

**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.

Faculty of Information Technology and Electrical Engineering (IE)

Department of Mathematical Sciences (IMF)

Department of Information Security and Communication Technology (IIK)

## 2 PhD research fellowship positions in cryptographic voting systems

Norwegian University of Science and Technology (NTNU) has vacancies for 2 positions at the Department of Mathematical Sciences (IMF) and the Department of Information Security and Communication Technology (IIK) at the Faculty of Information Technology and Electrical Engineering (IE). Both positions are as a PhD candidate, 100% position.

The PhD appointments are for a term of 3 years without teaching assistance and up to 4 years including 25% of teaching assistance.

### About the project

The positions are connected to the project «Secure, Usable and Robust Cryptographic Voting Systems». This is a joint project between NTNU and the University of Luxembourg, funded by the Research Council of Norway and the Luxembourg National Research Fund. The goal of the project is to study the security of cryptographic voting schemes.

### Work description

Traditional voting has some significant limitations. From a security viewpoint, it has relied heavily on trust in the election officials, which in turn restricts independent verifiability and high assurance regarding confidentiality of votes. In addition, traditional voting has problems regarding errors in counting, accessibility, and timeliness.

Although cryptographic voting systems have been proposed almost 30 years ago, and deployed in many countries more recently, there remain major obstacles to their widespread adoption. As we have seen in recent years, voting systems sometimes fail and they are susceptible to a range of attacks, even in established democracies.

This project will investigate the security of voting systems and increase our assurance in state-of-the-art voting systems. In particular, the project will study user confidence in cryptographic voting systems, security proofs for such systems, as well as options for long-term security (including post-quantum security).

Security proofs will be a particular focus for one PhD fellow, while long-term security will be a particular focus for the other PhD fellow.

### Qualifications

The applicants should have a master's degree in mathematics, computer science, communications technology or related areas. A background including experience with cryptography is desirable. Candidates completing their MSc degree in the Spring 2018 are encouraged to apply. The position is also open for integrated PhD for NTNU students starting their final year of their master degree in Autumn 2018.

The candidate must satisfy the requirements for admission to the PhD education NTNU; please see <https://www.ntnu.edu/phd> and <https://www.ntnu.edu/studies/phma>. In particular, admission to PhD education at NTNU requires an average grade of at least B, within a scale of A-E for passing grades (A best), for the last two years of the master's degree.

See here for regulations concerning appointment and promotion to teaching and research posts:

<https://www.regjeringen.no/no/dokumenter/regulations-concerning-appointment-and-promotion-to-teaching-and-research-posts/id2519258/>.

### Language requirements

Applicants who do not master a Scandinavian language must provide evidence of good English language skills, written and spoken. The following tests can be used as such documentation: TOEFL, IELTS or Cambridge Certificate in Advanced English (CAE) or Cambridge Certificate of Proficiency in English (CPE). Minimum scores are:

- TOEFL: 600 (paper-based test), 92 (Internet-based test)

- IELTS: 6.5, with no section lower than 5.5 (only Academic IELTS test accepted)
- CAE/CPE: grade B or A.

### Formal regulations

Appointments are made in accordance with the regulations in force regarding terms of employment for PhD candidates issued by the Ministry of Education and Research, with relevant parts of the additional guidelines for appointment as a PhD candidate at NTNU. Applicants must undertake to participate in an organized PhD programme of study during their period of employment. The person who is appointed must comply with the conditions that apply at any time to employees in the public sector. In addition, a contract will be signed regarding the period of employment.

Applicants must be qualified for admission as PhD students at NTNU. See <http://www.ime.ntnu.no/forskning/phd> for information about PhD studies at NTNU. Together with the application, include a description of the research work that is planned for completion during the period of the grant.

### Salary conditions

The position follows code 1017 Research fellow, salary grade 50-62 in the Norwegian State salary scale, gross 436.900 - 537.700 per year, depending on qualifications. A deduction of 2% is made as a statutory contribution to the Norwegian Public Service Pension Fund.

### General

We can offer

- an informal and friendly workplace with dedicated colleagues
- academic challenges
- attractive schemes for home loans, insurance and pensions in the Norwegian Public Service Pension Fund

The Faculty of Information Technology and Electrical Engineering wants to attract outstanding and creative candidates who can contribute to our ongoing research activities. We believe that diversity is important to achieve a good, inclusive working environment. We encourage all qualified candidates to apply, regardless of the gender, disability or cultural background.

For further information about the positions, please contact Kristian Gjøsteen ([kristian.gjosteen@ntnu.no](mailto:kristian.gjosteen@ntnu.no)) or Colin Boyd ([colin.boyd@ntnu.no](mailto:colin.boyd@ntnu.no)).

The appointments are subject to the conditions in effect at any time for employees in the public sector.

Under Section 25 of the Freedom of Information Act, information about the applicant may be made public even if the applicant has requested not to have his or her name entered on the list of applicants.

### The application

The application must be sent electronically through this page ([www.jobbnorge.no](http://www.jobbnorge.no)) with information about education and relevant experience (all in one combined PDF file). Mark the application with the IE code given below.

The application must contain information of educational background and prior training, exams, and work experience. In addition, the applicant must submit a research statement (max. 3 pages), detailing research interests and initial plans with regard to the above project description. The statement should also describe why the applicant is suited for the position, and how the project relates to previous education, research and competence. Publications and other work that the applicant wishes to be taken into account must be enclosed (including a brief description of the contribution if not obvious).

The application must contain:

- Curriculum vitae (CV) with information about the candidate's prior training, exams, and work experience
- Certified copies of transcripts and diplomas
- Applicants from universities outside Norway are kindly requested to send a diploma supplement or a similar describes in detail the study and grading system and the rights for further studies associated with the obtained degree
- Research statement (max. 3 pages) including:
  - A short presentation of the motivation for a PhD study
  - How the applicant sees his/her background suitable,
  - The applicant's view of research challenges within the area of the PhD position
  - How the competence of the applicant can contribute to solving these challenges
- Names and contact information of at least 2 reference persons
- A copy of the master thesis (in PDF), or, for those who are near to completion of their MSc, an extended abstract combined with a statement of how and when the applicant plans to complete the thesis.

Incomplete applications will not be considered.

Signing of the employment contract should happen within October 1,2018.

The application deadline is: June 18, 2018.

Mark the application: IE 119-2018.

Jobbnorge-ID: 153300, Søknadsfrist: Søknadsfristen er gått ut