



## Creating Music Using AI

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### ABSTRACT –

Here, in this paper it explores and discusses the use of AI (Artificial Intelligence) to create Music. AI is used in various technological industries to achieve success in various ways, the music industry has also witnessed significant changes. AI is being used to generate music in various ways, like generating melodies, rhythms and harmonics, and also can be used to create entire songs from start to end.

This paper starts by discussing about the challenges of creating music using AI, then the benefits of AI to create music and concludes by discussing the future of music with AI also recent finding. The insights of this paper are taken from various sources including Adobe, Meta, as well as articles and reviews from trustworthy sources.

**Keywords - AI, Generative Adversarial Networks, training, music, model, text prompt**

### INTRODUCTION

**What is Music?** Music is an art in a different form that can switch different types of emotions in people. It can be used to express different emotions like anger, love, happiness, sadness and other emotions depending on the melody of the music. Music can also be used for entertainment, storytelling and more.

Traditionally, music is created by humans, but in recent years AI is being used to create music which takes the music in a whole new and different level for humans. AI is impacting the creation of music production and creation.

**Music using AI** – There are various challenges in creating music using AI (Artificial Intelligence). One of the major challenges is training the AI model, as it requires training in large number of datasets to make the music that is realistic as well as creative. As realistic and creative the music should be, it will be another challenge to meet the need to be original and creative as humans. AI models are able to generate music similar to existing music, but it can be difficult for AI to generate truly original music as humans as the AI models are trained in previous datasets.

The **Fig.1** shows the major steps taken in training the model. The input is given by the composer/artist through DAW (Digital Audio Workstation) then uploaded to the AI’s music encoder, which an algorithm to perform certain tasks, which leads to music interpretation by the AI which helps in decoding the file and generate music as a result.

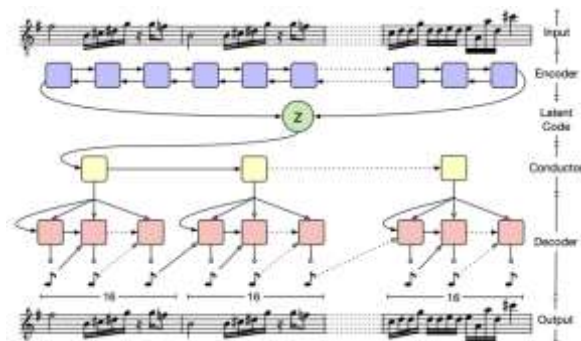


Fig.1

Source : Google

Regardless of these challenges, there are number of potential benefits in creating music using AI. One could be the ability to create music that is more diverse and creative than human can create on their own. AI models unlike humans can be trained on wide variety of musical styles, which can help them to create music that is more diverse than what a human composer alone could create. Another benefit could be the ability to generate music faster and easily. AI models can generate music faster than humans could, which can be useful for creating music for video games, movies, and other applications where creating music faster is important, as AI are trained using large datasets, they will provide number of varieties in composition of music than a human.

## METHODS

There are number of different methods that can be used to make music using AI. One of the commonly used methods is to train models against each other using (GANs) generative adversarial networks technique. This involves a multi-step process. First, existing music is being collected and preprocessed in the music library, then AI models like GANs are trained on the data available to learn the patterns.

The shown **Fig 2** is the visual representation of GAN, how the training is processed with the data available. The samples are given for the model to be trained where the model decides the requirements to generate the music as requested.

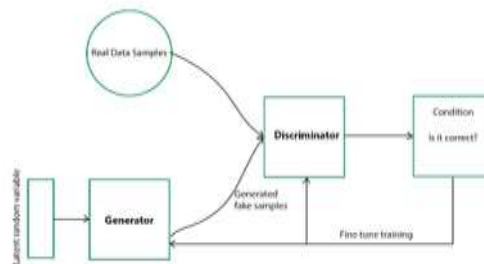


Fig.2

Source: GeeksforGeeks

Machine learning models like GANs are a type of model that can be used to create realistic music or images. They work by training two models together, one is called the generator, which is responsible for creating new and raw music and the other is called the discriminator, it is responsible for recognizing between real music and AI generated music.

## RECENT FINDING

**Adobe AI tools for crafting and editing custom music**– With years of AI research, Adobe has the most popular family of generative AI models like Firefly, which has quickly become the most widely used model for safe commercial usage in the world.

As with Adobe's Firefly, the new tools start with a text prompt that is put into a generative AI model. To create music, a user can type in a text prompt such as "sad jazz," "happy dance," or "powerful rock."

