



DLR – DAAD Fellowships

Fellowship No. 447

Research Area : Space

Research Topic: **Demonstration of New SAR Techniques using a Ground-Based MIMO Radar**

DLR Institute: Microwaves and Radar Institute (IHR), Radar Concepts Department, DLR Oberpfaffenhofen, Germany

Position: Doctoral Fellow

Openings: 1

Job Specification: The Microwaves and Radar Institute of the German Aerospace Center (DLR) contributes to the advancement of spaceborne sensors through the execution of long-term research programs. The research work of the Institute encompasses the conception and development of new synthetic aperture radar (SAR) techniques and systems, as well as the retrieval of information from SAR data for several science applications.

Specifically new methods for Synthetic aperture Radar sensors are being investigated, which use multiple transmit/receive channels and digital beamforming (DBF) techniques. To validate the results through real measurements the Radar Concepts department at the German Aerospace Center (DLR) is developing a multi-channel ground-based radar demonstrator utilizing a digital feed array and a reflector antenna.

The doctoral fellow will be responsible for supervising the development of the digital FPGA-based unit which is responsible for the real-time elevation (SCORE) and azimuth (staggered SAR) processing. This also includes the development, implementation, and testing of the algorithms. Interfacing the digital unit to the RF units and the antenna of the ground-based radar demonstrator is a further task of the fellow.

The research combines theoretical investigations of the SAR operation modes/techniques, processing algorithms, and calibration with multi-channel SAR systems.

The doctoral fellow will be encouraged to publish in peer-reviewed journals, apply for patents, and present his/her work at international conferences.

Required Qualification: Diploma or Master in Electrical Engineering with emphasis on radar system design, MIMO radar, and/or signal processing.

Solid foundations in the basics of radar, MIMO radar, signal and digital signal processing.

Experience with FPGAs. RF hardware and antenna knowledge.

Knowledge about synthetic aperture radar

Analytical skills and basic programming experience in Python, MATLAB, C++, or equivalent.

Applicants should have good interpersonal and communication skills and should be able to work in an international and interdisciplinary environment, both independently and as part of a team.

Advantageous Skills: Experience with RF circuit design (passive and active components), knowledge of SAR processing algorithms. Practical experience with digital circuit design.

English competence: See requirements on www.daad.de/dlr

The working language is English. A very good speaking/writing knowledge is required.

Earliest Start Date: 01.08.2020

Application Deadline: Until position filled

Further Information: <http://www.dlr.de>
<http://www.daad.de/dlr>

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