

## **Professor in Cyber Security, University of Oulu, Faculty of Information Technology and Electrical Engineering, Finland.**

### **Description**

The University of Oulu is an international scientific community, with 15 000 students and approximately 3 000 employees. The strengths of the University are wide multi-disciplinary study/research interests and modern research and study environment and good cooperation with international educational and research institutes. More information <http://www.oulu.fi/english/>.

ICT is one of the key focus areas of the University of Oulu since the 1990's, and the Faculty of Information Technology and Electrical Engineering (ITEE, <http://www.oulu.fi/itee>) was founded in 2014 to consolidate expertise in the field. Faculty of ITEE encompasses 12 research groups in the fields Communications Engineering, Computer Science and Engineering, Electrical Engineering, and Information Processing Science, with world-class research and rising research groups in the areas of machine vision, wireless communications, high-speed electronics and optoelectronics, ICT electronics components, ubiquitous computing, empirical software engineering, software security, and ICT in health and wellbeing.

The University of Oulu and the Faculty of ITEE and specifically Biomimetics and Intelligence Systems Group (BISG), is opening a position of Professor in Cyber Security – Trust as Technology Enabler

Trust and privacy are demanded, regulated and mandated and may be seen as extra obstacles to overcome in the development and adaptation of new technologies and products. However, demand for trust could be leveraged as an enabler instead of inhibitor. Traditional thinking in system development may have considered trust as an afterthought: data is processed by various devices and actors in the system, supply chain is long and complicated, data persist forever and trust and privacy is upheld by either attempting to anonymizing the data or applying strong access controls. Opposite thinking would be to focus data collection, keeping data and its processing local, simplifying and securing each step in processing and expiring collected data as swiftly as possible. This paradigm shift would require more forethought and new techniques but may yield considerable cost, complexity, bandwidth and storage savings and lead to faster acceptance of new technologies and products. Increased public and regulatory pressure on trust and privacy creates new business opportunities. This trust and privacy smart approach should be studied as a competitive advantage in productization and as an enabler to make big data applications socially feasible.

#### **Job Description and Location**

This position is in the field of Cyber Security, and in particular, it focuses on enabling technologies of trust and on trust as a technological enabler. Specifically, the position is directed towards:

Exploring the relationship between technological choices and trust.

Tracking trust and privacy regulation and mapping its impact to use of technology in general and especially in cloud services, financial and health care sectors.

Advancing trust enabling and privacy preserving techniques such as focused data collection, limited data retention, optimized sharing and hyper local processing.

Exploiting advances in software security measures, cryptography, anonymization and computer science in general in order to turn trust into an enabler.

Implementing trust all the way from nano-sized applications to large and complex systems with long supply chains.

Applying these techniques to productization and system development to achieve savings and to speed up adaptation of new products and technologies.

The successful applicant will be involved in teaching and supervision activities in this field and is expected to create and provide related courses to enrich the faculty curriculum. The candidate will also be active in attracting both national and international funding.

Due to the nature of the research, the successful applicant should preferably be familiar with the software engineering discipline, security engineering and technical aspects of trust. Applicant should have practical software and system development experience. Experience from “big data” in the context of private information is a plus. Moreover, applicant should be familiar with the related regulation and commercial productization of technology. As for teaching, pedagogical training is considered an advantage and previous experience in supervision is considered a plus.

The position will be located at the Biomimetics and Intelligent Systems Group, which conducts internationally acknowledged multidisciplinary research in the areas of Data Analysis, Robotics, Secure Programming, and Bio-IT. The application areas of our research include optimisation of industrial manufacturing processes, industry 4.0, health and wellbeing systems, environmental monitoring with mobile robots, dependable Internet of things (IoT), and seamless artificial-natural systems. In addition, the appointed professor will work on close collaboration with National Defense University and other research units of the Defense Forces in Finland.

### Responsibilities, Required Qualifications and Language Skills

Within the full-time working hours (1624 hours per annum) and an annually confirmed working plan, the professor shall teach in the faculty’s introductory, intermediate and advanced level courses and supervise theses. The working time will be divided roughly following 50/50 principle so that the National Defense University will act as a contact point when annual working plan is designed. On teaching, research and service activity University of Oulu and the National Defense University will agree together the needs for The Finnish Defense Forces in this collaborative effort.

According to section 33 of the Universities Act, a professor shall carry out and supervise scientific research work, give teaching based on it, follow developments in science or art, and take part in societal interaction and international cooperation.

An applicant to be appointed as a professor shall have a doctoral degree, high-level scientific or artistic competence, experience in leading scientific research, an ability to supervise theses and give high-level instruction based on research, and proof of international cooperation in the field of research that he or she represents.

