



## SOLUTION

### General Information:

Lecture (3 SWS): Thu 14.15 – 15.45 (H16) and Tue 12.15 – 13.45 (H16)  
Exercises (1 SWS): Mo 12.15 – 13.45 (02.134-113) and Tue 12.15 – 13.45 (E1.12)  
Certificate: Oral exam at the end of the semester  
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## Forest Classification and Regression

### Exercise 1 Python Classification Toolbox

Download the Classification Toolbox from the exercise homepage. Familiarize yourself with the structure of the toolbox.

### Exercise 2 Decision Forest

Implement a randomized Decision Forest in files *DecisionForest.py* and in *DecisionTree.py*. A Decision Forest should consist of *numTree* trees of depth *depth*. During training, *numSplit* axis aligned random splits should be evaluated at each node.

After implementation, evaluate the performance of your Decision Forest with respect to the choice of parameters for the example data of the toolbox. What do you observe ?

### Exercise 3 Regression Forest

Implement a randomized Regression Forest in files *RegressionForest.py* and in *RegressionTree.py* (parameters similar to the Decision Forest). At each leaf node, the decision trees should perform linear regression.

After implementation, evaluate the smoothness of the predicted regressions with respect to the choice of parameters.