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## AI Generated Music

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*Abstract: In last few years we noticed that the usage of artificial intelligence growing very fast which is implemented in the photography, videography, computer vision and many more topics which we can't explain in this paper but the point is AI is used everywhere. AI music generation is one of them in which we generate music through the AI with the help of machine learning models, we can generate music with the integration of AI generated music composition, emotional analysis, music generation algorithms, culture and genre exploration, purpose of music, music recommendations, copyright and ethical consideration, neuroscience, education and creativity, public perception. Our research paper is for the best music generation for the listeners of emotional music, cultural music and who wants the different music quality and quantity apart from the copyright issues.*

*Keywords: Machine Learning, RNN's, GNN'S, Deep Learning, BCI's.*

### 1. INTRODUCTION

Music is a form of expressing the human emotions in a far better way than the simply writing it. This research paper is our journey of exploring the different things of AI, components of the music, components of the lyrics which is to be generated. We find a lot of ways to implement the AI in the music generation but we found a new way to implement it in the industry so the AI music generation can be in touch with the level of human music creators. We know that the AI can't replace the human creations but this for the purpose of that users which only likes the one kind of music, same time of taste of culture in music, same type of emotions in music without any extra thing in it.

In short this research paper is for those music generators who wants a signature sound and music for their listeners. Which they can customize according to the use cases of it.



### **Composition of Music**

For creation of music the basic need is the composition of music from different parameters which we can achieve through the using the open AI's Muse Net or google' Magenta, both belongs from the open AI we can use them to create versatile music generation, customization, multitrack composition, harmony and melody generation, integration. With the help of magenta we can create unique sounds.

### **Emotion Analysis**

this is for the for the who wants a specific taste of emotions in their music with the help of AI we can create emotional analysis through lyrics and music theory patterns and can be improved by the collecting user feedback for every single emotion generated by the AI, and it can be according to the emotional cues like it makes the music more intense in excitement and soothing for calm situations.

### **Collaboration with AI-Human**

We can collaborate between AI and human in the form of musical exploration and inspiration, composition assistant, enhancing the creativity, we can create music with time efficiently, music for entertainment and multimedia consumption, genre innovation and learning skills of the model always help to make it modern with the user feedback system for every type of music.

### **Music Generation Algorithms**

We have to study about about the algorithm models used in the music generations on the basis of the RNN (Recurrent neural networks) and GAN's (Generative Adversarial Network). We can create this type of models with the help of Markov chains, hidden Markov models (HMM's), reinforcement learning, rule based systems, hybrid approaches towards the algorithms, rule based systems.

Music generation algorithms can be different for every type of music creations it is based on the user's priority that which type of quality and quantity that wants.

### **Music Recommender System**

Our paper includes the various type of algorithms which can be used in personalized music system for every single user. That used to listen the AI generated music we can use following techniques to create music recommendation:

- Collaboration filtering,
- Content based filtering,
- Matrix factorization,
- Deep learning models,
- And user feedback is mandatory in every steps of AI music generation.

### **Neuroscience**

We can use neuroscience models for music in brain activities, for understanding and improving the creation and reception of music. With the help of models which are:



- Emotion recognition
- cognitive load and memory
- Brain computer interfaces (BCIs)
- Music therapy
- And user feedback is always on top priority

### **Public Perception**

Public perception can be recognised and used with the help of these algorithms Ethical and legal concerns;

Commercial use and intellectual property;

Emotional connection;

Quality and aesthetics;

Influence on human musicians;

Accessibility and inclusivity.

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