New definition of empirical Bayes estimation with symmetric alpha stable (SαS) distribution approach

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Abstract

Let (θ, x) be a random vector such that (a) θ has a distribution function G, and (b) conditionally on θ, x has a SαS distribution function $F(x|\theta)$ with respect to a α-finite measure m. We want to estimate θ by some function $t = t(x)$. Minimizing the mean squared error for estimation with regard to the random variation of both θ, x must be changed sometimes, and we can't apply the following formula always:

$$E(t-\theta)^2 = \iint (t(x)-\theta)^2 f(x|\theta) dm(x) dG(\theta).$$

For given G & a density function of x ($f(x|\theta)$), because there is not 2'nd moment & a specific density function always and so we try to introduce a new conception like dispersion instead of the above formula with in the class of linear estimation function or generalized estimation.

Keywords

Linear empirical Bayes, General empirical Bayes, Stable distributions, Domain of attraction, Dispersion.

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