The University of Chicago

Department of Statistics

Seminar

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"Aggregation for Regression Learning"

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ABSTRACT

Aggregation of arbitrary estimators in regression models has recently received increasing attention in the statistical literature. A motivating factor is the existence of many different methods of estimation, leading to possibly competing procedures. Local polynomial kernel smoothing, penalized least squares or likelihood, spline or wavelet estimators are classes of methods that represent major trends in nonparametric estimation of regression. When no method is a clear winner, one may prefer to combine different estimators obtained via different methods. Furthermore, within each method one can obtain competing estimators for different values of the smoothing parameter (the bandwidth in kernel procedures, the calibrating constant in the penalty term, the threshold value for wavelet estimation etc.). In all these situations we are faced with a large collection of concurrent estimators. A natural idea is then to look for a new estimator that would be approximately at least as good as either of the estimates or even better. Such an estimator is usually called *aggregate*, and its construction is called aggregation. There exist essentially three main aggregation problems: model selection (MS), convex (C) and linear (L) aggregation. We propose an estimate which achieves at the same time all three different aggregation minimax bounds.

This is joint work with Florentina Bunea, Florida State University and Alexandre B. Tsybakov, Université Paris VI. Research is partially supported by NSF grant DMS 0406049

References

[1] Florentina Bunea, Alexander Tsybakov and Marten Wegkamp. *Aggregation for regression learning*. Manuscript.