

PETERSON YUHALA

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ACADEMIC POSITION	Postdoctoral Research Fellow	April 2026 – Present
	Systopia Lab Department of Computer Science, <i>University of British Columbia</i> , Vancouver, Canada	
INTERESTS	Confidential computing and trusted execution environments (TEEs); processing-in-memory; systems security; privacy-preserving computation.	
EDUCATION	Ph.D. in Computer Science	April 2019 – March 2024
	<i>University of Neuchâtel, Switzerland</i> Thesis: Enhancing Security and Performance in Trusted Execution Environments Advisors: Pascal Felber, Valerio Schiavoni, Alain Tchana Nominated for a Best Thesis Award	
	Masters of Engineering in Computer Science	Sept. 2013 – Sept. 2018
	<i>National Advanced School of Engineering (ENSP), Yaoundé, Cameroon</i> Thesis: Memory address translation optimization in virtualized systems Advisor: Alain Tchana	
RESEARCH EXPERIENCE	University of British Columbia, Vancouver, Canada	April 2026 – Present
	<i>Systopia Lab, Postdoctoral Fellow</i> • Hardware-based security for processing-in-memory (PIM) architectures • Side-channel attacks and mitigations in PCIe-based interconnects	
	University of Neuchâtel, Switzerland	April 2024 – March 2026
	<i>Computer Science Institute / collaboration with ABB Corporate Research, Postdoctoral Researcher</i> • Accelerating homomorphic encryption algorithms with PIM • Securing real-time applications with trusted execution environments (TEEs)	
	University of Neuchâtel, Switzerland	April 2019 – March 2024
	<i>Computer Science Institute, Research Assistant / Ph.D. Candidate</i> • Program partitioning for TCB reduction in TEE programs • Adding TEE support in GraalVM CE for sensitive data protection in the cloud • IoT security and privacy with TEEs and machine learning	
	Toulouse Institute of Computer Science Research (IRIT), France	March 2018 – Sept. 2018
	<i>Research Intern</i> • Memory address translation optimization in virtualization systems	
AWARDS	• Postdoctoral Fellowship, Swiss National Science Foundation (CHF 112,000 / \$138,000) • Certificate of Appreciation, excellent service on ASPLOS’24 Artifact Evaluation Committee • Research Intern Scholarship, Campus France • Salutatorian, Computer Engineering class of 2018, ENSP Yaoundé • Valedictorian, Class of 2013, Sacred Heart College • Ralph C. Okwen Award, overall best high school science student, Sacred Heart College • 2nd Award, Academic Excellence Award for a perfect score at the Cameroon GCE A-Level • 1st Award, Academic Excellence Award for a perfect score at the Cameroon GCE O-Level	2026 2024 2018 2018 2013 2013 2013 2011
PUBLICATIONS	1. Andrei Arusoae, Claudiu-Nicu Bărbieru, Oana-Otilia Captarencu, Pascal Felber, Corentin Libert, Emanuel Onica, Etienne Rivière, Valerio Schiavoni, Peterson Yuhala. Where to Place Your TEE? In Search of a Censorship-Resilient Design for Rollup Sequencers. <i>Proceedings of the 29th International Conference on Principles of Distributed Systems (OPODIS)</i>, 2025	

