Postdoc in deep learning based remote sensing data analysis

Join us at the Department of Electrical and Computer Engineering at Aarhus University for a postdoctoral position focused on deep learning based analysis of remote sensing data for groundwater recharge mapping to help shape the future of sustainable water management. We're looking for a motivated postdoc for a 1-year position (with a possible extension for 1 more year) to lead cutting-edge research in deep learning models for multi-sensor satellite data (e.g. SAR, SMAP) within a large international research project on AI-driven solutions for groundwater management.

Application Deadline:
09 February 2026

Institute/Faculty:
Department of Electrical and Computer Engineering

Faculty:
Faculty of Technical Sciences

Academic contact person:
Muhammad Rizwan Asif
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Vacant positions:
1

Number of months:
12

Hours per week:
37

Expected date of accession:
15/04/2026

Expected start date and duration of employment

This is a 1-year position from April 15, 2026, or as soon possible thereafter.
This is a fixed-term position to end on 14 April 2027, or 12 months after the start date with a possible extension of one more year.

Job description

This postdoc position focuses on research in deep learning for remote sensing data analysis within a highly collaborative, interdisciplinary environment. You will play a central role in developing, evaluating, and interpreting deep learning models for multi-sensor satellite data, addressing challenges such as spatiotemporal learning, super-resolution, and model generalization.

You will be embedded within the **Ethio-Nature** project, funded by the Danish Ministry of Foreign Affairs and managed by Danida Fellowship Council. Ethio-Nature aims to apply deep learning based remote sensing methods to site nature-based solutions that enhance local recharge and support the replenishment of shallow groundwater systems in dryland environments.

Your key responsibilities will include:

- Developing deep learning models for spatiotemporal fusion of multi-sensor satellite data (e.g. SAR and SMAP), with soil moisture as a target variable.
- Designing and evaluating deep learning architectures for remote sensing super-resolution, including training strategies, loss functions, and generalization assessment.
- Applying and assessing explainable AI methods (e.g. Shapley values) to interpret and analyse model behaviour and predictions.
- Publishing high-impact research and contributing to outreach and dissemination activities.

In addition to the colleagues at Department of Electrical and Computer Engineering, you will also work closely with the geophysicists from the Hydrogeophysics Group (HGG) at the Department of Geoscience, as well as international partners in Ethiopia. You will also have the opportunity to supervise bachelor's and master's students.

Your profile

We are looking for a highly motivated candidate with a strong background in deep learning for remote sensing data analysis. The ideal candidate thrives in interdisciplinary settings and is eager to contribute to method-driven research with real-world impact. Required qualifications include:

- PhD in electrical engineering, computer engineering, geoinformatics, computer science, or a related field with a focus on deep learning applied to remote sensing or geospatial data
- Documented experience with deep learning model development (e.g., CNNs, UNets, Transformers)
- Demonstrated experience working with satellite data, particularly SAR and multi-spectral imagery
- Strong programming skills in Python and hands-on experience with deep learning frameworks (e.g., PyTorch)

- Solid understanding of geospatial data handling, time series analysis, and model evaluation metrics
- Strong publication record relative to career stage
- Excellent written and spoken English communication skills

Following qualifications will be considered as an advantage:

- Experience with deep learning–based analysis of satellite soil moisture missions (e.g. SMAP, SMOS)
- Experience with deep learning based super-resolution techniques
- Familiarity with explainable AI methods (e.g., Shapley values).
- Experience with collaborative, cross-cultural research environments.

Who we are

You will be based at the Department of Electrical and Computer Engineering (ECE) at Aarhus University, a dynamic and growing department committed to excellence in research, education, and innovation. Our research spans signal processing, machine learning, digital twins, and intelligent systems — all with a strong emphasis on real-world impact and societal relevance.

This position is anchored within the Signal Processing and Machine Learning section at ECE and will be mentored by Assistant Professor Muhammad Rizwan Asif, whose research focuses on developing advanced deep learning methods for environmental and geoscientific applications. Current research includes large-scale crop mapping, wetland monitoring, and the integration of machine learning with remote sensing and geophysical data for groundwater mapping.

Your daily work will be closely linked to researchers at the Hydrogeophysics Group (HGG) in the Department of Geoscience — an internationally recognized leader in developing geophysical methods for groundwater exploration — providing a strong interdisciplinary foundation for the project.

