**Jobbnorge-ID:** 311698
**Søknadsfrist:** 15.12.2026
**Nettside:** http://www.ntnu.no
**Omfang:** Heltid
**Varighet:** Vikariat/Midlertidig

## NTNU - knowledge for a better world

**NTNU - knowledge for a better world**

The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

**Department of Marine Technology**

We develop methods and technology related to the blue economy: oil and gas extraction at sea, ship technology and the equipment industry, fisheries and aquaculture. We also have a strong commitment to the development of sustainable solutions for offshore renewable energy, coastal infrastructure, and marine robotics. Marine technology helps to solve major global challenges related to the environment, climate, energy, food and efficient transport. The Department of Marine Technology is one of eight departments in the Faculty of Engineering.

The Department of Marine Technology has a vacancy for a

# PhD Candidate in Marine Cybernetics on AI-based Energy and Battery Management for Ships and Ports

## This is NTNU

NTNU is a broad-based university with a technical-scientific profile and a focus in professional education. The university is located in three cities with headquarters in Trondheim.

At NTNU, 8,6000 employees and 44,000 students work to create knowledge for a better world.

You will find more information about working at NTNU and the application process here.

Video: https://www.youtube.com/watch?v=_KHQjc4ndas&t=41s

## About the position

Are you motivated to take a step towards a doctoral degree and open up exciting career opportunities? As a PhD Candidate with us, you will work to achieve your doctorate to gain formal qualifications as researcher in engineering science. This opens up for high-impact career paths in research and higher education, within academia, research institutes, or industry.

We will employ a PhD candidate to perform research on development of AI models and agents for cost-optimal energy management and monitoring of batteries for hybrid-electric ships and integrated port power systems, as part of a maritime AI research centre at NTNU.

Your supervisor will be Professor Roger Skjetne, and your immediate leader will be the Head of Department.

## About the project

The Norwegian Maritime AI Centre (MAI) has recently been awarded to NTNU and partners through the Research Council of Norway. This position is funded directly by MAI.

## Duties of the position

- Survey recent developments in physics-informed neural network (PINN) and agentic AI (e.g., reinforcement learning) for marine battery state monitoring, optimal load prediction of ships and port infrastructures, and energy management optimization methods.
- Development of a synthetic training gym based on in-house numerical models, as a platform for AI model training.
- Establish some relevant use cases, aligned with MAI partners, and collect real ship and port data from relevant sources. Perform necessary cleaning, processing, and quality assurance of the data to render it AI-ready.
- Development of AI-based models for battery state prediction and agents for battery health-informed energy management for ships and port charging infrastructures.
- Apply the methods for ship and port design considerations, operational planning, and onboard real-time energy scheduling and power allocation control.

General duties are:

- Complete the doctoral training until PhD defense, in good collaboration with MAI partners.
- Carry out research of good quality within the framework described above.
- Immediate focus on academic publications and popular science dissemination.
- Participate in the research group Marine Energy Systems and Autonomics (MESA) at IMT.
- Participate actively in MAI meetings and workshops, relevant external research stays, as well as in international conferences.
- Teaching duties and supervision of master students on relevant topics (to be clarified).
- Be prepared for changes to your work duties after employment.

## Required selection criteria

- You must meet the requirements for admission to the Faculty of Engineering doctoral program: PhD in Engineering, see Section 6-1 of the PhD regulations for more information.
- You must have a relevant Master of Science degree in control engineering, cybernetics, or computer science or equivalent. Your degree must include a major independent project (minimum 30 ECTS) equivalent to a master's thesis. Master students can apply, but the master's degree must be obtained and documented before starting the position and no later than 31 July 2027.
- You should have a strong and relevant academic background within machine-learning, agentic AI, control/cybernetics, or electric power systems, with very good skills in mathematics and programming.
- The average grade from your Master's degree study, or equivalent education, must be equal to B or better compared to NTNU's grading scale. If you do not have letter grades from previous studies, you must have an equally good academic foundation.
- You must have good oral and written presentation skills in English.
- Positions in MAI are restricted by acts relating to Control of the Export of Strategic Goods, Services, and Technology. This means that candidates from countries subject to sanctions, export restrictions, or listed in threat assessments from national security authorities will normally not be eligible. Candidates with citizenship from outside EU/NATO, or who by assessment of the application and attachments are seen to conflict with the above criteria, are very uncertain to get necessary access to MAI partner background and know-how, incl. data and technologies, or security clearance if relevant, within the centre's timeframe, and may thus be ranked lower or disqualified from recruitment to this position.

The appointment is to be made in accordance with NTNUs guidelines for recruitment positions for general criteria for the position.

## Preferred selection criteria

- Documented knowledge in marine technology and/or electrical engineering, skills on relevant methods in AI modeling, as well as knowledge in marine power and control systems.
- Strong skills in relevant programming languages, particularly Python and C++, good knowledge in ROS (Robot Operating System) is an advantage, as well as best practice in data handling, FAIR principles, and use of Github.
- Experience and abilities for dissemination of knowledge and skills towards students.

## Personal characteristics

- Work independently while actively contributing to a positive atmosphere of learning in our university environment.
- Show curiosity and a strong motivation for relevant subjects.
- Get involved, work hard in a structured way, set goals, and contribute constructively with feedback, also under pressure of time.
- Be open, present, and discuss your research and innovative ideas with other involved professionals and collaborators.
- Have a keen interest for good practice in programming, data management, and data analysis.
- Be eligible for the relevant security level for in-depth collaboration with MAI partners.

