
Information Consistency of Nonparametric Gaussian Process Methods

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Joint work with S. Kakade and D. Foster [1].

We present information consistency results for nonparametric sequential prediction with Gaussian processes. The connection to nonparametric MDL is through the prequential approach, as detailed in Grünwald's 2007 book, Sect. 13.5. Our proof technique is elementary, making use of a convex duality previously useful to obtain PAC-Bayesian bounds. We also obtain precise information consistency rates for a wide range of kernels and input distributions, using kernel eigenvalue asymptotics. In all these cases, the linear expert space is an infinite-dimensional function space, but still very reasonable rates are obtained.

References

- [1] M. Seeger, S. Kakade, and D. Foster. Information consistency of nonparametric Gaussian process methods. *IEEE Transactions on Information Theory*, 54(5):2376–2382, 2008.