to adapt as AI has become increasingly prevalent within it. Notably, record labels are "scanning social media platforms, on the lookout for unlicensed use of their songs. The Shazam app has a similar process for locating unlicensed use of songs. This shows that record labels and publishers are indeed being proactive in protecting their music. However, If artists do not wish to be subject to the kind of thing previously discussed regarding the "fake Drake song" ,copyright law will need to change to reflect that and include consequences for those who engage in it. Simply being asked to take a song down will not necessarily deter others from engaging in similar pranks.

In conclusion, AI is transforming musical productions, but it is essential that people learn to use it responsibly. In the right hands and with concrete guidelines and laws, AI music generating models can help launch the career of aspiring independent artists without the need to hire a band or a production team.

Music generating models also have the potential to sift through a vast amount of pre-existing music and use it to create new genres based on listener preferences and feedback, and record labels can use artificial intelligence to scan social media looking for misappropriations of their music.

On the other hand, people can use AI models to create fake songs by well-known artists which is unethical and needs to be taken care of by appropriate laws. Another problem with AI generated music is the lack of clarity on the issue of ownership.

The artificial intelligence debate has many sides, and though artificial intelligence can be useful, it also presents many challenges and makes people rightfully wary of its capabilities. The key is balance—leveraging innovation while protecting the integrity of human creativity.