



## Bayesian bootstrap inference for the ROC surface

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The receiver operating characteristic (ROC) surface is a popular tool for evaluating the accuracy of medical diagnostic tests that classify individuals into one of three ordered classes. We propose a fully nonparametric method based on the Bayesian bootstrap for conducting inferences for the ROC surface and its functionals, such as the volume under the surface. The proposed estimator is based on a simple, yet interesting, representation of the ROC surface in terms of placement variables. As an illustration of the proposed methods, we analyze data concerning the diagnosis of neurological impairment in HIV patients.

**Keywords:** Bayesian bootstrap; HIV data; ROC surface; volume under the surface.