What we offer

We offer a vibrant and inclusive research environment with a strong interdisciplinary foundation and a clear commitment to real-world impact. Denmark is consistently ranked among the best countries in the world for work-life balance and quality of life. Family-friendly policies include generous parental leave, subsidised childcare, and access to excellent public healthcare and education. As a postdoc at Aarhus University, you will benefit from a supportive and flexible workplace culture that values diversity and offers excellent conditions for researchers and their families.
Specifically, we offer:

- A vibrant, interdisciplinary work environment that encourages collaboration across different domains
- Access to state-of-the-art facilities and computing infrastructure
- Strong support for research career development, including mentoring and international networking opportunities
- A commitment to diversity, equity, and inclusion in all aspects of our work
- A high degree of flexibility and autonomy in planning your research activities
- a workplace characterised by professionalism, equality and a healthy work-life balance.
- Non-financial relocation support and assistance with practical matters such as housing, childcare, and integration into Danish society.

We warmly welcome applications from all qualified candidates and strongly encourage women and individuals from underrepresented backgrounds in STEM to apply.

Place of work and area of employment

The place of work is Finlandsgade 22, 8200, Aarhus N, and the area of employment is Aarhus University with related departments.

Contact information
For further information, please contact: Assistant Professor Muhammad Rizwan Asif, +4560909831, rizwanasif@ece.au.dk

Deadline
Applications must be received no later than February 9, 2026.

Application procedure
Shortlisting is used. This means that after the deadline for applications – and with the assistance from the assessment committee chairman, and the appointment committee if necessary, – the head of department selects the candidates to be evaluated. All applicants will be notified whether or not their applications have been sent to an expert assessment committee for evaluation. The selected applicants will be informed about the composition of the committee, and each applicant is given the opportunity to comment on the part of the assessment that concerns him/her self. Once the recruitment process is completed a final letter of rejection is sent to the deselected applicants.

Letter of reference
If you want a referee to upload a letter of reference on your behalf, please state the referee's contact information when you submit your application. We strongly recommend that you make an agreement with the person in question before you enter the referee's contact information, and that you ensure that the referee has enough time to write the letter of reference before the application deadline.
Unfortunately, it is not possible to ensure that letters of reference received after the application deadline will be taken into consideration.

If you wish to add a referee **after** you have submitted your application, you must send this person's details (name, job title, place of work, and email address) as well as the name of the position you have applied for to: HR.Nattech@au.dk

Formalities and salary range
Technical Sciences refers to the Ministerial Order on the Appointment of Academic Staff at Danish Universities under the Danish Ministry of Science, Technology and Innovation.

The application must be in English and include a curriculum vitae, degree certificate, a complete list of publications, a statement of future research plans and information about research activities, teaching portfolio and verified information on previous teaching experience (if any). Guidelines for applicants can be found here.

Appointment shall be in accordance with the collective labour agreement between the Danish Ministry of Taxation and the Danish Confederation of Professional Associations. Further information on qualification requirements and job content may be found in the Memorandum on Job Structure for Academic Staff at Danish Universities.

Salary depends on seniority as agreed between the Danish Ministry of Taxation and the Confederation of Professional Associations.

Aarhus University's ambition is to be an attractive and inspiring workplace for all and to foster a culture in which each individual has opportunities to thrive, achieve and develop. We view equality and diversity as assets, and we welcome all applicants.

Research activities will be evaluated in relation to actual research time. Thus, we encourage applicants to specify periods of leave without research activities, in order to be able to subtract these periods from the span of the scientific career during the evaluation of scientific productivity.

Aarhus University offers a broad variety of services for international researchers and accompanying families, including relocation service and career counselling to expat partners. Read more here. Please find more information about entering and working in Denmark here.

Aarhus University also offers a Junior Researcher Development Programme targeted at career development for postdocs at AU. You can read more about it here.

The application must be submitted via Aarhus University's recruitment system, which can be accessed under the job advertisement on Aarhus University's website.

Aarhus University

Aarhus University is an academically diverse and research-intensive university with a strong commitment to high-quality research and education and the development of society nationally and globally. The university offers an inspiring research and teaching environment to its 38,000 students (FTEs) and 8,300 employees, and has an annual revenues of EUR 935 million. Learn more at www.international.au.dk/