# Metaverse-Based Random-Play Dance Game Utilizing AI Motion Recognition

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## Abstract:

Random-play dance is a cultural phenomenon in which numerous participants gather offline to enjoy dance and interact, and it has become popular worldwide. However, acquiring the requisite dance moves requires users to engage in repetitive practice and exchanges with others, and sustaining offline gatherings is constrained by time and space. To address this, this paper proposes a game platform that allows users to enjoy and practice random-play dance together at home using metaverse avatars. The proposed system processes webcam video in real time with a MediaPipe motion-recognition model to extract and store users' joint coordinates as time-series data, compares these coordinates with pre-collected expert choreography using Dynamic Time Warping, computes cosine similarity, and evaluates dance scores. Moreover, the extracted joint information is immediately applied to metaverse avatar animations, enabling multiple users to connect simultaneously and compete and train through their avatars. Preliminary experiments with data from 30 users confirmed an average DTW similarity of over 85%.