

Segmentation and Classification of High Resolution SAR Images

This project is part of a cooperation of the Center for Sensorsystems with the Institute of Electronics of the Chinese Academy of Sciences (IECAS). Hereby the work of a doctoral scholarship holder of the MOSES programme in the field of remote sensing is funded. The main issue of the project is to build up an algorithm to automatically perform land cover classification. Another issue is buildings extraction over urban areas by using high resolution SAR images. The algorithm framework will not only compare features (e.g. texture feature, image intensity value, etc.), but also integrate statistical learning algorithms (e.g. probabilistic graph model, Bayesian parametric method, Bayesian nonparametric method, etc.). Furthermore, a suitable approximate inference technique will be chosen. In this way will combine machine learning algorithms with feature based ones for performing SAR image characterization.

It is also our first attempt to compare monostatic and bistatic products regarding a given classification task thus generating new understanding and capabilities. This project strives for new insights concerning classification of urban areas, based on TerraSAR-X images. Until now, a rough land cover classification algorithm has been developed based on "Bag of Words" and Support Vector Machine (SVM) methods, with respect to a limited number of scenes. Based on our experience we intend to test and improve our algorithm with more generality and usability by using a data archive shot from various regions that can reveal different terrain characteristics.

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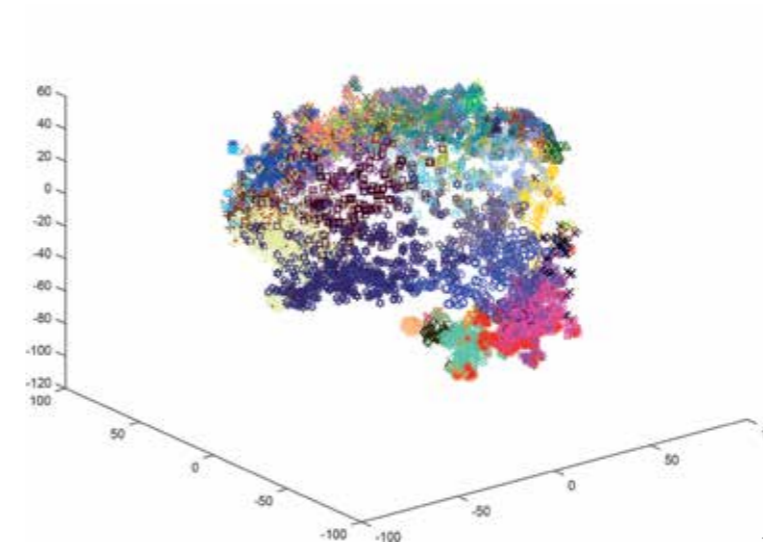


Figure 1: 3D feature space

Figure 2: SAR intensity image of the city of Aachen (GEC product provided DLR)

Figure 3: Classification result

I Project Management and Execution

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