Projection Based Scatter Depth Functions and Associated Scatter Estimators

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Abstract

In this talk, I will introduce scatter depth functions and their favorable properties. The proposed projection based scatter depth satisfies those desirable properties and its sample version possesses strong and $\sqrt{n}$ uniform consistency. Under some regularity conditions, the limiting distribution of the empirical process of the scatter depth function is derived. Also its influence function is found to be bounded. Furthermore, a maximum depth based affine equivariant scatter estimator is induced. The limiting distributions as well as the strong and $\sqrt{n}$ consistency of the sample scatter estimators are established. The finite sample performance of the related scatter estimator shows that it has high robustness and good efficiency.