

# **PhD Position within Assurance of Safety and Reliability of Autonomous Field Robots**

Ecole/Institution/Société:

**Norwegian University of Life Sciences (NMBU), Norway / Ås**

Discipline:

Type d'emploi::

**PhD Position**

Date de publication:

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Personne à contacter:

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Would you like to take part in developing next generation safe and reliable robotic autonomous systems??

## **PhD position within assurance of safety and reliability of autonomous field robots**

### **About the position**

The Faculty of Science and Technology at the Norwegian University of Life Sciences (NMBU) has a vacant PhD-position related to reliability and safety assurance of Robotic Autonomous Systems (RAS). The PhD position is for a period of 3 years, or up to 4 years if teaching and other work duties are agreed. The starting date for the position will ideally be January 1, 2023, but some flexibility is possible for the right candidate.

The announced Ph.D. position is part of a larger research project called "RoboFarmer", financed by the Norwegian Research Council (RCN). The main objective of RoboFarmer project is to develop and demonstrate necessary methods for enabling safe operation of autonomous multi-arm robots in real-world agricultural environments.

As a member of NMBU Robotics group you will be working closely with other academics, as well as lab- and support staff, to develop robotic systems for real-world field applications primarily within agriculture robots. NMBU Robotics has developed the agriculture robotics platform, "Thorvald", which has been successfully commercialized by Saga Robotics.

Other industrial partners of RoboFarmer include RobotNorge and ByteMotion while SINTEF, the leading research-institute in Norway, serves as project coordinator. This setup will make state of the art robots, tools as well as a rich set of sensor-suite available and set the stage for achieving your goals!

In addition to our industrial partners, the PhD work will be conducted in collaboration with international academic partners, most notably at University of York and Lincoln in England and Royal Institute of Technology (KTH) in Stockholm, Sweden. The RoboFarm project will encourage the selected Ph.D. candidate and provide opportunity to benefit intellectually from interaction and extended visits with internationally recognized researchers and institutes.

An application for a PhD position at NMBU is at the same time an application for admission to a PhD programme at the institution. The documentation that is necessary to ensure that the admission requirements are met must be uploaded as an attachment.

## Main tasks

The selected Ph.D. candidate will work on:

- Real world applications of agriculture robotics (NMBU developed Thorvald platform).
- Assurance of safety and reliability of real-world Robotic Autonomous Systems (RAS) used out in the field
- Development of new formalisms, methods and tools for Formal verification and Model Checking of RAS including both HW and SW components (co-verification)
- Online verification of Adaptive and Machine Learning (ML) based RAS

The successful candidate is expected to enter a plan for the progress of the work towards a PhD degree during the first months of the appointment, with a view to completing a doctorate within the PhD scholarship period.

## Competence

The successful applicant must meet the conditions defined for admission to a PhD programme at NMBU. The applicant must have an academically relevant education corresponding to a five-year master's degree or a cand.med.vet. degree, with a learning outcome corresponding to the descriptions in the Norwegian Qualification Framework, second cycle. Candidates submitting MSs thesis within 30. September 2022 may be considered. The applicant must have a documented strong academic background from previous studies and be able to document proficiency in both written and oral English. For more detailed information on the admission criteria please see the [PhD Regulations](#) and the relevant [PhD programme description](#).

The nature of the proposed PhD project call for candidates characterized by strong drive, motivation and curiosity, a good general mathematical understanding, and effective written and oral communication skills. As parts of the project will require software manipulation, advanced programming skills are required.

The applicant must document expertise and interest in the research subject.

## Required Academic qualifications

- M.Sc. within a relevant field
- Experience with robotic systems
- Advanced programming skills

The following experiences and skills will be emphasized:

- Experience within formal-verification and model-checking
- Experience with machine-learning algorithms
- Previous research and publications within these domains
- Proficiency programming with Python/C++ and/or ROS(2)
- Proficiency in a Scandinavian language

You need to:

- Be curious, result-oriented and highly motivated
- Possess strong communication and cooperation skills

- Have a solid interest in robotics

## Remuneration and further information

The position is placed in government pay scale position code 1017. PhD fellows are normally placed in pay grade 54 (NOK 501.200,-) on the Norwegian Government salary scale upon employment and follow ordinary meriting regulations.

The position is within an academic field where the [Norwegian export control regulations](#) apply (authorized by law 18 Dec. 1987, No. 93, and in the Ministry of Foreign Affairs, regulation of 19 June 2013), and where Norwegian universities are not allowed to transfer (export) knowledge to specific countries. Employment is considered as a way of transferring knowledge.

Candidates who by assessment of the application and attachment are seen to conflict with the criteria in the latter law will be prohibited from recruitment to NMBU.

Employment is conducted according to national guidelines for University and Technical College PhD scholars.

For further information, please contact Dr. David A. Anisi, Associate Professor

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(do not use this e-mail for application, it is only for questions)

[Information for PhD applicants](#) and [general Information to applicants](#)

## Application

To apply online for this vacancy, please click on the 'Apply for this job' button above. This will route you to the University's Web Recruitment System, where you will need to register an account (if you have not already) and log in before completing the online application form.

**Application deadline:** 20.11.2022

In the application, the candidate must confirm that information and documentation (in the form of attachments) submitted via the job application can also be used by NMBU in a possible admission process.

Applicants invited for an interview are expected to present original diplomas and certificates.

The following documents must be attached to the application:

- Motivation letter (maximum 1 page)
- Complete CV
- Certified copies of academic diplomas and certificates. (*i.e.* Di-iploma, transcript. Diploma supplement for both bachelor and master). Diplomas, transcripts and diploma supplements that are not in Norwegian or English must be uploaded in the original language. An English translation of these documents must also be attached.
- Applicants from universities outside Norway are kindly requested to send a diploma supplement, or a similar document, which describes in detail the study program and grading system.
- Documentation of proficiency in written and oral English in accordance with NMBU PhD regulation section 5-2 (3).
- Names and contact details for two references

- Additional relevant documentation of professional knowledge (for example, list of scientific works). If it is difficult to judge the applicant's contribution for publications with multiple authors, a short description of the applicant's contribution must be included.

## **About The Faculty of Science and Technology**

[The Faculty of Science and Technology \(REALTEK\)](#) develops research-based knowledge and educates civil engineers and lecturers needed to reach the UN's sustainability goals. We have approximately 150 employees, 70 PhD students and soon 1500 students. The education and research at REALTEK cover a broad spectrum of disciplines.

This includes data science, mechanics and process engineering, robotics, construction and architecture, industrial economics, environmental physics and renewable energy, geomatics, water and environmental engineering, applied mathematics as well as secondary school teacher education in natural sciences and use of natural resources such as in agriculture, forestry and aquaculture. The workplace is in Ås, 30 km from Oslo.

What is it really like to work at the Faculty of Science and Technology (REALTEK) at NMBU?

- [Guided tour of the Faculty of Science and Technology on Vimeo](#)

## **The Norwegian University of Life Sciences (NMBU)**

NMBU has a particular responsibility for research and education that secures the basis for the life of future generations. Sustainability is rooted in everything we do and we deliver knowledge for life. NMBU has 1,900 employees of which about 500 phd scholarships and 6,700 students. The university is divided into seven faculties.

NMBU believes that a good working environment is characterised by diversity.

We encourage qualified candidates to apply regardless of gender, functional ability, cultural background or whether you have been outside the labour market for a period. If necessary, workplace adaptations will be made for persons with disabilities. More information about NMBU is available at [www.nmbu.no](http://www.nmbu.no).

**[Apply for this job](#)**

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