

Comparative Performance Evaluation of Predictive Models

by

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Extended Abstract

The continuing advances in machine learning algorithms combined with the increased availability of user-friendly, powerful software tools for analytics have brought predictive modeling within easy reach of power users in every functional area in business. Modeling applications such as estimating product demand and predicting sales figures, forecasting credit risk and detecting fraud, predicting failure from anomalous behavior in manufacturing hardware or software, performing customer segmentation and predicting consumer tastes, even classifying the mood of tweets can now be undertaken with relative ease and free from learning algorithm programming concerns. Notwithstanding that fact, choosing amongst the predictive models resulting from different learning algorithms remains a challenge to be addressed. In this paper, we review performance metrics that are used to evaluate predictive models for classification as well as regression problems including Area Under the Receiver Operating Characteristics curve (AUC-ROC) and the Kolmogorov-Smirnov test (K-S test). Additionally, we consider the utility of Decision Curve Analysis (DCA), which has been introduced as a method to evaluate prediction models in medicine in terms of their clinical consequences for a binary classification of subjects into a group who should and a group who should not be treated, for comparative performance evaluation of predictive models for business classification problems.