Comparison of Bayesian and ML predictive distributions

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Abstract

Maximum likelihood estimation (MLE) is one of, if not, the most well known and used method of point estimation. Predictive distributions created from substitution of the true unknown parameters with the MLE are shown to be inferior in terms of average Kullback-Leibler (KL) divergence for independent and identically distributed exponential and unknown mean normal random variables. A novel technique for calculating densities of Bayesian predictive distributions, also known as posterior predictive distributions, is provided and illustrated for exponential and normal random variables.

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