Random Ferns for Semantic Segmentation of PolSAR Images

Polarimetric Synthetic Aperture Radar (PolSAR) is an advanced imaging technique, that uses a moving active sensor to acquire weather and daylight independent images of the earth's surface.

Semantic Segmentation of images still states an open research topic, especially for remotely sensed SAR images. Contemporary classification methods often involve massive analytic computations and/or concentrate on specific predefined object classes.

Recently, ensemble methods gained larger importance. They do not try to find an optimal solution by analytic means but combine a large random set of weak classifiers to a final algorithm, which outperforms each individual.

The goal of this thesis is to implement a Random Ferns classifier as an exemplary ensemble method for the classification of PolSAR images.

Keywords: Random Ferns, SAR, classification

Involved tasks:
– Literature research
– Implementation of ferns-classifier
– Evaluation of the whole framework

(Recommended) requirements:
– Basic understanding of image processing methods (e.g. attendance in Digital Image Processing)
– Knowledge about image analysis (e.g. attendance in Automatic Image Analysis)
– Good programming skills (C/C++)

Language: German / English

Note: This Master thesis will be carried out in collaboration with the German Aero-Space Center (DLR).