UNIVERSITETET I OSLO

Jobbnorge ID: 264242
Deadline: 7/31/2024
Website: http://www.uio.no/
Scope: Fulltime
Duration: Project

Postdoctoral Research Fellow at the intersection of artificial intelligence and biology

About the position

Position as Postdoctoral Research Fellow available at the Department of Biosciences as part of the UiO: Life Science Convergence Environment AUTORHYTHM.

The candidate will develop new machine learning methods with a focus on metrics and quantification of uncertainty in combination with interpretable and explainable AI. The candidate will be embedded in the research group of Dr. Helene Knævelsrud at Institute of Basic Medical Sciences, UiO and in close collaboration with Dr. Michael A. Riegler at Simula Research Laboratories and Dr. Jorrit Enserink at the Institute for Cancer Research, Oslo University Hospital.

The appointment is a full-time position and is made for a period of three years (10% of which is devoted to required duties related to the UiO:Life Sciences program).

No one can be appointed for more than one Postdoctoral Research Fellowship at the University of Oslo.

Knowledge development in a changing world - Science and technology towards 2030.

The Faculty of Mathematics and Natural Sciences

Video: https://www.youtube.com/watch?v=t4wvWQEhDEs

Job description / Project description / Development plan:

The AUTORHYTHM Convergence Environment aims to build a strong interdisciplinary research environment to explore complex biological problems. The first goal is to decipher the spatiotemporal nature of autophagy and make predictions for improving a healthy lifespan. To reach this goal, we will use machine learning, sonification strategies, mathematical modelling, and experimental systems of cell biology and aging. AUTORHYTHM builds on the expertise of the seven research groups involved, using a combination of experiments in cellular and animal model systems, mathematical modelling, machine learning and music technology. One PhD student or postdoctoral fellow will be recruited to each of these four fields and this group will work together on the AUTORHYTHM project in close contact with the respective research group that each candidate is embedded in.

The candidate will be employed through the Department of Biosciences at the University of Oslo and work in the interdisciplinary AUTORHYTHM team. The workplace will be in the Cell Stress and Cancer group (headed by Dr. Knævelsrud) at the Institute of Basic Medical Sciences, UiO. One of the main research aims of the group is to better understand the regulation of autophagy.

The candidate will also work with the Holistic Systems Department at the Simula Research Laboratory under the leadership of Dr. Michael A. Riegler. The department has extensive experience in machine learning, specifically in the medical domain. The current focus lies on medical data analysis, including image segmentation, explainable artificial intelligence, synthetic data generation, and combining statistical methods with machine learning. Simula is a publicly-owned ICT research lab, and their main objective is to reach new levels of understanding and to create vital knowledge about fundamental scientific challenges that are of genuine value to society.

The candidate will also have a connection to the Cancer Molecular Medicine group (headed by Dr. Enserink) at the Radium Hospital, which is part of Oslo University Hospital, the largest academic hospital in Scandinavia. The group is a member of a Norwegian Centre of Excellence (Centre for Cancer Cell Reprogramming, CanCell), which consists of six research groups focused on finding novel mechanisms in cancer development that can be targeted with novel cancer therapy. One of the main research aims of the group is to better understand the regulation of autophagy.

The candidate will work with existing high-content time-series imaging data to develop new deep learning algorithms with the aim to analyze the spatiotemporal nature of autophagy by image segmentation, detection and classification, and to extract novel features. The candidate will use the existing datasets to develop ML methods to predict the properties of autophagy and quantify the uncertainty when predicting new and unobserved data. In a case of a lack of manually annotated data, the candidate will explore the possibility of generating synthetic data using available datasets. Furthermore, this will be used to extend existing deterministic performance metrics to measure the method's ability to quantify uncertainty. Finally, the candidate will pursue the interpretability of the model by also considering uncertainty. This will include developing procedures that automatically summarize the main properties of the different modes of the parametric space of DL models, which will enhance explainability.

The main purpose of a postdoctoral fellowship is to provide the candidates with enhanced skills to pursue a scientific top position within or beyond academia. To promote a strategic career path, all postdoctoral research fellows are required to submit a professional development plan no later than one month after commencement of the postdoctoral period.

It is expected that the successful candidate will be able to complete the project in the course of the period of employment.

Qualification requirements:

The Faculty of Mathematics and Natural Sciences has a strategic ambition to be among Europe's leading communities for research, education and innovation. Candidates for these fellowships will be selected in accordance with this, and expected to be in the upper segment of their class with respect to academic credentials.

