



Norwegian University of  
Science and Technology

**Jobbnorge ID:** 279945  
**Deadline:** 6/10/2025  
**Website:** <http://www.ntnu.no>  
**Scope:** Fulltime  
**Duration:** Temporary

The Department of Information Security and Communication Technology has a vacancy for a

## PhD Candidate in Analysis of Security, Safety, and Liveness of Industrial OT Protocols

### 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, 9,000 employees and 43,000 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://youtu.be/Xt-yHCN5QS0>

### About the position

We are looking for a Ph.D. candidate to work at the intersection of cyber security, cyber-physical systems, and mathematical methods as part of the NORCICS Norwegian Centre for Cyber Security in Critical Sectors. The centre links researchers from NTNU with other research groups nationally and internationally and works closely with industry and government.

As a PhD Candidate with us, you will work to achieve your doctorate, and at the same time gain valuable experience that qualifies you for a further career in higher education and research, in and outside academia.

The position is also open for applicants currently studying for a Master degree at NTNU and entering their final year during 2025. Such applicants will be considered for the Integrated PhD program.

The position's working place is NTNU campus in Trondheim or Gjøvik.  
Your immediate leader will be the Head of Department.

### About the project

Modern control systems rely on being at least partially predictive while digital twins also must maintain a state model of the targeted cyber-physical system. In addition to other threats, any adversary able to interfere with communication channels may disrupt or break processes in a number of ways, not least of which through simple and difficult-to-defend denial of service type attacks also from within an OT environment.

In this project algebraic methods will continue to be developed to study whether and to what extent protocol-mediated interactions in cyber-physical systems are susceptible to breaches of security, safety, and liveness guarantees. To this end, a rigorous mapping of selected semantics found in manufacturing automation protocols as well as the semantics of composition for sequences and event-based composition will be developed. This will allow the investigation of possible vulnerabilities as well as efficient means of mitigating these through rigorous proofs.

### Duties of the position

- Complete the doctoral education until obtaining a doctorate
- Carry out research of good quality within the framework described above
- Academic publications and popular science dissemination
- Participate in the NORCICS (IIK CISAR) research group
- Participate in NORCICS meetings and interactions with partners in the centre
- Participate in international activities such as conferences and/or research stays at foreign educational institutions

Be prepared for changes to your work duties after employment.

## Required selection criteria

- You must have an academically relevant background within Computer Science, Mathematics, Electrical Engineering, or a closely related subject area.
- You must have a Master's degree in Computer Science, Mathematics, or a closely related area or equivalent. Your course of study must correspond to a five-year Norwegian course, where 120 credits have been obtained at master's level. Master's students can apply, but the master's degree must be obtained and documented before starting the position and no later than 1 July 2025.
- Candidates in their 4. Year of Master degree at NTNU may apply for the Integrated PhD program
- You must have a strong academic background from your previous studies and have an average grade from your Master's degree study, or equivalent education, which is 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. If you have a weaker grade background, you may be considered if you can document that you are particularly suitable for a PhD education.
- You must meet the requirements for admission to the faculty's [Doctoral Programme](#).
- Good oral and written presentation skills in English

**PLEASE NOTE: For detailed information about what the application must contain, see paragraph "About the application".**

If you cannot document skills in Norwegian, Swedish or Danish at [level A2](#) upon employment, you must complete [Norwegian courses](#) corresponding to at least 15 credits before the end of the employment period. NTNU will facilitate this.

The appointment is to be made in accordance with [Regulations for the Universities and Colleges Act \(university and colleges regulations\) and Regulations for the degrees philosophiae doctor \(ph.d.\) and philosophiae doctor \(ph.d.\) in artistic development work at the Norwegian University of Science and Technology \(NTNU\)](#) for general criteria for the position.

## Preferred selection criteria

- Oral and presentation skills in Norwegian or another Scandinavian language are desirable.
- Some mathematical maturity is desirable.
- Knowledge of cyber-physical systems and their modelling is desirable

## Personal characteristics

To complete a doctoral degree (PhD), it is important that you are able to:

- Work independently and creatively
- Work in a structured way, set goals and make plans to achieve them
- Present and discuss your research with other professionals
- Engage in academic discussions, giving and taking constructive feedback
- Show curiosity and strong motivation for the subject

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
- [Working capital](#) that can be used to implement the project
- [Mentor programme](#) as a [new employee at NTNU](#)
- As a public employee, you have favourable benefits as a member of the [Norwegian Public Service Pension Fund \(SPK\)](#)

You will be employed as a PhD Candidate at NTNU and will have access to [employee benefits and discounts](#).

## 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 536 200,- 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. 4 years if Integrated PhD. If learning Norwegian (level A2 corresponding to at least 15 credits) is to be completed before the end of the employment period, the employment period can be extended by 10 weeks after completed and documented the Norwegian course.

For employment as a PhD Candidate, it is a prerequisite that you gain admission to the [PhD programme in Information Security](#) three months of your employment contract start date, and that you participate in an organized doctoral programme throughout the period of employment.

The position is conditional on external funding.

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 academic 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 must accompany the application as these documents form the basis of the application assessment. The documents must be in Norwegian/a Scandinavian language or English.

**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 upon request.

- Transcripts and diplomas for Bachelor's and Master's degrees
- CV
- Copy of Master's thesis. If you have recently submitted your Master's thesis, you can attach 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)
- Possibly publications etc. 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 works 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 Prof. Stephen Wolthusen, Tel. +47 611 35 289, Email [stephen.wolthusen@ntnu.no](mailto:stephen.wolthusen@ntnu.no). If you have any questions about the recruitment process, please contact [katrine.rennan@ntnu.no](mailto:katrine.rennan@ntnu.no) (Senior Executive Officer HR).

**Application deadline: 10.06.2025**

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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.

**The city of Gjøvik**, is a smaller town by the shores of Lake Mjøsa. Gjøvik Campus is IIKs hub for Cyber- and Information Security and holds an attractive scientific environment as well as a vibrant community with excellent schools (including international schools from year 1-12), modern healthcare services, and a variety of recreational activities. With its strategic location, just a short drive from Oslo, Gjøvik combines the best of urban life and natural experiences. Here, you'll find a dynamic business environment and exciting career opportunities in a setting that values work-life balance.

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.

## NTNU - knowledge for a better world

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

### Department of Information Security and Communication Technology

Research is vital to the security of our society. We teach and conduct research in cyber security, information security, communications networks and networked services. Our areas of expertise include biometrics, cyber defence, cryptography, digital forensics, security in e-health and welfare technology, intelligent transportation systems and malware. The Department of Information Security and Communication Technology is one of seven departments in the [Faculty of Information Technology and Electrical Engineering](#).

## Additional information

### Place of service:

- NTNU Campus Trondheim 7491 Trondheim (Trondheim Municipality)
- NTNU Campus Gjøvik 2815 Gjøvik (Gjøvik Municipality)