## Consistency of $\phi$ -divergence errors of Barron density estimates

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**Abstract:** Our research is motivated by the need of using nonparametric density estimates for optimization of the switching rules in the nods of telecommunication and computer networks. One of the applications in this area is to estimate tail probabilities of an unknown distribution. Thus, we need estimates as much precise as possible particularly in the tail areas. The Barron estimator, defined as a convex mixture of histogram estimate and some dominating probability distribution, showed up to be a convenient tool for this type of problems.

In this contribution we are interested in the consistency of the mentioned estimator if its error is measured by  $\phi$ -divergences with the true density for a general class of functions  $\phi$ . In quantized models leading to reduced  $\phi$ -divergences we prove the consistency of this estimator in the reduced  $\phi$ -divergence and in the expected reduced  $\phi$ -divergence. Further, we formulate conditions under which it is possible to extend the obtained results also to the original non-quantized models.

## References

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