Lucas Roquet

1st Year Ph.D. Student

lucas.roquet@inria.fr
lucasrqt.github.io
lucasrqt
0009-0001-8458-516X
M8paRW0AAAAJ

Education

October 2024 – now **Ph.D. Student at IRISA/Inria Rennes Taran research group**, *University of Rennes*, Supervised by F. F. dos Santos and A. Kritikakou
Improving the security and reliability of large machine learning models by developping new efficient protection methods.

2022–2024 **Cybersecurity Master's Degree (Hardware Security Track)**, *Cyberschool, University of Rennes*

2021–2022 **Bachelor of Computer Science**, *ISTIC, University of Rennes 1*

2019–2021 **Bachelor of Computer Science (1st and 2nd year)**, *University of South Britanny (UBS)*

2019 **Highschool Diploma**, *Benjamin Franklin Highschool*, Auray, France

Internships

May–August 2023 **Characterizing the impact of radiation-induced errors on Vision Transformers for NVIDIA GPUs**, *Inria Rennes, Taran Team*, Supervised by F. F. dos Santos and A. Kritikakou
The internship focused on fault injections on Vision Transformers running on NVidia GPUs simulating faults induced by radiations. This work resulted in a publication [1].

March–August 2024 **Improving Security and Reliability of Large Vision Transformers Models on Embedded GPUs**, *Inria Rennes, Taran Team*, Supervised by F. F. dos Santos, A. Kritikakou and M. Traiola
The goal of the internship is to characterize the security and the reliability of Vision Transformers running on Embedded GPUs. To run on such hardware, Vision Transformers have to be optimized. We aim to see if those optimizations have an impact on their reliability.

Research Projects

Spring 2023 **Cache Attacks : Flush+Reload VS Prefecth+Reload**, *Supervised by Mohamed Sabt (IRISA)*, 1st year of Master's project

Fall 2023 **Security in Distributed Additive Manufacturing: Last Mile Hardening**, *Supervised by Damien Hardy (IRISA) and Ronan Lashermes (Inria)*, 2nd year of Master's project

Languages

French Native language

English Fluent

German Beginner

Computer Science Skills

Programming C/C++, Python, Bash, Java, Rust (basis), Assembly (Arm, NIOS-II, RISC-V)

Computer Security	Side-Channel, Cryptanalysis, Cryptography, Binary Analysis, Security of Embedded Systems
Computer Systems	Low-level programming, Operating Systems (Linux)
Machine Learning	PyTorch, Transformers, Quantization
Other	Computer Architecture (CPU, NVIDIA GPU), Architecture Reliability, Git, VSCode, LaTeX

Interests

Sport	Rowing, Running
Music	Guitar, Bass
Other	Handworking, Video-games, Computer Science, Reading

Student Engagement

July 2024 – now	Co-founder and secretary of **Café!**, association of Ph.D. students, post-docs, research engineers and interns at IRISA laboratory
April 2022 – April 2024	Secretary of **BDE Palme**, ISTIC's Students Assocication
September 2023 – August 2024	Member of the University of Rennes Student Council

References

[1] Lucas Roquet, Fernando Fernandes dos Santos, Paolo Rech, Marcello Traiola, Olivier Sentieys, and Angeliki Kritikakou. Cross-Layer Reliability Evaluation and Efficient Hardening of Large Vision Transformers Models. In *Design Automation Conference (DAC)*, San Fracisco, United States, June 2024.