

PhD Position on SMT for Security Analysis, Uppsala University, Department of Information Technology, Sweden.

Uppsala University is a comprehensive research-intensive university with a strong international standing. Our mission is to pursue top-quality research and education and to interact constructively with society. Our most important assets are all the individuals whose curiosity and dedication make Uppsala University one of Sweden's most exciting workplaces. Uppsala University has 44.000 students, 7.100 employees and a turnover of SEK 7 billion.

The Department of Information Technology has a leading position in research and education. The Department currently has about 280 employees, including 120 teachers and 110 PhD students. More than 4000 students study one or more courses at the department each year. More info: it.uu.se

Duties/Subject Area: SMT solvers are constraint solvers that combine highly efficient reasoning about Boolean logic with decision procedures for domains like arithmetic, bit-vectors, or arrays. SMT solvers form the backbone of many of today's verification systems, responsible for discharging verification conditions that encode correctness properties of hardware or software designs. As a prime application area of SMT, recently the analysis of security properties of networks and software programs has emerged, motivated by the challenge of web- and cyber-security. The topic of the PhD position is (i) to develop and extend SMT technology tailored to security analysis, in particular methods and tools for relevant theories such as strings, fragments of word equations, and regular expression constraints, and to (ii) investigate and improve SMT-based methods for security analysis, possibly including approaches like whitebox fuzzing, model checking, symbolic execution, and variants of taint tracking.

About the project: The funding for the PhD position is part of the ambitious framework project WebSec: Securing Web-driven Systems, funded by the Swedish Foundation for Strategic Research (SSF) and dedicated to principled security and privacy for the web. The project is a collaboration between Chalmers in Gothenburg (project leader: Andrei Sabelfeld) and Uppsala University (PI: Philipp Ruemmer), and the PhD student will have the opportunity to work together with several world-leading groups at both universities: the Embedded Systems, Algorithmic Program Verification, and Optimization group in Uppsala, and the Information Security group at Chalmers.

About WebSec: cse.chalmers.se/research/group/security/websec

Requirements: The candidate should have a Master of Science in computer science, computer engineering, or equivalent, with a solid grasp in SMT or constraint solving, security, formal methods, and language technology such as compiler construction. Good programming skills and communication skills are required in this project. We expect the student to have demonstrated ability to do research, as seen through his/her MS thesis. Excellent skills in spoken and written English are an absolute requirement.

The position is for a maximum of five years and includes departmental duties at a level of at most 20% (typically teaching) as well as course studies. The candidate will be expected to teach in English or Swedish.

Application: The application should include a description of yourself, your research interests, reasons for applying for this particular PhD position and past experience (max. 3 pages), a CV, copies of relevant university degrees and transcripts, relevant publications, a copy of your MSc thesis (or a summary in case the thesis is ongoing) and other relevant documents. Candidates are encouraged to provide up to 3 letters of recommendation and contact information to reference persons. We would also like to know your earliest possible date for starting.

Rules governing Ph.D. candidates are set out in the Higher Education Ordinance Chapter 5, §§ 1-7 and in Uppsala university's rules and guidelines regler.uu.se/search/?hits=30&languageId=1&search-language_en=English

Uppsala University strives to be an inclusive workplace that promotes equal opportunities and attracts qualified candidates who can contribute to the University's excellence and diversity. We welcome applications from all sections of the community and from people of all backgrounds.

Working in Sweden: Sweden is a fantastic place for living and working. Swedes are friendly and speak excellent English. The quality of life is high, with a strong emphasis on outdoor activities. The Swedish working climate emphasizes an open atmosphere, with active discussions involving both junior and senior staff. All PhD students and Postdocs are full employees, with standard salaries and five weeks of paid holiday. The starting salary of a PhD student at our department is currently 28500SEK/month. Spouses of employees are entitled to work permits, and, after being awarded a PhD degree, non-EU-citizens are eligible for permanent work permits. Healthcare is free after a small co-pay and the university subsidizes athletic costs, such as a gym membership. The parental benefits in Sweden are among the best in the world, including extensive parental leave (for both parents), paid time off to care for sick children, and affordable daycare.

Salary: According to local agreement for PhD students.

Starting date: As agreed upon, temporary position.

Type of position: Full time position.

For further information about the position please contact Dr. Philipp Rümmer, philipp.ruemmer@it.uu.se, phone: +46 18 4713156.

Please submit your application by 30 April 2019, UFV-PA 2019/615.

Are you considering moving to Sweden to work at Uppsala University? If so, you will find a lot of information about working and living in Sweden at uu.se/joinus. You are also welcome to contact International Faculty and Staff Services at ifss@uadm.uu.se.

Please do not send offers of recruitment or advertising services. Applications must be submitted as described in this advertisement.

Placement: Department of Information Technology

Type of employment: Full time , Temporary position longer than 6 months

Pay: Fixed salary

Number of positions: 1

Working hours: 100 %

Town: Uppsala

County: Uppsala län

Country: Sweden

Union representative:

Seko

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Number of reference: UFV-PA 2019/615

Last application date: 2019-04-30