

Department of Decision Sciences

De Finetti Risk Seminar

Trimming Overconfident Weak Learners

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Abstract

The ease of collecting information has provided a strong impetus for the use of crowd wisdom in forecasting uncertainties. One challenge in dealing with forecasts provided by crowds is that resulting average (and/or ensemble) forecasts are poorly calibrated especially when the individual sources are overconfident, weak learners. In this talk, we propose the use of trimmed distributional forecasts instead of linear opinion pools in aggregating sets of forecasts. We show that this simple heuristic provides a reasonable and intuitive approach that can improve both forecast accuracy and calibration. In addition, we also show how this approach can be extended to a popular machine learning technique known as random forecasts. In particular, we present a method for generating trimmed average distributional forecasts from a random forest. Using a simple information structure, some theory is provided on why this approach works for regression and classification tasks in forecasting. Finally, we illustrate these concepts on several well-studied data sets from the UCI data repository and show the method's out-of-sample accuracy and its potential use for improving predictive analytics. (Joint work with Yael Grushka-Cockayne and Casey Lichtendahl)