

THE CRITICAL PARAMETER OF FERMAT DISTANCE

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Abstract. In statistical learning tasks such as clustering, recommendation, or dimension reduction, a notion of distance or similarity between points is crucial but might not be directly available as an input. In previous work, we proposed a new density-based estimator for weighted geodesic distances that takes into account the underlying density of the data, and that is suitable for nonuniform data lying on a manifold of lower dimension than the ambient space. The macroscopic distance obtained depends on a unique parameter and we discuss the choice of this parameter and the properties of the obtained distance for machine learning tasks.