On Musical Information Geometry with Applications to Sonified Image Analysis

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Abstract : In this paper, a theoretical foundation is developed for patterned segmentation of audio using the geometry of music and statistical manifold. We demonstrate image content clustering using conic space sonification. The algorithm takes a geodesic curve as a model estimator of the three-parameter Gamma distribution. The random variable is parameterized by musical centricity and centric velocity. Model parameters predict audio segmentation in the form of duration and frame count based on the likelihood of musical geometry transition. We provide an example using a database of randomly selected images, resulting in statistically significant clusters of similar image content.

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