Grasping Gestures: An Analysis of the Aesthetics of Dance Through the Lens of Physics and Computer Science

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Performing arts organizations have been tremendously affected by this pandemic; many have shut down, with revenue loss for NYC dance organizations alone estimated at $24 million. As a dancer and member of a non-profit that showcases artists, I have witnessed the impact firsthand. Such devastation for the arts community warrants a mechanism to ensure that online performances are being presented to optimize enjoyability, and thus remuneration. This investigation aims to quantify the value and relevance of objective physical characteristics of movement to perceived enjoyment, so dancers can curate online performances employing tactics that yield higher satisfaction. This analysis focused on the aesthetics of Odissi, an Indian classical dance. Participants were shown 25 dance phrases which they rated along four subjective features. Using the Tracker app, data concerning the motion of all four limbs for each phrase was accumulated. This data was analyzed using machine-learning models; the analysis revealed that certain objective features are significant predictors of enjoyability. For example, aesthetic phrases tend to include sharp changes in movement velocity. The model used for investigation enabled practical application for curators to choose among several dances. This model allows one to input kinematic features of a dance and obtain predicted probabilities of different levels of enjoyment; one could thus rank dance videos by predicted enjoyment levels. Ongoing and future research focuses on the improvement of this model and pursuing avenues to implement this framework in creating algorithms for dance-streaming platforms to provide recommendations based on kinematic similarity rather than style or artist.

Awards Won:

Third Award of $1,000

University of Arizona: Renewal Tuition Scholarship