THE UNIVERSITY OF CHICAGO | DEPARTMENT OF STATISTICS

MASTER'S THESIS PRESENTATION

LIN GUI

Department of Statistics
The University of Chicago

Conformal Prediction with Debiased Random Rounding

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Jones 304, 5747 S. Ellis Avenue

ABSTRACT

Conformal prediction is a modern technique for providing valid predictive inference with the assumption of data exchangeability. In regression problems, the algorithm of discretizing the model, an extended version of grid search, reduces the heavy computational cost without breaking the coverage validity. However, as a trade-off, it induces additional biased noise on the labels due to rounding. We modify the algorithm by introducing the random rounding procedure, for which independent samples from uniform distribution determine the rounding direction of labels. This modified algorithm guarantees both provable unbiasedness of the rounding noise and coverage validity. Further, experimental studies indicate the benefits of the random rounding procedure for cases with moderate sample sizes and grid widths.