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.

The amount and quality of image data acquired by satellites is steadily increasing. Modern Synthetic Aperture Radar (SAR) sensors like TerraSAR-X (DLR) provide high-resolution images of the surface of the earth. However, the automatic and accurate interpretation of these data is still a huge challenge and states an open research problem.

The complex-valued measurements of amplitude and phase of the recorded echo render most computer vision operators sub-optimal, since these were developed for optical imagery with different statistics. Classical approaches of SAR-image interpretation extract real-valued features and use them as input to conventional classifiers.

The goal of this thesis is a qualitative investigation whether a direct application of complex-valued support vector machines (SVM) to the measured data has advantages compared to classical approaches.

Keywords: Classification, Polarimetric SAR, Support Vector Machine

Involved tasks:
- Literature research
- Implementation of CV-SVM (or using/adapting existing libraries if possible)
- Evaluation of the whole framework

(Recommended) requirements:
- Good knowledge about image analysis (e.g. attendance in Automatic Image Analysis)
- Good programming skills (e.g. C/C++)

Language: German / English