

BeatBreakdown

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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

- ① Developing the Frontend
- ② Storage of datasets in the Backend
- ③ CNN Model for classifying instruments present in the music
- ④ Understanding the workings of Spleeter and Demucs models

The application's tech stack includes:

- Programming Languages: Python, Javascript
- AI Frameworks: TensorFlow
- Web Development: HTML, CSS, React.js, Django, Figma
- Audio Processing: Librosa, Spleeter, Demucs
- Dataset: musDB

Future enhancements and features include:

- 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 quicker runtimes and reliability.
- Storage of previously extracted audio in a user profile.

Challenges

Challenges faced by us:

- Choosing the model to be used.
- Integration of ML models with Frontend and Backend portions.

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.