Munich Aerospace Open PhD Position

Exploiting Sparsity in Earth Observation (EO) - Modeling

Description:

By utilizing the sparsity property signals can be well reconstructed from much fewer samples than the conventional Shannon sampling theory requires. In the last 5 years, along with the significant development of the compressive sensing theory, exploitation of sparsity brought breakthroughs in many fields such as medical imaging, computational biology, astronomy, communications, and computer graphics. However, the concept of sparsity in remote sensing for earth observation has not been well studied so far. The envisioned PhD work is part of the Munich Aerospace project "SparsEO: Sparse Reconstruction and Compressive Sensing for Remote Sensing and Earth Observation " whose goal is to exploit sparsity in the field of remote sensing data acquisition and operational processing for earth observation.

Sparse remote sensing is a relatively new research field, except from first results from a few groups including the hosting group. The goal of this PhD work is to identify and investigate potential remote sensing problems and applications which can benefit from the exploitation of sparsity. The respective physical and sensing models will be cast into the framework of sparse reconstruction. After initial analysis the most promising applications will be selected and investigated in depth both theoretically and with real data. Prototypes of the algorithms will be implemented and compared to conventional methods.

This work will be supervised by leading experts on remote sensing in the Remote Sensing Technology Institute, DLR (DLR-IMF) and the Remote Sensing Technology Department, Technische Universität München (TUM-LMF) in order to guarantee state-of-the-art modeling and comparison with the most advanced conventional methods. The PhD work will be carried out in close cooperation with the TUM Faculty of Mathematics under the umbrella of Munich Aerospace. Also the mission-specific specialists (TerraSAR-X, Tandem-X, Tandem-L, EnMAP) of DLR-IMF will support the project.

Profile:

- Master in Remote Sensing, Earth Sciences, Geophysics, Mathematics, Physics, Computer Science or equivalent
- Knowledge in programming
- Creative and cooperative

The Munich Aerospace scholarship is typically awarded for a four-year period. The monthly scholarship is 1575€ based on the Munich Aerospace regulations, including the opportunity to participate training and courses in the Munich Aerospace graduate school. Additional funding for conferences and publications is granted.

Interested candidates should submit a full curriculum vitae, covering letter together with academic records to the email address given below.

Contact person:

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