A weighted bootstrap procedure for divergence minimization problems

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Sanov type results hold for some weighted versions of empirical measures, and the rates for those Large Deviation principles can be identified as divergences between measures, which in turn characterize the form of the weights. This correspondance is considered within the range of the Cressie-Read family of statistical divergences, which covers most of the usual statistical criterions. We propose a weighted bootstrap procedure in order to estimate these rates. To any such rate we produce an explicit procedure which defines the weights, therefore replacing a variational problem in the space of measures by a simple Monte Carlo procedure.