**Exercise Sheet 2:** Tree-based Methods December 15, 2022

1. **Random Forest**
   1. Predict the demand of all product-location-date combinations in test using a Random Forest, e.g., from *scikit-learn*. You can choose one of the two setups described in exercise 2) a and b of exercise sheet 1. Repeat the evaluations with this model.
   2. Estimate the importances of the different features in your model averaged over the training.
2. **Gradient Boosting**

Predict the demand of all product-location-date combinations in test using a Gradient Boosting method, e.g., LGBM (also implemented in *scikit-learn* as HistGradBoost) or XGBoost (python package *xgboost*). Again, you can choose one of the two setups described in exercise 2) a and b of exercise sheet 1. Repeat the evaluations with this model.

1. **Individual Explainability**

Use one of the two methods LIME or SHAP (python packages *lime* and *shap*) to go beyond feature importances averaged over the training and explain a bunch of individual predictions in terms of influences of the different features.