

Nonparametric modeling of stand tables using data from large-scale forest inventories

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Abstract: Advanced forest management often depends on information systems which provide information at the stand level. One of the most important stand characteristics is the stand table. Stand tables are needed for several reasons such as for ecological assessments of stands or for timber assortment calculations. In this study two different approaches for modeling stand tables are considered. The first approach is to partition the feature space into mutually exclusive partitions by multivariate recursive partitioning and to fit a simple model for each partition. One of the most important advantages of recursive partitioning is the automatic selection of features. However, a limitation of recursive partitioning is the lack of smoothness of the resulting regression surfaces. The lack of smoothness can be overcome by using kernel smoothing methods (with nearest-neighbor bandwidths) instead of recursive partitioning. Results from a case study with data from the Swiss National Forest Inventory show that kernel smoothing outperforms recursive partitioning.

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