PhD position “Automated ocean data quality control with deep learning” (m/f/d)

Background
Marine data quality control (QC) is a field of utmost importance for providing high-quality datasets for climate or process studies. However, due to increasing data acquisition, new algorithmical support is needed for the QC, and deep learning has the potential to provide significant benefits. This project aims to develop and improve a deep learning algorithm for ocean data quality control. The algorithm will be trained and evaluated on AWI's UDASH dataset, which will be extended with MOSAiC data. Improving the algorithm includes, e.g. testing alternative architectures, adding, and designing new input features, hyperparameter optimisation. High-end computer infrastructures like GPUs will be utilized. Learning hands-on ocean data quality control is contemplated by participating in expeditions or by exchange with partner institutions.

Tasks
You will:
- develop, improve, extend a deep learning algorithm with modern techniques like Keras
- use state-of-the-art computer infrastructures on Linux with high-end GPUs
- develop a statistical test framework for the evaluation of the algorithm
- create new data products including AWI's unique MOSAiC data
- learn classical aspects of ocean data quality control

Requirements
- Master's degree (e.g. MSc) in computer science, applied mathematics/statistics, information science or related field
- good computing skills and knowledge of at least one high-level programming language (e.g. Matlab, R, Python); experience with Linux is an asset
- knowledge in machine learning techniques and statistics like hypothesis-testing, model selection is a plus
- good working knowledge of the English language, both written and spoken
- willingness to present research results at international conferences, publish in peer-reviewed journals and participate in research expeditions to the Arctic Ocean.
Further Information
For further information, please contact Dr. Benjamin Rabe (benjamin.rabe@awi.de) or Dr. Sebastian Mieruch-Schnülle (sebastian.mieruch@awi.de).

This position is limited to 3 years. The salary will be paid in accordance with the Collective Agreement for the Public Service of the Federation (Tarifvertrag des öffentlichen Dienstes, TVöD Bund), up to salary level 13 (100%) The place of employment will be Bremerhaven.

You will participate in the Helmholtz School for Marine Data Science MarDATA.

The AWI is characterised by
- our scientific success - excellent research.
- collaboration and cooperation - intra-institute, national and international, interdisciplinary.
- opportunities to develop – on the job, aiming at other positions and beyond AWI.
- a culture of reconciling work and family – an audited and well-supported aspect of our operation
- our outstanding research infrastructure – ships, stations, aircraft, laboratories and more.
- an international environment – everyday contacts with people from all over the world.
- having an influence – fundamental research with social and political relevance
- flat hierarchies – facilitating freedom and responsibility
- exciting science topics, with opportunities also in technology, administration and infrastructure

Equal opportunities are an integral part of our personnel policy. The AWI aims to increase the number of female employees and therefore strongly encourages qualified women to apply.

Disabled applicants will be given preference when equal qualifications are present.

The AWI fosters the compatibility of work and family in various ways and has received a number of awards as a result of this engagement.

We look forward to your application!
Please submit your application, including (1) a letter of motivation, (2) two letters of recommendation or the contact information of two references and (3) a list of publications, by February 17th, 2021 exclusively online.

Selected candidates will be invited to present their research ideas and motivation during the “Annual recruitment days”, planned from 01. to 23 April 2021 and expected to be online.

Reference number 21/42/G/MarData-b

Apply here