VIDIT NANDA, University of Pennsylvania

Homotopy-inference for functions

We survey the work of Niyogi, Smale and Weinberger which provides explicit bounds on size of a uniformly random point-sample required to reconstruct the homotopy type of an underlying compact Riemannian manifold with high confidence. We also describe an analogous result for Lipschitz-continuous functions between such manifolds: one can recover the action on homotopy of such a function using only finitely many evaluations. This is joint work with Steve Ferry and Konstantin Mischaikow.