- Applicants must hold a degree equivalent to a Norwegian doctoral degree in biology, biostatistics or computer science. Doctoral dissertation must be submitted for evaluation by the closing date. Only applicants with an approved doctoral thesis and public defence are eligible for appointment.
- Documented coding skills are essential. Experience with machine-learning based analysis of biological or medical images is required. In addition, experience with deep learning methods, explainable AI methods such as SHAP, or quantification of uncertainty is highly advantageous.
- Documented knowledge of autophagy regulation will be a positive benefit
- Fluent oral and written communication skills in English
- Personal suitability and motivation for the position

Personal skills:

- We are looking for a talented, enthusiastic, and determined person who can work both independently as well as in the context of an interdisciplinary team
- The successful candidate is positive-minded, is looking forward to learning and developing new techniques, has good communication skills, and is well organized

We offer:

- Salary NOK 575 400 - 657 300 per annum depending on qualifications in position as Postdoctoral Research Fellowship (position code 1352). For especially qualified candidates higher salary might be considered.
- Attractive welfare benefits and a generous pension agreement
- Professionally stimulating working environment
- Vibrant international academic environment
- Postdoctoral development programmes
- Oslo's family-friendly surroundings with their rich opportunities for culture and outdoor activities

The application must include:

- Cover letter (statement of motivation, summarizing scientific work and research interest)
- CV (summarizing education, positions, pedagogical experience, administrative experience and other qualifying activity)
- Copies of educational certificates, academic transcript of records
- A complete list of publications and up to 5 academic works that the applicant wishes to be considered by the evaluation committee
- Optional: A link to a repository of recent or current work demonstrating experience with coding within the field of machine learning or other relevant applications (preferably github)
- Names and contact details of 2-3 references (name, relation to candidate, e-mail and telephone number)

The application with attachments must be delivered in our electronic recruiting system, please follow the link "apply for this job". Foreign applicants are advised to attach an explanation of their University's grading system. Please note that **all** documents should be in English (or a Scandinavian language).

In assessing the applications, special emphasis will be placed on the documented, academic qualifications, as well as the candidates motivation and personal suitability. Interviews with the best qualified candidates will be arranged.

Formal regulations:

Please see the guidelines and regulations for appointments to Postdoctoral fellowships at the University of Oslo.

If an applicant has applied for and been granted funding for a fulltime research stay abroad while being employed as a Postdoctoral Research Fellow, the employment will be prolonged with the equivalent time as the research stay, but for no longer than of twelve months (thus extending the employment to a maximum of four years)

According to the Norwegian Freedom and Information Act (Offentleglova) information about the applicant may be included in the public applicant list, also in cases where the applicant has requested non-disclosure.

The University of Oslo has an agreement for all employees, aiming to secure rights to research results a.o.

Inclusion and diversity are a strength. The University of Oslo has a personnel policy objective of achieving a balanced gender composition. Furthermore, we want employees with diverse professional expertise, life experience and perspectives.

If there are qualified applicants with disabilities, employment gaps or immigrant background, we will invite at least one applicant from each of these categories to an interview.

Contact persons:
For further information about the position please contact:

Helene Knævelsrud: helene.knavelsrud@medisin.uio.no Phone: +47 41427591

Michael A. Riegler: michael@simula.no

Jorrit Enserink: jorrit.enserink@ibv.uio.no,

For questions regarding the recruitment system, please contact HR Adviser Nina Holtan, e-mail: nina.holtan@mn.uio.no

About the University of Oslo

The University of Oslo is Norway's oldest and highest rated institution of research and education with 28 000 students and 7000 employees. Its broad range of academic disciplines and internationally esteemed research communities make UiO an important contributor to society.

Department of Biosciences (IBV) is one of nine departments at the Faculty of Mathematics and Natural Sciences. Research in the department is organised in five sections covering topics within biochemistry, molecular biology, physiology, cell biology, genetics, aquatic biology, toxicology, ecology, and evolutionary biology. The Department also operates Finse research station, the Biological research station in Drøbak and UiO's research vessel. Education across these topics is offered for around 300 bachelor, 170 master, and 75 PhD students. With 48 permanent professors/associate professors, post-docs, researchers, technical, and administrative personnel, the Department has a total staff of 260 from more than 30 different countries. The Department aims to maintain high international standards within both research and teaching. The new bachelor program in bioscience is the first of its kind to include programming and computational modelling as core elements.

Additional information

Place of service:
Problemveien 7 0313 Oslo (Oslo Municipality)