Jobbnorge ID: 279440
Deadline: 7/31/2025
Website: http://www.ntnu.no
Scope: Fulltime
Duration: Temporary

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

Researcher in Hardware Security and Reverse Engineering in Embedded Systems

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

Video: https://youtu.be/Xt-yHCN5QS0

About the Job

This researcher position is associated with the Department of Information Security and Communication Technology (IIK) at NTNU Gjøvik under the SFI Norwegian Center for Cybersecurity in Critical Sectors (NORCICS) funding. The research work will be supervised by Associate Professor Arvind Sharma (arvind.sharma@ntnu.no) and other colleagues working on the project.

You will report to the Head of the Department.

Hardware components are crucial for ensuring computing systems' security, integrity, and reliability, especially in industrial control systems (ICS), as they play a pivotal role in our daily lives and critical infrastructures, transmitting vital information for decision-making processes. To enhance security at the hardware level, it's essential to understand device vulnerabilities and potential attack vectors. Hardware reverse engineering (HRE) is a method used to gain insights into the inner workings of man-made devices. However, there's a noticeable gap in educational resources related to hardware security and HRE, including courses, labs, and best practices.

The reverse engineering lab at NTNU Gjovik is being established under NORCICS to address future hardware security challenges by developing innovative methods, tools, and techniques in collaboration with industries, government, and international research institutions. The lab has essential testing equipment for testing hardware security vulnerabilities on embedded systems. In partnership with national/international experts, the HRE lab will be a central hub for various activities. It will establish a physical reversing lab for research, testing, and training, develop a Hardware Security Reverse course for academic and industry use, organise workshop/seminar series on specific topics for partners, and host the annual NTNU Reverse Engineering Forum, providing a vital meeting point for the community.

Duties of the position

The position will be central to the NORCICS project, which aims to develop threat models for assessing hardware security vulnerabilities in embedded systems, an application of smart grids. Sub-objectives include identifying potential use cases, designing and demonstrating a test bed, validating prevention methods, analysing impacts, and enhancing national competence in hardware security through research, development, education, and awareness. The position will address research challenges related to Hardware Security, and depending on the skills of the candidate, different aspects may be emphasised, e.g. by focusing on:

- Invasive and non-invasive attacks, e.g. Side-channel attacks, Fault Injection, reverse engineering
- Hardware Trojan Detection and Prevention in Printed Circuit Board (PCB)
- Memory Extraction through UART/JTAG
- Application of Machine Learning in Hardware Security

Other duties include:

- Collaborating closely with industry and other international research institutions towards a demonstrator of the research result
- Develop and pursue own research agenda in Hardware Security and Reverse Engineering
- Contribute to developing research and education in Hardware Security by leading and supporting new research and innovation.
- Work on initiating, organising, and writing proposals in coordination with national and international research institutions for the Research Council of Norway), the European Commission and other potential funding organisations.

- Participate actively in the Digital Forensic group, and collaborate with other groups at the Department, including supervision and co-supervision of MSc and PhD students.
- Contributing to NORCICS' research and innovation initiatives

The research will be carried out within the context of SFI NORCICS, the research-based innovation Norwegian Center for Cybersecurity in Critical Sectors. These sectors include electricity production and distribution, oil & gas production and distribution, manufacturing, healthcare, industrial production, smart districts. NORCICS follows a holistic, comprehensive and systemic approach addressing people, processes and technology to protect critical sectors throughout the cybersecurity core functions (identify, protect, detect, respond, recover). NORCICS has partners from academia, research, the public sector and the industry. For more information about NORCICS see www.ntnu.edu/norcics

Required selection criteria

- You must have completed a Norwegian doctoral degree, or a corresponding foreign doctoral degree recognized as equivalent to a Norwegian PhD in Electronics Systems, Embedded Systems, Electrical Engineering, Information Security, Computer Science, or a closely relevant field equivalent, focusing on embedded systems' cybersecurity/hardware security.

If you can document that the PhD thesis has been submitted, your application can be assessed even if you have not defended your dissertation. Documentation of the obtained doctoral degree must be presented before you can take up the position.

- Track record with publications on relevant research areas in credible journals and conferences.
- Being able to attend and present at national and international forums.
- Good written and oral English language skills.

