Random Forests are one of the strongest modern methods of **machine learning** and are applied in many different applications. The basic idea is to generate many decision trees, where tree creation is subject to a certain amount of **randomization**. The final system answer is the fusion of the result of the individual trees. The advantage is on the one hand, that it is not necessary to aim for the optimal tree and on the other hand, that the final result of the Random Forest is on average more accurate than the individual results.

The two most important properties of Random Forests are the **strength and correlation** of the individual trees. Each tree should be as strong as possible, i.e. making as few mistakes as possible. But if trees are making mistakes, they should be different. There are many methods to create a strong tree, but only few approaches to create decorrelated trees.

The goal of this thesis is to implement a specific method to create strong but uncorrelated trees in order to exploit the principles of ensemble learning as much as possible.

**Keywords:** Random Forests, Ensemble Learning

**Involved tasks:**
- Literature Research
- Extension of existing frameworks or reimplementation of Random Forests
- Changing tree creation to ensure less correlated trees
- Evaluation of the proposed approach

**(Recommended) requirements:**
- Good knowledge about digital image processing (e.g. attendance in lecture DIP)
- Good knowledge about machine learning (e.g. attendance in lecture AIA)
- Good programming skills (e.g. C++)

**Language:** German / English