Emphasis will be placed on personal qualities.

## We offer

- An exciting job with an important mission in society.
- Developing tasks in a strong and international professional environment.
- Career guidance and follow-up during the PhD period.
- Open and inclusive working environment with committed colleagues.
- Operational expenditures as a PhD candidate in MAI.
- Favorable terms as a member of the Norwegian Public Service Pension Fund (SPK).

As a PhD Candidate at NTNU, you will have access to employee benefits.

## Diversity

Diversity is a strength, and at NTNU we aim to be an employer that reflects the diversity in society and that makes use of the potential of the population's collective skills. Our vision is Knowledge for a better world and our values are creative, critical, constructive and respectful. We believe that an organization that is equal, diverse and gender-balanced is essential for us to achieve our goals.

We strive to attract employees with different skills, life experiences and perspectives to contribute to even better problem solving of our societal mission in research and education.

If you think this position is relevant and interesting, we encourage you to apply, regardless of gender, functional ability and cultural background, or whether you have been out of work for a period of time.

At NTNU we want to increase the proportion of women in scientific positions. We have a number of measures to promote equality.

## Salary and conditions

In the position of PhD Candidate, code 1017, your gross salary will normally be NOK 580 000,- per annum depending on qualifications and seniority. A 2% statutory contribution to the State Pension Fund is deducted from the salary.

The employment period is 3 years for the doctoral work.

For employment as a PhD Candidate, it is a prerequisite that you gain admission to the Faculty of Engineering doctoral program: PhD in Engineering, within three months of your employment contract start date, and that you participate in an organized doctoral program throughout the period of employment.

The position is conditional on external funding from the MAI research centre.

As an employee at NTNU, it is important that you keep yourself up to date with academic and organizational changes and adapt to them.

For the necessary professional and social interaction, it is a prerequisite that you are physically present and available to the institution on a daily basis.

The appointment is carried out in accordance with the principles of the State Employees Act, and Export control (legislation that regulates the export of knowledge, technology and services). Candidates who, after assessment of the application and attachments, are considered to be in conflict with the criteria in the latter act, will not be able to be employed.

## About the application

The attachments (including a description of your scientific work) must accompany the application as these documents form the basis of the application assessment. The documents must be in English or Norwegian language.

**Please note:** the application will only be assessed on the basis of the information we have received by the application deadline. Therefore, make sure that your application clearly shows how your skills and experience meet the criteria described above. The application and all attachments must be sent electronically via Jobbnorge.no. If you are invited to an interview, you must bring certified copies of certificates and diplomas upon request.

The application must include:(decide on what must be included - remove what does not fit):

- Transcripts and diplomas for Bachelor's and Master's degrees.
- CV clearly indicating academic record, with publication record and minimum three referees.
- Copy of or an accessible link to Master's thesis. If you have recently submitted your Master's thesis, you can attach or link a draft of the thesis. Documentation of a completed Master's degree must be presented before taking up the position.
- Short letter of motivation (400 words/1 page). If proceeding to interview, a (short) presentation (powerpoint, pdf, etc.) will be expected.
- Possibly contributed papers or other relevant research work.
- Possibly certificates
- Names and contact information of three relevant referees.

If all, or parts, of your education has been taken abroad, we also ask you to attach documentation of the scope and quality of your entire education, both Bachelor's and Master's education, in addition to other higher education. If your institution uses “diploma supplement” (normal for most European institutions), you must attach this. A description of the documentation required can also be found here. If you already have a statement from Norwegian Directorate for Higher Education and Skills (HK-dir), please attach this as well.

Joint work will be considered. If it is difficult to identify your contribution to joint work, you must attach a brief description of your participation.

When assessing the best qualified, we emphasize necessary qualifications such as education, experience and personal suitability. Motivation for the position, ambitions, and potential for research will also count when assessing the candidates.

NTNU recognizes a wide range of academic contributions and has committed itself to The San Francisco Declaration on Research Assessment and CoARA (responsible assessment of research and recognition of a greater breadth of academic contributions in accordance with NTNU's social mission).

## General information

A public list of applicants with name, age, job title and municipality of residence is prepared after the application deadline. If you wish to be exempt from entry on the public applicant list, this must be justified. Assessment will be made in accordance with current legislation. You will be notified if the exemption is not granted.

If you think this position looks interesting and in line with your qualifications, you are welcome to apply.

If you have any questions about the position, please contact Professor Roger Skjetne, e-mail: roger.skjetne@ntnu.no. If you have any questions about the recruitment process, please contact HR Advisor Maria Hjertner, e-mail: maria.hjertner@ntnu.no.

**Application deadline: 15.12.2026**

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For practical information about working at NTNU, please visit this webpage.

**The city of Trondheim** is a modern European city with a rich cultural scene. Trondheim is the tech capital of Norway with a population of 200,000. The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world. Professional subsidized day-care for children is easily available. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life and has low crime rates and clean air quality.

## Tilleggsinformasjon

**Arbeidssted:**
Professor JHL Vogts veg 1a 7052 Trondheim (Trondheim Kommune)