AI Powered Music Composition

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ABSTRACT

The field of artificial intelligence (AI) has witnessed significant advancements in recent years, leading to its integration into various domains. One such domain that has garnered considerable attention is AI music composition, where algorithms and machine learning techniques are employed to create, analyse, and generate musical compositions. This abstract provides an overview of the key aspects and implications of AI-driven music composition.

We surveyed the field for existing models and datasets, and carried out best work of musicians to identify music quality characteristics that could be used as evaluation metrics.

- We chose to tune and compare the transformer model by using the Long Short-Term Memory (LSTM)

- This abstract explores the potential impact of AI on the Music industry, where human music and AI collaborates.

Keywords: Artificial Intelligence; Long Short-Term Memory

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INTRODUCTION

Our project embarks on a pioneering journey into the realm of AI-powered music composition, where algorithms and machine learning converge to redefine the boundaries of musical creativity. In the ever-evolving landscape of technology, the marriage of artificial intelligence and music has emerged as a captivating frontier, pushing the boundaries of creativity and artistic expression. Our project, "Harmony in Code," delves into the realm of AI-powered music composition with a specific focus on the intricate and emotive world of piano music.

As we embark on this exploration of AI Powered Music Composition, we anticipate not only the creation of captivating and innovative musical pieces but also a deeper understanding of the profound interplay between human ingenuity and machine intelligence in the realm of artistic expression. Through this project, we aspire to redefine the landscape of music composition, offering a glimpse into the limitless possibilities that arise when technology and creativity harmonise in unprecedented way

🎶Harmony in Code🎶

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AI Powered Music Composition

- (Create an AI that generates original music composition in various styles and moods, aiding musical, and composers in creativity.)

- In this we used the method called LSTM(Long Short-Term Memory)LSTMs are particularly well-suited for sequential data tasks such as time series prediction, natural language processing, and, relevant to your problem statement, music composition.

- In the context of AI-powered music composition, LSTM networks can be used to learn patterns and structures within musical sequences and generate new compositions.

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OBJECTIVES

- The main objective of this model is to generate an new music composition using AI, which is likely human composed.
- **Generate Original Compositions**: One primary objective is for AI to create original pieces of music autonomously.
- **Personalisation and Adaptation**: This involves learning from user interactions and continuously improving the quality of generated music.
- **Developing** a model that taking the user inputs and generating the music using MIDI and Wav files.
- **Explore New Musical Territories:** AI can push the boundaries of traditional music composition by exploring unconventional structures, experimental sounds, and avant-garde techniques. The objective is to foster innovation and creativity in music-making.

LITERATURE SURVEY

➢ Note: Specify links for datasets if available. Mention atleast 10 references. First reference should be your base paper. You can include more than 1 base paper as reference)

	Paper Title	Journal / Conference details	Methods Proposed	Datasets Used	Limitations
1.	An improved multi-output gaussian process rnn with real-time validation for early sepsis detection	In Machine Learning for Healthcare Conference			

LIMITATIONS OF EXISTING SYSTEM

LSTMs can analyse and learn patterns in music data, allowing them to generate new musical pieces that resemble the style and structure of the training data.

- **Generating melodic sequences:** LSTMs can create new melodies that follow the style and feel of a specific genre or composer.

- **Harmonising melodies:** LSTMs can predict chords that complement a given melody, creating harmonically interesting pieces.

