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Spectro-Score

Detecting Substantial Similarities Between Song Tracks using Samples

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ABSTRACT

In the rapidly evolving digital music landscape, identifying similarities between musical pieces is essential to help musicians avoid unintended copyright infringement and maintain the originality of their work. However, detecting such similarities remains a complex and computationally challenging problem.

A novel approach to address this issue is Spectro-Score, a song similarity detection system that utilises a Siamese Convolutional Neural Network (CNN) with Triplet Loss for effective audio input comparison. The model is trained on a custom dataset obtained from WhoSampled, an extensive database of information on sampled music, cover songs, and remixes. The dataset comprises pairs of audio samples and interpolations, making it suitable for the Siamese CNN approach. The incorporation of Triplet Loss enhances the model's performance by learning discriminative features for improved comparison.

Spectro-Score's is assessed using a confidence interval-based metric, achieving a 96.86% accuracy at a 99.7% confidence level in determining the similarity between music samples. The solution provides a helpful tool for musicians to actively compare their creations with existing songs, helping to reduce the likelihood of unintentional plagiarism and possible legal issues.

Keywords: Deep Learning, Siamese Convolutional Neural Network, Triplet Loss, Music Samples, Distance Metric Learning, Music Similarity

Subject Descriptors:

- Audio Archives → Audio Extraction → Spectrogram Generation → Similarity Systems
- AI Methodologies → Deep Learning → Deep Learning Algorithms → Siamese Networks
- Applied Computing → Entertainment → Music & Song Production