PhD Research Fellow in Machine Learning applied to Wind-Based Renewable Energy Production

About the position

A position as PhD Research Fellow in machine learning applied to wind-based renewable energy production is available at the Department of Technology Systems (ITS).

The purpose of the fellowship is research training leading to the successful completion of a PhD degree.

The fellowship period is 3 years and devoted to contribute to a project entitled "Electrification of Oil and Gas Installation by Offshore Wind" (ELOGOW).

Preferred starting date for the candidate is by 01.07.2020 and 01.11.2020 being the last possible starting date.

Job description

The PhD research fellow will be part of the ELOGOW (Electrification of Oil and Gas Installation by Offshore Wind) project. ELOGOW is a competence building project for the industry funded by the Research Council of Norway and by the industry partners of the project. The project partners are: The Institute For Energy Technology (IFE), NORCE, University of Oslo (UiO), Equinor, ConocoPhillips, Aibel and Energy Valley. The PhD research fellow position is affiliated with the Section for Autonomous Systems and Sensor Technologies (AUTOSENS) at ITS, and will collaborate very closely on a daily basis with our neighboring research institute, IFE, which is located at Kjeller outside Oslo and in Halden, Norway.

The main goal of the ELOGOW project is to minimize the CO2 emissions from offshore oil and gas platforms and installations, by electrifying the installation with local offshore wind turbines supported by energy storage. However, wind power is a versatile energy source, which requires good forecasting (e.g. weather predictions), planning and control. The main goal of the PhD project is to employ machine learning methods to meet these requirements.

The PhD research work will include the following topics and tasks:

- Use machine learning to control the wind-based energy production in a way that both provides a reliable energy source and minimizes the CO2 emissions
- Apply modern machine learning methods to improve the prediction of local weather conditions and improve the prognosis of the resulting wind energy production
- Analyze various energy storage solutions, slow response back up gas turbines etc.
- Train artificial intelligence agents to control energy systems in simulators (in order to later apply them in real offshore energy systems, i.e. transfer learning)
- Use machine learning to find solutions for the scheduling of energy demanding jobs in the installation
- Dissemination through scientific publications

Qualification requirements

The Faculty of Mathematics and Natural Sciences has a strategic ambition of being a leading research faculty. Candidates for this fellowship will be selected in accordance with this, and expected to be in the upper segment of their class with respect to academic credentials.

Required qualifications:

- Applicants must hold a Master’s degree (120 ECTS) or equivalent in a relevant field such as Computer Science, Statistics, Machine Learning, Robotics, Physics, Mathematics or similar, with a minimum grade B (ECTS grading scale) or equivalent. The Master’s degree must include a thesis of at least 30 ECTS.
- A Master’s degree (M.Sc.-level) that is completed in a foreign country must correspond to a minimum of a four years study programme in the Norwegian educational system
- The PhD candidate must be eligible to obtain a “restricted” security clearance according to the Norwegian National Security Act (Lov om Nasjonal Sikkerhet, a.k.a. “Sikkerhetsloven”), i.e. preferably a citizen of Norway or a NATO country
- The PhD candidate must have fluent oral and written communication skills in English. For more information about the English requirements for applicants from outside of EU/EEA countries, refer to:

http://www.mn.uio.no/english/research/phd/application/application.html

Desired qualifications:

The PhD candidate should preferably also have:

- Good publication track record
- Good programming skills in languages like C/C++, Python and/or similar
Education, training or experience with Machine Learning or Deep Learning algorithms
Work experience from the energy sector

Grade requirements:

The norm is as follows:

- The average grade point for courses included in the Bachelor’s degree must be C or better in the Norwegian educational system
- The average grade point for courses included in the Master’s degree must be B or better in the Norwegian educational system
- The Master’s thesis must have the grade B or better in the Norwegian educational system

The purpose of the fellowship is research training leading to the successful completion of a PhD degree.

The fellowship requires admission to the PhD programme at the Faculty of Mathematics and Natural Sciences. The application to the PhD programme must be submitted to the department no later than two months after taking up the position. For more information see:

http://www.uio.no/english/research/phd/
http://www.mn.uio.no/english/research/phd/

Personal skills

- Ability to take initiative and come up with new ideas to solve theoretical and practical problems
- Ability to work independently as well as in a team
- Good communication skills

We offer

- Salary NOK 479 600 - 523 200 per year depending on qualifications and seniority as PhD Research Fellow (position code 1017)
- Attractive welfare benefits and a generous pension agreement
- A vibrant international academic environment
- Career development programmes
- Oslo’s family-friendly surroundings with their rich opportunities for culture and outdoor activities

How to apply

The application must include:

- Cover letter - statement of motivation and research interests
- CV (summarizing education, positions and academic work - scientific publications)
- Copies of the original Bachelor and Master’s degree diploma, transcripts of records and letters of recommendation
- Documentation of English proficiency
- List of publications and academic work that the applicant wishes to be considered by the evaluation committee
- 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).

Applicants may be called in for an interview.

Formal regulations

Please see the guidelines and regulations for appointments to Research Fellowships at the University of Oslo.

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

According to the Norwegian Freedom of 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 appointment may be shortened/given a more limited scope within the framework of the applicable guidelines on account of any previous employment in academic positions.

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

Contact information

For further information please contact either:

Paal E. Engelstad, Professor ITS, email: paal.engelstad@its.uio.no

For questions regarding the recruitment system, contact HR advisor Therese Ringvold, e-mail: therese.ringvold@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.

The Department of Technology Systems (ITS) is a newly established department at the Faculty of Mathematics and Natural Sciences at the University of Oslo. ITS has taken over the activities at UNIK from January 2017. The Institute is located in the Kjeller Research Park, which is one of the largest research and development centers in Norway. ITS collaborates with the research institutes at Kjeller, and with industry, while it is also tightly integrated with complementary activities at UiO in Oslo. The department has two sections: section for energy systems and section for autonomous systems and sensor technologies. An important goal of ITS is to provide wider opportunities at UiO within applied technologies.