



Contribution ID: 6

Type: not specified

Cramér - von Mises type estimators

Tuesday, 27 June 2023 09:30 (20 minutes)

The contribution study the minimum distance density estimators based on Kolmogorov and Cramér -von Mises distance. Inequalities between Kolmogorov and Cramér -von Mises distances are proven to achieve $n^{-\gamma}$ consistency in (expected) L_1 norm of $M(CM)E$. Further, the generalized Cramér - von Mises distance is defined together with so called Kolmogorov - Cramér distance which includes both Kolmogorov and Cramér - von Mises distance as limiting special cases. We prove $n^{-\gamma}$ consistency in the (expected) L_1 norm of both minimum distance estimators based on newly defined distances.

Our numerical simulation illustrates the quality of consistency property covered by theoretical results. The proportionality constants of the consistency order are approximated from simulated data since they are not given by the proofs of theorems. Dependence of consistency in the L_1 norm on ε - contamination neighbourhood of the true model is studied and, further, the robustness of these newly defined estimators is investigated for contaminated Normal family. Numerical simulations are used to compare statistical properties of all studied estimators and to determine the optimal or preferable choice of parameters of newly defined estimators. Finally, we bring comparison of all studied estimators with Rényi and Power divergence estimators.

Primary author: HRABÁKOVÁ, Jitka (FIT CTU)

Co-author: KŮS, Václav (KM FJFI CVUT)

Presenter: HRABÁKOVÁ, Jitka (FIT CTU)

Session Classification: Stochastic monitoring control