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## Boundary effects in kernel estimation of ROC curves

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**Summary.** Receiver Operating Characteristic (ROC) analysis has its origin in signal detection theory, but most of the current work occurs in the medical decision making community. Now, ROC curves have been widely used for evaluating the accuracy and discriminating power of a diagnostic test or statistical model. To derive a smooth estimate for the ROC curve, we use a kernel smoothing method. By this process we estimate a distribution function. It is well known now that kernel distribution estimators are not consistent when estimating a distribution near the finite end points of the support of the distribution function to be estimated. This is due to boundary effects that occur in nonparametric curve estimation problems. To avoid these difficulties we use the technique, which is a kind of generalized reflection method involving reflecting a transformation of the data.

**Key words:** kernel estimation, reflection, distribution estimation, ROC curve.

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