Postdoctoral

Ecole/Institution/Société:
University of Twente, **Netherlands / Enschede**

Discipline:
Control Systems Engineering

Type d'emploi::
Full-time

Date de publication:
2025-02-23

Personne à contacter:
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PhD position on Hardware Security

Job description

Public-key cryptography is vulnerable to mathematical attacks by quantum computers. Governments encourage organizations to adopt new post-quantum cryptography algorithms to secure critical infrastructure. However, these new algorithms are still susceptible to physical attacks, while current testing infrastructures to assess their resistance to physical attacks sacrifice quality for run time. This project investigates new methods inspired by genomics (to improve quality) in combination with digital hardware design (to reduce run time) to thoroughly evaluate the security of post-quantum protected implementations against deep-learning-based side-channel analysis.

We invite applications for a PhD position at the Computer Architecture for Embedded Systems group. We are looking for a talented and highly motivated candidate to work on this project doing research at the intersection of hardware security (specifically side-channel analysis) and FPGA design.

Your profile

* You are an enthusiastic and highly motivated researcher.

* You have a master’s degree in a relevant discipline, such as computer engineering, embedded systems, or computer science.

* You have good knowledge of C, C++, and Python (preferably in Linux environment).

* You have master-level knowledge in hardware security, specifically side-channel analysis, and are familiar with statistical tools for conducting successful attacks.

* You have master-level knowledge in FPGA/hardware design using hardware description languages and/or high-level synthesis (VHDL, Verilog, Vitis HLS, Vitis), and experience in programming FPGA boards.

* You have basic parallel programming knowledge and experience.

* Basic understanding of deep learning methods is a plus

* You are proficient in English.

Our offer

* As a PhD student at UT, you will be appointed to a full-time position for four years, with a qualifier in the first year, within a very stimulating and exciting scientific environment.

* The University offers a dynamic ecosystem with enthusiastic colleagues.

* Your salary and associated conditions are in accordance with the collective labour agreement for Dutch universities (CAO-NU).

* You will receive a gross monthly salary ranging from € 2,901(first year) to € 3,707 (fourth year);

* There are excellent benefits including a holiday allowance of 8% of the gross annual salary, an end-of-year bonus of 8.3%, and a solid pension scheme.

* Free access to sports facilities on campus.

* A family-friendly institution that offers parental leave (both paid and unpaid);

* You will have a training programme as part of the Twente Graduate School where you and your supervisors will determine a plan for a suitable education and supervision.

* We encourage a high degree of responsibility and independence, while collaborating with close colleagues, researchers and other staff.

Information and application

Are you interested in this position? Please send your application via the 'Apply now' button below before March 10, 2025, and include:

* A cover letter (maximum 2 pages A4), emphasizing your specific interest, qualifications, and motivation to apply for this position.

* A Curriculum Vitae, including a list of publications, if applicable, and contact information of, at least, two academic references (one of them should be your Master project supervisor) we may contact.

* Academic transcripts of your Bachelor and Master's programs.

* Your master's thesis, or if it is not yet completed, another document written in English where you are the primary author. This can be a publication, a term paper, or any other relevant work you have written.

First round of interviews will be held on March 17, 2025.

For more information regarding this position, you are welcome to contact Dr. Nikolaos Alachiotis (n.alachiotis@utwente.nl).

About the department

The CAES group conducts research and education in computer architecture and computing systems with a particular emphasis on embedded systems.

Embedded systems are already commonplace, they provide the necessary control and integration of

cyber-physical systems. In the last couple of decades, a larger portion of the world’s total computing power is taking place at the edge, motivated by broad concepts, such as the Internet-of-Things (IoT), machine learning, smart grids, and real-time and dependable systems. With different constraints in terms of power consumption, performance, reliability, and security, the understanding of the underlying computer architectures is vital for the efficient integration of these systems.

Our research goal is to investigate the challenges and opportunities in the intersection between CS and EE. This large scope allows our researchers to tackle real problems with a broad and systemic view, allowing for the development of new technologies, architectures, design automation tools, algorithms, methodologies, and models. This process requires knowledge from different domains in the hardware and software levels of abstraction, allowing ample space for our members to develop and collaborate internally and with external partners.

About the organisation

The faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS) uses mathematics, electronics and computer technology to contribute to the development of Information and Communication Technology (ICT). With ICT present in almost every device and product we use nowadays, we embrace our role as contributors to a broad range of societal activities and as pioneers of tomorrow's digital society. As part of a people-first tech university that aims to shape society, individuals and connections, our faculty works together intensively with industrial partners and researchers in the Netherlands and abroad, and conducts extensive research for external commissioning parties and funders. Our research has a high profile both in the Netherlands and internationally. It has been accommodated in three multidisciplinary UT research institutes: Mesa+ Institute, TechMed Centre and Digital Society Institute.

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