- **Composing full pieces:** Combining melody and harmony generation, LSTMs can create complete musical pieces with multiple instruments and sections.
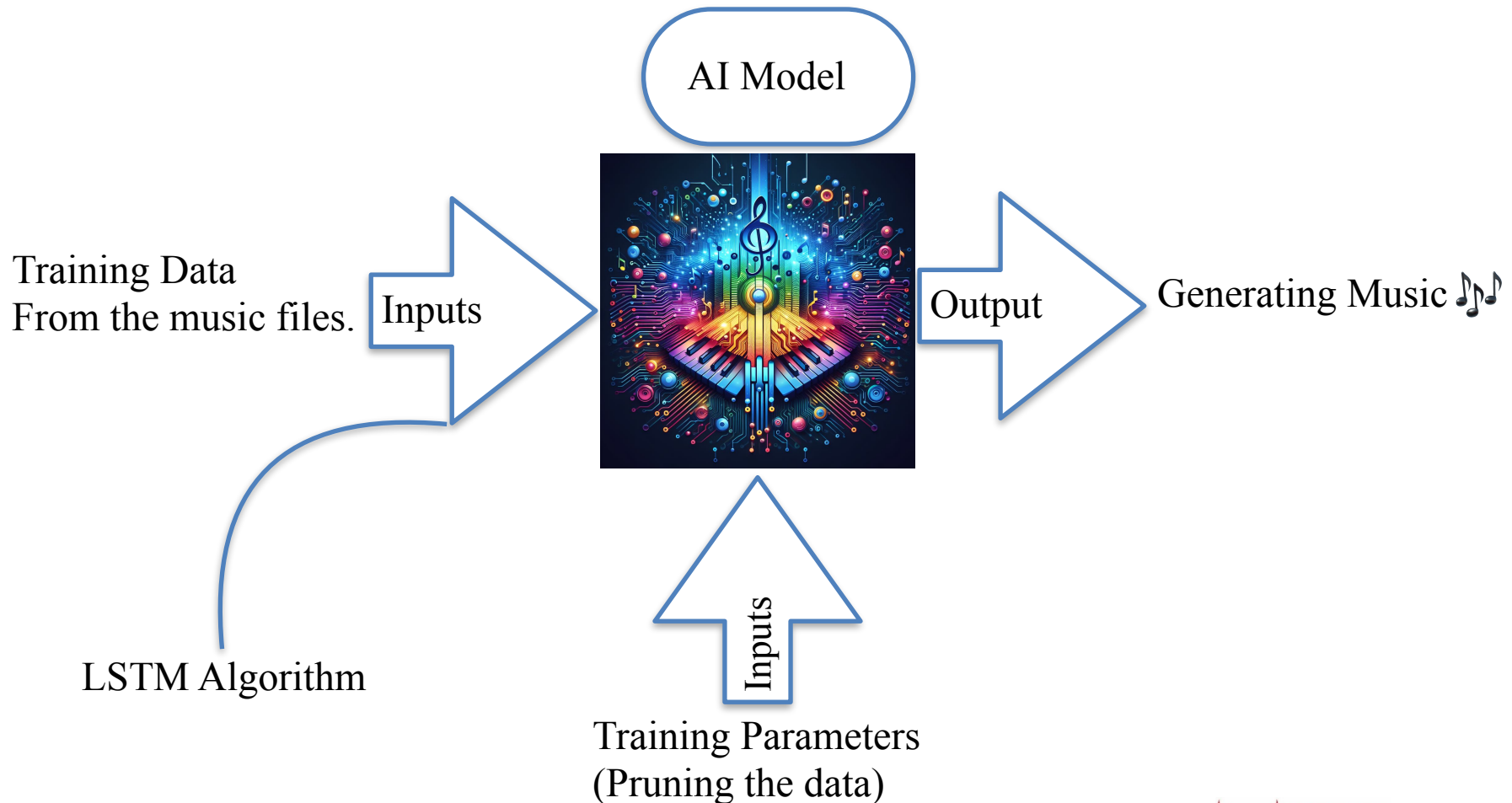
However, there are also some limitations to consider:

- **Training data quality:** The quality and diversity of the training data significantly impact the quality of the generated music. LSTMs trained on limited data might produce repetitive or unmusical results.

- **Control and creativity:** While LSTMs can learn patterns, it's challenging to inject specific emotions, intentions, or creative ideas into the generated music.

- **Computational resources:** Training and running large LSTM models for music composition requires significant computational power.

This workflow shows that how the model is been trained with the music datasets and generating its own music.

AI Model

Training Data
From the music files.

Inputs

Output

Generating Music ♪♪

LSTM Algorithm

Inputs

Training Parameters
(Pruning the data)

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REFERENCES

➢ **Use APA style for references and number the references.**

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