

Concentration and robustness of discrepancy-based ABC

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Abstract

Approximate Bayesian Computation (ABC) typically employs summary statistics to measure the discrepancy among the observed data and the synthetic data generated from each proposed value of the parameter of interest. However, finding good summary statistics (that are close to sufficiency) is non-trivial for most of the models for which ABC is needed. In this paper, we investigate the properties of ABC based on integral probability semimetrics, including MMD and Wasserstein distances. We exhibit conditions ensuring the contraction of the approximate posterior. Moreover, we prove that MMD with an adequate kernel leads to very strong robustness properties.

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