The **Fig 3** shows how a text prompt is given to the Adobe AI tool to update an existing music track which could possibly be used for "Inspiring Film" to "Intense hip-hop" music track.

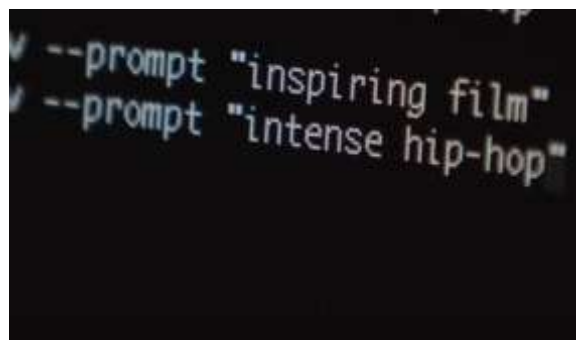


Fig 3

Source: Project Music GenAI Control | Adobe Research (YouTube)

Users could modify the tempo, rhythm, and repeating patterns of a piece of music they want, or choose when to increase and decrease the pitch of the audio, enhance a clip, re-mix a section, or create a smoothly repeatable loop using a simple interface.

With Project Music GenAI Control, users can generate specifically the parts they need to create intros, outros, and background audio without having to manually trim existing music. This would minimize problems with the workflow from beginning to end.

## RESULTS

There are number of successful attempts in creation of music using AI in creating music. One of the examples is demonstrated in YouTube by creators like Tanmay Bhat and his friends in the YouTube channel @Overpowered, where they recreated a Bollywood actor's Voice after training the AI model called RVC (Running Google Collab), also created an entire song with the help of AI, the tools used: ChatGPT for lyrics, UberDuck (for text-to-speech) and Audacity as a DAW (digital audio workstation). There have been various of new projects they have worked upon. The result shows number of musical styles from classical to current music genres. Another example is Adobe's "Project Music GenAI Control".

Below shown is one of the results of how Meta works on creating music using AI. Meta uses AudioCraft: A Generative AI Tool For Audio and Music as can be seen in *Fig 4*, the text input is given to be processed by the AI and in response to the instruction it gives music/sound output.

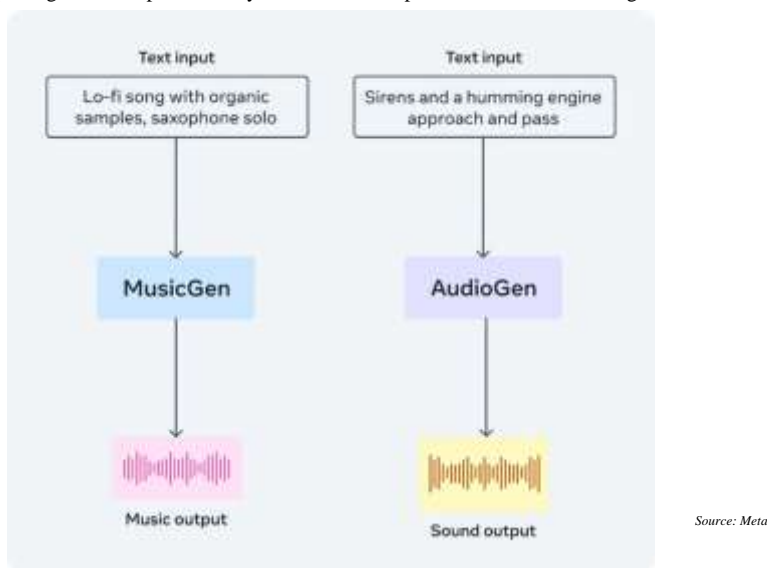


Fig 4

## MERITS AND DEMERITS

**Merits** – The merits of creating music using AI shows exciting evolution on music in present time. As it has huge potential in the creation of music, AI can create music that is more creative and diverse than a human can create. It also has the ability to create music faster and easier and can change the music as the listener wants.

**Demerits** – There are some drawbacks as well to the creation of music using AI, some of them could be that they need large amount of data to be trained and it is very difficult to train the AI for the perfect melody, tone, genre or harmonics.

## CONCLUSION

This discusses the pros and cons of using artificial intelligence (AI) into music production. AI has changed music, a type of expressive art, making it more difficult to be creative but also allowing for quick creation. Creators like Tanmay Bhat, industry like Meta's AudioCraft and Adobe's Project Music GenAI Control have produced effective AI-generated music using techniques like Generative Adversarial Networks (GANs) and text prompts, which are used to train AI models. Although there are still difficulties, such as providing AI with enough data to train on, there is a great deal of promise for AI in the music industry, promising a future of more creativity and diversity.

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