Preferred selection criteria

- Good Knowledge and understanding of the hardware security domain and reverse engineering.
- Experience with side-channel attacks.
- Experience with HW Trojans
- Experience with EMC labs.
- Excellent practical hands-on skills, preferably from lab environments
- Knowledge of threat and attack analysis models for hardware level.
- Experience developing research project proposals for external funding bodies such as the European Commission, Research Council of Norway, etc.

Personal characteristics

- Highly motivated by fundamental scientific research of practical relevance
- Well-organised and have interests beyond their own research and ability.
- Eager to disseminate research results through publications and presentations at international conferences.
- Be scientifically curious and open to new research challenges.
- Demonstrate independence and persistence in addressing technical problems.
- Be flexible and reliable, able to work effectively independently and as part of a team.

Emphasis will be placed on personal and interpersonal qualities.

We offer

- exciting and stimulating tasks in a strong international academic environment
- an open and inclusive work environment with dedicated colleagues
- favourable terms in the Norwegian Public Service Pension Fund
- employee benefits

Salary and conditions

The gross salary for the position as Researcher (code 1109) is normally remunerated at gross from NOK 594 500 before tax per year, depending on qualifications and seniority. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 2 years.

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants, and the acts relating to Control of the Export of Strategic Goods, Services and Technology. 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 NTNU

It is a prerequisite that you can be present at and accessible to the institution daily.

About the application

The application and supporting documentation must be in English.

Please note that your application will be considered based solely on information submitted by the application deadline. You must therefore ensure that your application clearly demonstrates how your skills and experience fulfil the criteria specified above. If, for any reason, you have taken a career break or have had an atypical career and wish to disclose this in your application, the selection committee will take this into account, recognizing that the quantity of your research may be reduced as a result.

The application must include:

- A letter of motivation (maximum 500 words)
- CV and certificates
- Transcripts and diplomas for bachelor's-, master's- and PhD degrees. If you have not yet completed your PhD, you must confirm your estimated date for the doctoral dissertation or that your PhD thesis has been submitted.
- A copy of the doctoral thesis. You can attach a draft if you are close to submitting or have recently submitted your thesis. Documentation of a completed doctoral degree must be presented before taking up the position.
- Academic works - published or unpublished - that you would like to be considered in the assessment (up to 5 items)
- Research plan (1000-1500 words)
- Name and contact information of three referees.

Joint work will also be considered. If it is difficult to identify your specific input to a joint project, you must include evidence of your contributions.

In the assessment of the best qualified applicant, we will emphasize education, experience and personal suitability as well as your motivation for the position.

NTNU is committed to following evaluation criteria for research quality according to The San Francisco Declaration on Research Assessment - DORA. This means that we pay special attention to the quality and professional breadth of these works. We also consider experience from research management and participation in research projects. We place great emphasis on your scientific work from the last five years.

General information

NTNU believes that inclusion and diversity is a strength. We want our faculty and staff to reflect Norway's culturally diverse population and we continuously seek to hire the best minds. This enables NTNU to increase productivity and innovation, improve decision making processes, raise employee satisfaction, compete academically with global top-ranking institutions and carry out our social responsibilities within education and research. NTNU emphasizes accessibility and encourages qualified candidates to apply regardless of gender identity, ability status, periods of unemployment or ethnic and cultural background.

NTNU is working actively to increase the number of women employed in scientific positions and has a number of resources to promote equality.

The city of Gjøvik has a population of 30 000 and is a town known for its rich music and cultural life. The beautiful nature surrounding the city is ideal for an active outdoor life! The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world.

As an employee at NTNU, you must at all times adhere to the changes that the development in the subject entails and the organizational changes that are adopted.

A public list of applicants with name, age, job title and municipality of residence is prepared after the application deadline. If you want to reserve yourself 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 reservation is not accepted.

If you have any questions about the position, please contact Associate Professor Dr. Arvind Sharma, telephone +47 46 710 948, email: arvind.sharma@ntnu.no. If you have any questions about the recruitment process, please contact Julie Lindland, e-mail: julie.lindland@ntnu.no.

If you think this looks interesting and in line with your qualifications, please submit your application electronically via jobbnorge.no with your CV, diplomas and certificates attached. Applications submitted elsewhere will not be considered. Upon request, you must be able to obtain certified copies of your documentation.

Application deadline: 31.07.2025

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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 Gjøvik 2815 Gjøvik (Gjøvik Municipality)