Automated Dance Choreography and Direction Using Music Classification and Contextual Factors

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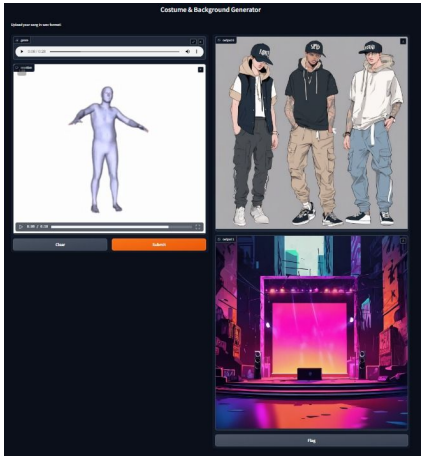
Problem Statement

Most choreographers and directors spend lots of time, money and effort while creating a choreography for a particular song and choosing appropriate costumes and backgrounds. Our project aims to produce dancing figure and suggests costumes and backgrounds for the dance generated.

Dataset and Features

The AIST++ dataset consists of 1408 dance sequences along with music. There are 60 music clips of different tempos and genres that are classified into 10 music/ dance genres. The motion clips are 7 seconds to 48 seconds long.

Summary of Project Outcome



Results and Discussion

- Music genre classification (KNN algorithm): 69.7%
- Hinge Loss (mapping seed motions): 0.57
- FID score (dance generation): 35.35

$$FID = \|\mu_r - \mu_g\|^2 + T_r(\Sigma_r + \Sigma_g - 2(\Sigma_r\Sigma_g)^{1/2})$$

Conclusion and Future Work

The project integrates music analysis to generate intelligent choreography. It recommends costumes and backgrounds aligned with emotion and genre, presented through a user-friendly interface for easy customization. Future plans involve expanding dance styles to include cultural forms and diversifying costumes and backgrounds based on geographical origins.

Publications

1. UniqueNatyam: An Approach Towards Non-Repetitive Dance Generation [2023 IEEE 4th International Conference on Pattern Recognition and Machine Learning]
2. NatyaSet: Classical Dance Dataset for Bharatanatyam [Gradiva Review Journal Volume 9, Issue 8, 2023]

References

[1] R. Li, S. Yang, D. A. Ross, A. Kanazawa, AI Choreographer: Music Conditioned 3D Dance Generation with AIST++ vis ICCV 2021
[2] Jonathan Tseng, Rodrigo Castellon, C. Karen Liu Stanford University, EDGE: Editable Dance Generation From Music, Nov 2022

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