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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.

# PhD research fellowship position in Differential Privacy (IE-116/18)

NTNUs Department of Information Security and Communication Technology ([www.ntnu.no/iik](http://www.ntnu.no/iik)) invites applications for a fully funded Ph.D. position in Differential Privacy with a duration of 4 years with 25% teaching duties.

## About the Department

The Department of Information Security and Communication Technology has 33 permanent scientific staff members, and in total approximately 80 employees. 50 persons work at NTNUs campus in Gjøvik and 30 at NTNUs campus in Trondheim. IIK carries out internationally competitive research organized in seven cross-disciplinary labs covering the academic areas of Internet of Things (IoT), Applied Cryptology, Intelligent Transport Systems, Quantifiable Performance and Dependability of Communication Systems, Biometry, Digital Forensics, and Information Security. The department provides teaching in BSc in IT Operations and Information Security, MSc programs in Communication technology and Information Security, and PhD programs in Telematics and Information Security. The department hosts and operates NTNUs Center for Cyber and Information Security, a public-private partnership with 25 members.

## Work description

The appointment is for a term of 4 years with 25% teaching duties. This is a researcher training position aimed at providing promising researcher recruits the opportunity of academic development in the form of a doctoral degree.

Data on individuals represents enormous values, both for corporations such as Google, Facebook, and Acxiom, and for public sector activities such as health research. At the same time, we are dependent on protecting individual privacy which puts constraints on the collection and use of data about individuals. With the rapid increase of information collected about us all, a significant challenge lies in balancing information needs with privacy needs. Disclosure control is the control of inferences enabled by access to information and is essential for privacy when information is published. Differential privacy is becoming the de-facto standard definition of disclosure control with adoptions by, among others, Microsoft, Apple, Google, and the US Census bureau. The reasons for its popularity include sound theoretical foundations, and the ability to quantify disclosure risk in a manner that allows tracking its inevitable rise as information computed from data is published. An important aspect of research into differential privacy is optimizing the privacy and utility trade-off, generally requiring tools from statistics and theoretical computer science.

The researcher will work on designing differentially private mechanisms for data access. Of particular interest are development of new differentially private response mechanisms for distributed data, differentially private response mechanisms for longitudinal data, and theory around privacy as an only partially renewable resource.

## Qualifications

The candidate should have a master's degree in computer science, mathematics, statistics, or a related area. As the research topic rests heavily on quantitative analysis, design of algorithms, and proofs of algorithm properties, advanced classes in relevant topics are advantageous. Writing and communications skills are essential. Most importantly, the successful candidate has a strong interest in exploring theoretical aspects of privacy preserving computations.

Prospective applicants who finish their master's degree or equivalent within summer 2018 are also encouraged to apply.

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 housing loan, insurance and pension 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. We encourage especially women to apply.

The appointment is subject to the conditions in effect at any time for employees in the public sector.

### **To apply**

The application must be sent electronically as a response to this posting at (<https://www.jobbnorge.no>) with information about education and relevant experience (preferably, all in one combined PDF file). Mark the application IE-116/18. Incomplete applications will be rejected.

The applicant must submit a research statement (max. 3 pages), detailing research interests and initial plans with regard to the above research 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).

In addition, the application must also contain:

- Curriculum vitae (CV) with information about the candidate's prior training, exams, and work experience and contact information of at least two references
- 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
- 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.
- Documentation of English proficiency if applicable (see requirements above)

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

For further information about the position, please contact Professor Staal A. Vinterbo ([Staal.Vinterbo@ntnu.no](mailto:Staal.Vinterbo@ntnu.no))

### **Deadline for applications: 15.07.2018**

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.

Jobbnorge-ID: 153336, Søknadsfrist: Avsluttet