2. Niklas Klinger, Jonas Sander, **Peterson Yuhala**, Pascal Felber, Thomas Eisenbarth. **DRAMatic Speedup: Accelerating HE Operations on a Processing-in-Memory System**. *IACR Communications in Cryptology 3.1*, 2026
3. **Peterson Yuhala**, Mpoki Mwaisela, Pascal Felber, Valerio Schiavoni. **PIM-CACHE: High-Efficiency Content-Aware Copy for Processing-In-Memory**. *Proceedings of the 27th ACM/IFIP International Middleware Conference*, 2026
4. Romain de Laage, **Peterson Yuhala**, François-Xavier Wicht, Pascal Felber, Christian Cachin, Valerio Schiavoni. **Practical Secure Aggregation by Combining Cryptography and Trusted Execution Environments**. *Proceedings of the 19th ACM International Conference on Distributed and Event-based Systems (DEBS)*, 2025
5. Mpoki Mwaisela, **Peterson Yuhala**, Pascal Felber, Valerio Schiavoni. **IM-PIR: In-Memory Private Information Retrieval**. *Proceedings of the 26th ACM/IFIP International Middleware Conference*, 2025
6. **Peterson Yuhala**, Christian Göttel, Jämes Ménétrey, Valerio Schiavoni, David Kozhaya, Pascal Felber. **On Real-Time Guarantees in Intel SGX and TDX**. *Proceedings of the 37th Euromicro Conference on Real-Time Systems (ECRTS)*, 2025
7. Mpoki Mwaisela, Joel Hari, **Peterson Yuhala**, Jämes Ménétrey, Pascal Felber, Valerio Schiavoni. **Evaluating the Potential of In-Memory Processing to Accelerate Homomorphic Encryption**. *Proceedings of the 43rd International Symposium on Reliable Distributed Systems (SRDS)*, 2024
8. **Peterson Yuhala**, Jämes Ménétrey, Pascal Felber, Marcelo Pasin, Valerio Schiavoni. **Fortress: Securing IoT Peripherals with Trusted Execution Environments**. *Proceedings of the 39th ACM/SIGAPP Symposium on Applied Computing (SAC)*, 2024
9. Jämes Ménétrey, Aeneas Grüter, **Peterson Yuhala**, Julius Oeftiger, Pascal Felber, Marcelo Pasin, Valerio Schiavoni. **A Holistic Approach for Trustworthy Distributed Systems with WebAssembly and TEEs**. *Proceedings of the 27th International Conference on Principles of Distributed Systems (OPODIS)*, 2023
10. **Peterson Yuhala**, Pascal Felber, Hugo Guiroux, Jean-Pierre Lozi, Alain Tchana, Valerio Schiavoni, Gaël Thomas. **SecV: Secure Code Partitioning via Multi-Language Secure Values**. *Proceedings of the 24th ACM/IFIP International Middleware Conference*, 2023
11. **Peterson Yuhala**, Michael Paper, Timothée Zerbib, Pascal Felber, Valerio Schiavoni, Alain Tchana. **SGX Switchless Calls Made Configless**. *Proceedings of the 53rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, 2023
12. Boris Teabe, **Peterson Yuhala**, Alain Tchana, Fabien Hermenier, Daniel Hagimont, Gilles Muller. **(No)Compromis: Paging Virtualization is Not a Fatality**. *Proceedings of the 17th ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments (VEE)*, 2021
13. **Peterson Yuhala**, Pascal Felber, Valerio Schiavoni, Alain Tchana. **Plinius: Secure and Persistent Machine Learning Model Training**. *Proceedings of the 51st Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, 2021
14. **Peterson Yuhala**, Jämes Ménétrey, Pascal Felber, Valerio Schiavoni, Alain Tchana, Gaël Thomas, Hugo Guiroux, Jean-Pierre Lozi. **Montsalvat: Intel SGX Shielding for GraalVM Native Images**. *Proceedings of the 22nd ACM/IFIP International Middleware Conference*, 2021

INVITED TALKS

- Guest lecture at the University of British Columbia, hosted by Dr. Aastha Mehta (Oct. 2025)
- Invited talk: EPFL BSA Conference - Privacy x Verifiability (March 2025)
- Invited talk at FAU Erlangen-Nürnberg, hosted by Prof. Dr.-Ing. Rüdiger Kapitza (July 2024)
- Guest speaker at Privacy Reunion 3, hosted by the Crypto Valley Association (June 2024)
- Speaker at the 39th ACM/SIGAPP Symposium on Applied Computing (April 2024)
- Speaker at the 24th ACM/IFIP International Middleware Conference (Dec. 2023)
- Speaker at the 53rd IEEE/IFIP International Conference on Dependable Systems and Networks (June 2023)
- Invited talk at Huawei Research Center Zürich (December 2022)

TECHNICAL PROJECTS

- Guest lecture at the Institute of Computer Science, University of Yaoundé I (Dec. 2022)
- Guest speaker at the Conférence Universitaire de Suisse Occidentale (Dec. 2021)
- Speaker at the 22nd ACM/IFIP International Middleware Conference (Dec. 2021)
- Speaker at the 51st IEEE/IFIP International Conference on Dependable Systems and Networks (June 2021)
- Speaker at the Conférence francophone d'informatique en Parallélisme, Architecture et Système (July 2019)

