

Assessing Prediction Error at Interpolation and Extrapolation Points

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Common model selection criteria, such as AIC and its variants, are based on in-sample prediction error estimators. However, in many applications involving predicting at interpolation and extrapolation points, in-sample error cannot be used for estimating the prediction error. In this paper new prediction error estimators, tAI and $Loss(w_t)$ are introduced. These estimators generalize previous error estimators, however are also applicable for assessing prediction error in cases involving interpolation and extrapolation. Based on the prediction error estimators, two model selection criteria with the same spirit as AIC are suggested. The advantages of our suggested methods are demonstrated in simulation and real data analysis of studies involving interpolation and extrapolation in a Linear Mixed Model framework.