

Malware Detection 2.0 with Control-Flow Fingerprinting

Our group (Software Engineering Group, (Software Engineering Group, Prof. Reiner Hähnle, TU Darmstadt, Germany) is looking for a *PhD student* or *PostDoc* who is interested in working with us on a project in the intersection of **Formal Methods** and **IT Security**.

The project aims to detect malware based on a new, semantic approach called **Control-Flow Fingerprinting**. The idea is to compute a profile of a program's behavior by recording and classifying its logic decisions. The ambition is to be able to detect supply chain attacks targeting source code repositories as reported here:

<https://apiiro.com/blog/malicious-code-campaign-github-repo-confusion-attack/>

What we offer

We are an internationally leading research group in the the areas of deductive program verification and formal analysis of distributed systems.

We offer an engaging atmosphere, interesting research topics and collaboration with excellent researchers. The project you will work on is a joint effort with Profs. Haya Schulmann and Michael Waidner, who are internationally leading experts in the field of IT security.

The project is financed by the **National Research Center for Applied Cybersecurity ATHENE**, which offers a stimulating and vibrant environment with numerous offers of collaboration, distinguished lectures, exchange with political decision makers, etc.

PhD students and PostDocs are employed on a time-limited contract (usually, 3 years, with possible extension up to two years to complete a PhD). The salary depends on the experience level and starts at around 4,200 EUR per month (before taxes). Employment in Germany includes health insurance.

What you should offer

You have a keen interest in and excellent knowledge about formal methods (preferably: logic-based approaches). The project will involve tool building, so we expect very good software engineering skills. If you apply with the aim to achieve a PhD, your masters thesis was research-oriented, preferably having resulted in a first publication. In any case, it is necessary to provide evidence of your talent to perform scientific research.

How to apply?

Your application (in German or English) must consist of a *single* PDF document and include: (i) a motivation letter that states why you are interested in the position and why you are qualified, (ii) a CV, (iii) certificates and transcripts with detailed grades for M.Sc., B.Sc., and high school diploma, (iv) masters/bachelor/PhD thesis, as applicable. If you are applying as a PostDoc, please include the evidence of the successful completion of the Ph.D. (certificate). Instead of including a thesis you may also provide a download link.

Send your application via email to:

Prof. Reiner Hähnle, se-jobs@cs.tu-darmstadt.de

stating reference number **127** (this is **essential**).