

BeatBreakdown

Anvesha, Dhvani, Jyothika, Sanya

November, 2023

Introduction

- Music has always been an integral part of human culture and expression.
- Our AI-powered website aims to revolutionize music creation and learning.
- The website caters to both music enthusiasts and beginners, making music more accessible and enjoyable.

Problem Statement

Design an innovative AI-based website with three main functionalities:

- ➊ Music sampling and creation to inspire users' creativity.
- ➋ Easy instrumental learning for beginners to foster musical skills.
- ➌ Audio restoration for enhancing low-quality recordings.

Objective

The application aims to:

- Provide diverse music samples and styles for users to create original compositions.
- Implement advanced audio restoration algorithms to enhance low-quality audio recordings.

Approach

Our AI music application follows these key steps:

- ➊ Music Sampling: Access a vast database of musical samples across genres. We picked the musdb dataset to train and test our model.
- ➋ Music Creation: Allow users to modify samples, adjust tempo, key, and instrumentation to create unique compositions.
- ➌ Instrumental Learning: Provide musical notes for the music to support beginners.
- ➍ Audio Restoration: Utilize cutting-edge noise reduction and filtering techniques for enhancing audio quality.

The application's tech stack includes:

- Programming Languages: Python
- AI Frameworks: TensorFlow
- Web Development: HTML, CSS, Figma
- Audio Processing: Librosa

Challenges faced by us:

- Developing a diverse and extensive music sample library.
- Designing an adaptive and interactive instrumental learning system.

Future enhancements and features include:

- Optimizing AI models for real-time audio processing.
- Expand the musical instruments the AI can detect .
- Generate accurate music notes for the music file provided for easier compositions and learnings.
- Integration with cloud-based services for seamless data storage and sharing.
- Expansion of instrument tutorials and styles to cater to diverse musical interests.
- Storage of previously extracted audio in a user profile.

Conclusion

Our AI music application empowers users to explore their musical creativity, learn instruments easily, and enhance audio recordings effortlessly. It marks a new era in music technology, making music more accessible and enjoyable for everyone.