REGRESSION ON MANIFOLDS USING EXTRINSIC GEOMETRY

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ABSTRACT. Over the last few decades data represented in various non-conventional forms have become increasingly more prevalent. Typical examples include diffusion matrices in diffusion tensor imaging (DTI) of neuroimaging, and various digital images arising in biology, medicine, machine vision. One may also encounter data that are stored in the forms of subspaces, orthonormal frames, surfaces, and networks. Statistical analysis of such data requires rigorous formulation and characterization of the underlying space, and inference is heavily dependent on the geometry of the space. For a majority of the cases considered, the underlying spaces where these general data objects lie on, fall into the general category of *manifolds*. This talks focuses on nonparametric inference on manifolds and general metric spaces with a focus on exploiting the extrinsic geometry. In particular, we focus on regression problems where predictors or responses lying on manifolds.

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