Master Thesis

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<th>Topic</th>
<th>Algorithms for Efficient On-Board Quantization for Interferometric and Multi-Channel SAR Systems</th>
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**Description**

Present and future space-borne synthetic aperture radar (SAR) missions acquire an increasing volume of onboard data. This is due to the employment of large bandwidths, high pulse repetition frequencies, and multiple polarizations, which implies inevitably strong requirements in terms of onboard memory and downlink capacity. In this scenario, SAR raw data quantization becomes an important aspect, since the data rate employed for the digitization of the recorded radar signal affects both the amount of data to be stored and transmitted to the ground and the quality of the resulting SAR products.

The objective of the proposed thesis is to develop algorithms for the optimization of system resources with respect to the resulting interferometric SAR performance. For this, different resource allocation strategies depending on the specific application described by typical performance requirements and therefore by the resulting allowable compression rates, shall be taken into account. Performance simulations and investigations on real data acquired by the DLR’s interferometric satellite system TanDEM-X will be carried out, with focus on heterogeneous and non-stationary target distributions, where quantization errors particularly affect the data quality. The performance analysis shall focus on interferometric SAR, and potentials and challenges for efficient quantization algorithms for multi-channel SAR systems shall be also investigated.

Please send your complete application (cover letter including preferred starting date, curriculum vitae, current enrollment and current transcript of records from your University).

**Starting Date**

Immediate

**Duration**

Six month

**Required Skills**

- Experience in scientific programming languages such as MATLAB, IDL or Python
- Preferably prior knowledge in signal processing techniques
- Good knowledge of English

**Benefits**

Look forward to a fulfilling job with an employer who appreciates your commitment and supports your personal and professional development. Our unique infrastructure offers you a working environment in which you have unparalled scope to develop your creative ideas and accomplish your professional objectives. We are striving to increase the proportion of female employees and therefore particularly welcome applications from women. Disabled applicants with equivalent qualifications will be given preferential treatment.

**Contact**

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