Non-crossing quantile curves

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In this paper a new nonparametric estimate of conditional quantiles is proposed, that avoids the crossing problem.

The method uses an initial estimate of the conditional distribution function in a first step and solves the problem of inversion and monotonization with respect to $p \in (0, 1)$ simultaneously. The asymptotic properties of the new estimate are investigated and its performance is illustrated by means of a simulation study.