Secure processing-in-memory

April 2024 – March 2026

P4 SNSF Project: Practical Privacy-Preserving Processing, Neuchâtel, Switzerland

- Mitigating PIM data transfer overhead with inline deduplication and compression
- Exploring cryptographic approaches for securing PIM workloads

Securing IoT peripherals with TEEs

Feb. 2023 – Nov. 2023

VEDLIoT project, Neuchâtel, Switzerland

- TCB reduction in peripheral device drivers in OP-TEE OS for Arm TrustZone

Multilanguage program partitioning for TEEs

Sept. 2021 – Dec. 2022

Collaboration with Oracle Labs Zürich

- Using the GraalVM Truffle framework to implement generic AST nodes that encapsulate sensitive information in polyglot programs
- Building a taint analysis tool to analyze the AST and partition the program for TEEs
- gitlab.com/Yuhala/generic-tools

Configless Intel SGX switchless calls

Aug. 2021 – Feb. 2022

University of Neuchâtel

- Design of a dynamic worker thread scheduling system for switchless enclave routines
- gitlab.com/Yuhala/zc-switchless

Partitioning Java programs for TEEs

July 2020 – June 2021

Collaboration with Oracle Labs Zürich

- Java program partitioning with annotations and bytecode transformations for TCB reduction, implemented with GraalVM CE
- github.com/Yuhala/montsalvat

Fault tolerance for TEE programs

April 2019 – June 2020

University of Neuchâtel

- Leveraging persistent memory (PM) to provide efficient fault-tolerance guarantees in TEE programs; use case: secure machine learning
- github.com/Yuhala/plinius

Memory address translation in virtualization

March 2018 – Sept. 2018

IRIT, Toulouse, France

- Modifying the Xen hypervisor to provide contiguous memory to paravirtual guest VMs: github.com/Yuhala/xen
- Building a VM placement simulator: github.com/Yuhala/placement-simulator

SIMbox fraud detection

Sept. 2017 – Jan. 2018

National Advanced School of Engineering, Yaoundé, Cameroon

- Tool for SIMbox fraud detection based on the ELK stack: github.com/Yuhala/elk-fraud-detection

Embedded electronics

July 2016 – Sept. 2016

National Advanced School of Engineering, Yaoundé, Cameroon

	• Design and implementation of embedded software for home-automation systems on Arduino, MSP-430, and ESP32 • github.com/Yuhala/embedded-design	
TEACHING	Teaching Assistant, Faculty of Science <i>University of Neuchâtel, Switzerland</i> • Discrete Mathematics for Computer Science • Networking and Web Technologies	April 2019 – Feb. 2026
SERVICE	Program committees • USENIX Security 2027 • International Middleware Conference 2026 • Workshop on Reliable Large-scale Data Management 2025 • DSN Doctoral Forum 2025 Artifact evaluation committees • International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2024 • USENIX Conference on Operating Systems Design and Implementation (OSDI) 2021 • European Conference on Computer Systems (EuroSys) 2021 Reviewing • Sub-reviewer, IEEE International Conference on Cloud Engineering (IC2E) 2021 Volunteering • Organizing a STEM bootcamp: scienceprojectscmr.github.io • Scientific articles for the LexTech Institute blog: lextechinstitute.ch/blog • University media presence: secure data processing in the cloud • Student volunteer, OPODIS 2019 • Student volunteer, COMPAS 2018	
SKILLS	<i>Programming languages:</i> C/C++, Java, Python <i>Systems security:</i> Intel SGX, Intel TDX, Arm TrustZone, OP-TEE, AMD SEV <i>Web development:</i> HTML5/CSS, JavaScript, SQL, Laravel/PHP, Flask <i>Embedded/IoT systems:</i> Arduino, Raspberry Pi, ESP32, Microcontrollers <i>Miscellaneous:</i> Linux, Git, Shell (Bash), Docker, LaTeX	
REFERENCES	Available on request.	