University of Stuttgart
Germany

For the DFG-funded project "Defining a retracking manifold within a radargram stack to improve satellite altimetric water level over coastal seas and inland water bodies (SARMa)" the Institute of Geodesy (GIS), University of Stuttgart, invites applications for a

Research assistant (PhD student) in satellite geodesy

Background

Single-waveform retracking for satellite altimetry applications over coastal zones and inland waters has reached its limits, obtaining decimeter-level accuracy or worse. With the launch of operational altimetry missions, new retracking algorithms are needed to get highly precise water level estimates over inland waters and coastal seas.

The main objective of the SARMa project is to develop a next-level retracking algorithm and, consequently, improve altimetric water level determination over inland waters and coastal regions. This project aims to improve the water level estimation benefiting from the spatial and temporal dependencies of the consecutive waveforms. The idea of this project is to collect neighboring waveforms into a radargram and, then, to stack such radargrams over time. These so-called radargram stacks contain, unlike single waveforms, the full information on spatio-temporal variation of backscattered power over water surfaces. The radargram stack eases the recognition of patterns induced by water bodies. In such a context, instead of a retracking gate as a point in the 1D waveform, in a 3D radargram stack a surface referred to as retracking manifold is to be determined, for which Bayesian and deep learning methods will be investigated.

We are searching for an enthusiastic and committed researcher with a keen interest in satellite geodesy and Earth monitoring. The successful candidate will be part of our international and interdisciplinary team at the Institute of Geodesy.

Requirements

- A master's degree or equivalent in geodesy, remote sensing, computer science, mathematics, physics, or related fields with an emphasis on Earth observation and data science.
- Advanced computer literacy, programming skills, and scientific computation (Python, MATLAB, C\C++)
- Strong analytical and statistical skills
- Excellent written and spoken English skills
- Excellent teamwork skills
- Experience in probabilistic modeling, Bayesian Inference, and machine learning techniques is an advantage.

We offer a full-time position for 3 years as academic staff with the opportunity of pursuing a PhD degree at the Institute of Geodesy, University of Stuttgart. The salary will be based on the collective agreements for federal states (TV-L E13, 100%). The preferred starting date is 1st November 2022.

The University of Stuttgart aims to increase the number of female employees. Qualified females are, therefore especially encouraged to apply. Disabled applicants will be preferred if applicability and qualification are equivalent. The University of Stuttgart supports the compatibility of work and family through various means and offers nursery places.

For further information, please contact Dr. Mohammad J. Tourian (E-Mail: tourian@gis.uni-stuttgart.de)
Applications, including the usual documents (a letter of motivation, a CV including copies of certificates, a publication list if applicable, and contact information of two referees), with reference to the index SARMA_Job_01, should be sent by September 30, 2022, via Email (all documents attached as one pdf-file, 4 MB max) to: tourian@gis.uni-stuttgart.de.

GIS