UNIVERSITETET I OSLO

Jobbnorge ID: 305596
Deadline: 01.09.2026
Website: http://www.uio.no/
Scope: Fulltime
Duration: Fixed Term

PhD Research Fellow in Formal Methods and Knowledge Representation for Engineering Information

About the position

We invite applications for a PhD Research Fellow in Formal Methods and Knowledge Representation for Engineering Information at the Department of Informatics.

Starting date no later than 31.12.2026.

The fellowship period is three years.

Depending on the candidate and the teaching needs of the department, the fellowship period can be extended either for compulsory work consisting of e.g., teaching and supervision duties and research assistance up top four years.

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

Place of work is Department of Informatics at Blindern, Oslo.

Job description

This PhD project focuses on developing formal methods and knowledge representation techniques for the modelling and analysis of complex manufacturing and intralogistics systems, such as highly automated factories and warehouses with autonomous components. It addresses a fundamental challenge in industrial digitalization: the lack of formal, machine-interpretable representations that integrate structural, functional, spatial, and temporal aspects of engineering information. The research will investigate how such integrated representations can support consistency checking, automated reasoning, and the synthesis of behavioural models for dynamic analysis. Particular emphasis will be placed on the development of temporal modelling concepts, knowledge graphs, and formal verification techniques, enabling the automatic synthesis of timed and probabilistic behavioral models for model checking, performance evaluation, and optimization. The overall objective is to establish formal foundations that bridge static engineering descriptions and dynamic behavior, ultimately bridging static system design and dynamic operational analysis.

What skills are important in this role?

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.

Required qualifications:

- Master's degree or equivalent in Computer Science and equivalent fields
- Foreign completed degree (M.Sc.-level) corresponding to a minimum of four years in the Norwegian educational system
- Fluent oral and written communication skills in English
- Excellent academic background in formal methods, logic, theoretical computer science, or related areas
- Strong background in computer science and mathematics
- Demonstrated interest in formal modelling, verification, or knowledge representation

Desired qualifications:

- Experience with formal specification and modelling
- Experience with formal verification
- Experience with software engineering and software technology
- Experience with scientific publication and conducting research
- Experience with teamwork
- Interest in mathematics and natural science
- Experience with industrial systems

Language requirement:

- Good oral and written communication skills in English
- English requirements for applicants from outside of EU/ EEA countries and exemptions from the requirements: https://www.mn.uio.no/english/research/phd/regulations/regulations.html#toc8

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

For more information see:

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

All candidates and projects will have to undergo a check versus national export, sanctions and security regulations. Candidates may be excluded based on these checks. Primary checkpoints are the Export Control regulation, the Sanctions regulation, and the national security regulation.

What are we looking for in you?

Personal skills:

- Ability to work structured, creative, independently and in a team
- Enthusiasm, readiness to learn new knowledge, and ability to take initiative
- Flexibility, ability to handle pressure and meet deadlines
- Enjoy the process of scientific communication and writing
- The candidate should be highly self-driven and able to take responsibility for their own work, including troubleshooting and acquiring additional skills required to reach the project goals
- You are a person who prefers being present at work and actively contributes to the professional and social environment you are a part of

Employment in the position is based on a comprehensive assessment of all qualification requirements applicable to the position, including personal qualifications.

We can offer you

- A pleasant and stimulating work environment
- Good welfare schemes
- Opportunity of up to 1.5 hours a week of exercise during working hours
- A workplace with good development and career opportunities
- Career development programmes
- Membership in the Statens Pensjonskasse, which is one of Norway's best pension schemes with beneficial mortgages and good insurance schemes
- Oslo's family-friendly surroundings with their rich opportunities for culture and outdoor activities
- Salary in position as PhD Research Fellow, position code 1017 in salary range NOK from 550 800 - 595 000, depending on competence and experience. From the salary, 2 percent is deducted in statutory contributions to the State Pension Fund

We need different perspectives in our work

UiO is an open and internationally oriented comprehensive university that strives to be an inclusive and diverse workplace and academic environment. You can read more about UiO's work on equality, inclusion, and diversity at uio.no.

We fulfill our mission most effectively when we draw upon our variety of experiences, backgrounds, and perspectives. We are looking for great colleagues, could you be the next one?

We will do our best to accommodate your needs. Relevant adjustments may include modifications to working hours, task adaptations, digital, technical, or physical adjustments, or other practical measures.

If you have an immigrant background, a disability, or CV gaps (Norwegian), we encourage you to indicate this in the job application portal. We always invite at least one qualified candidate from each group for an interview. In this context, disability is defined as an applicant who identifies as having a disability that requires workplace or employment-related accommodations. For more details about the requirements, please refer to the Employer portal (Norwegian).

The selections made in the job application portal are used for anonymized statistics that all state employers include in their annual reports. More information about gender equality initiatives at UiO can be found here.

We hope you will apply for the position with us.

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 and transcripts of records
- Letters of recommendation
- Documentation of English proficiency if applicable
- 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)

Application with attachments must be submitted via our recruitment system Jobbnorge, click "Apply for this job".
Foreign applicants should attach an official explanation of their University's grading system.

When applying for the position, we ask you to retrieve your education results from Vitnemålsportalen.no. If your education results are not available through Vitnemålsportalen, we ask you to upload copies of your transcripts or grades. Please note that all documentation must be in English or a Scandinavian language.

General information

The best qualified candidates will invited for interviews.

Applicant lists can be published in accordance with Norwegian Freedom of Information Act § 25. When you apply for a position with us, your name will appear on the public applicant list. It is possible to request to be excluded from this list. You must justify why you want an exemption from publication and we will then decide whether we can grant your request. If we can't, you will hear from us.

Please refer to Regulations for the Act on universities and colleges chapter 3 (Norwegian), Guidelines concerning appointment to post doctoral and research posts at UiO (Norwegian) and Regulations for the degree of Philosophiae Doctor (PhD) at the University of Oslo.

The University of Oslo has a transfer agreement with all employees that is intended to secure the rights to all research results etc.

About the University of Oslo

The University of Oslo is Norway's oldest and highest rated institution of research and education with 26 500 students and 7 200 employees. Its broad range of academic disciplines and internationally esteemed research communities make UiO an important contributor to society.

The Department of Informatics (IFI) is one of nine departments belonging to the Faculty of Mathematics and Natural Sciences. IFI is Norway's largest university department for general education and research in Computer Science and related topics.The Department has more than 1800 students on bachelor level, 600 master students, and over 240 PhDs and postdocs. The overall staff of the Department is close to 370 employees, about 280 of these in full time positions. The full time tenured academic staff is 75, mostly Full/Associate Professors.

Additional information

Contact persons:

- For questions regarding Jobbnorge, please contact Therese Ringvold, HR Adviser
  Phone: +4722 85 16 06 | E-mail: therese.ringvold@mn.uio.no
- For further information please contact Andrea Pferscher, Postdoctoral Fellow
  Phone: | E-mail: andreapf@ifi.uio.no

Place of service:

Gaustadalléen 23 B 0373 Oslo (Oslo Municipality)