Empirical Bayes Estimation with Random Right Censoring

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Abstract

This paper investigates the empirical Bayes estimation of the mean lifetime θ in an exponential distribution with random right censored observations. It is assumed that θ is a realization of a bounded random variable Θ having an unknown prior distribution and a known upper bound. An empirical Bayes estimator is proposed and its corresponding asymptotic optimality is studied. It is established that the regret of the proposed empirical Bayes estimator converges to zero at a rate $O(\frac{\ln^3 n}{n})$, where n is the number of past data available when the current estimation problem is considered.

Keywords: Asymptotically Optimal, Random Right Censoring, Rate of Convergence, Regret.