When assessing the applicants’ merits, issues taken into consideration include scientific publications and other research results with scientific value, teaching experience and pedagogical training, skills to produce learning materials, other merits achieved in the teaching profession, a demonstration lecture and doctoral theses supervised by the applicant. We expect the successful candidate to have experience of leading research work, as well as proof of efficient acquisition of research funding. In addition to this, the following issues will also be taken into account: practical familiarity with the field of duties assigned to the position, scientific work abroad and international activities.

The language proficiency requirements are defined in the Government Decree on Universities (770/2009). For university teaching and research positions in Finland, a full command of the teaching language, Finnish or Swedish, is required. The language of instruction in the University of Oulu is Finnish, and the degrees are awarded in Finnish. Teaching may also be given in English. If the successful applicant is not proficient in Finnish, he or she is expected to acquire moderate proficiency within two years after the selection, as this is essential for the professor’s duties as well as for integration into the workplace and Finnish society.

Special attention will be paid to the applicants’ mastery of English.

### Salary

The salary will be based on levels 8-10 of the demand level chart for teaching and research staff of Finnish universities. In addition, a salary component based on personal work performance will be paid (maximum of 50% of the job-specific component). In practice, the salary will be roughly €5700 to €7000 per month, depending on the appointee’s qualification and performance.

The position is scheduled to be filled as of 1.6.2020 or as agreed, and it is subject to a six-month trial period.

#### Application Procedure

Because of the application of the research to the practical critical infrastructure protection, national personnel security clearance process will be carried out with the consent of the applicant.

Applications should be submitted using the electronic system form by March 13, 2020, 23:59 (Finnish local time).

The following appendices shall be included with the application (PDF files preferred)

1) A brief Curriculum vitae in English following the guidelines of the Finnish Advisory Board on Research Integrity (tutkimuseettinen neuvottelukunta). The guidelines are available at <https://www.tenk.fi/en/template-researchers-curriculum-vitae>

2) A list of publications classified as follows: (1) articles in international peer-reviewed journals, (2) articles in international peer-reviewed volumes of scientific significance and articles in peer-reviewed conference proceedings, (3) articles in domestic peer-reviewed journals, (4) articles in domestic peer-reviewed volumes of scientific significance and articles in domestic peer-reviewed conference proceedings, (5) scientific monographs, (6) other scientific publications, e.g., articles in scientific journals and conference proceedings with no peer-review process, and in university or department publications.

3) Teaching merits that are significant for the position should be presented in English in the form of a teaching portfolio or similar account. The portfolio is expected to follow the outline given in the appendix.

4) A brief research and action plan in English.

5) Copies in electronic form of at most ten (10) publications and other works that the applicant thinks should be taken into consideration upon evaluation of eligibility and merits.

Before being officially accepted for the position, the successful applicant must present to the faculty his or her original degree certificates or certified copies thereof, as well as a signed curriculum vitae.

#### Reviewer Assessment

The dean will send an invitation to three (3) external reviewers approved by the university's research council to be consulted regarding the appointment process. When selecting the reviewers, the respective specializations of the applicants in the field are taken into consideration, and general fairness is observed in other respects as well.

The applicants are informed about the selection of the reviewers.

Based on an assessment of the applicants' merits, the recruitment committee can at its discretion limit the number of applicants to be subjected to evaluation by the external reviewers.

#### Demonstration Lecture and Interview

The recruitment committee will interview the applicants that they consider best and makes arrangements for any demonstration lectures that may be deemed necessary.

#### Official Employment

The Dean will make his proposition on the basis of the proposition of the recruitment committee and submit this, justifications and attachments included, to the rector of the university, who will make the decision on the employment of the successful applicant.

#### Contact Information

For further information regarding this appointment process, please contact the Faculty of Information Technology at the University of Oulu as follows:

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#### OUTLINE OF THE CONTENTS OF THE TEACHING PORTFOLIO

According to the policy approved by the University of Oulu, the teaching skills referred to in the Appointments Decree (Decree on the Appointment of Professors at Universities 1581/91; Amendment 462/98) are assessed according to the outline below:

1. Teaching philosophy and characterisation of yourself as a teacher  
- thinking underlying your teaching, the personal background idea of your teaching: how is this to be seen in your work as a teacher? Description of yourself as a teacher and worker in the teaching profession
2. Practical experience gained in the teaching profession, how you develop your teaching
3. Production and use of learning materials
4. Maintenance of your teaching skills
5. Feedback received on your teaching (student and peer assessments, awards and approved teaching demonstrations)
6. Vision of the development of your work as a teacher  
- provide a brief plan for the development of your teaching and work as a teacher in the near future, e.g. in relation to the department's curriculum