

Adrien Ghosn

PHD STUDENT IN COMPUTER SCIENCE

Place du Grand Saint Jean 2, 1003 Lausanne

☎ (+33) 6 13 17 61 55 | ✉ ghosn.adrien@gmail.com | 🌐 <https://people.epfl.ch/adrien.ghosn> | 📷 aghosn | 📺 aghosn

Education

Ecole Polytechnique Federale de Lausanne(EPFL)

Lausanne, Switzerland

COMPUTER SCIENCE ENGINEERING

Sep. 2010 - PRESENT

- 2016 – Present: PhD in Datacenter System Laboratory, supervised by Prof. Edouard Bugnion
- 2013 – 2016: Master Degree, Foundations of Software specialization (avg 5.75/6)
- 2010 – 2013: Bachelor Degree

Northeastern University(NEU)

Boston, U.S.A.

MASTER THESIS

Sep. 2015 - Mar. 2016

- Supervised by Prof. Jan Vitek in the Programming Languages Laboratory

Carnegie Mellon University(CMU)

Pittsburgh, U.S.A.

EXCHANGE YEAR, BACHELOR DEGREE IN COMPUTER SCIENCE

Aug. 2012 - Jul. 2013

- Dean's list School of Computer Science for QPA > 3.75/4

PhD Internships

Summer Internship

Kirkland, USA

GOOGLE ASYLO TEAM - MATT GINGELL

June - August 2019

- Asylo team, Trusted Execution environments, SGX
- Explored potential designs to support higher-level programming languages in SGX enclaves
- Delivered a prototype that allowed HLPL code to run inside SGX

Skills

Programming Go, C/C++, Java, Shell scripting, asm, Python

Knowledge in

Compilers & PL design, Language runtimes & virtual machines
Operating System design, Virtualization, KVM, Intel VT-x, Intel MPK
Software security, Hardware Security extensions, Trusted Execution Environments
Theoretical CS, Concurrent & Distributed Algorithms

Research

Current Research Area

Lausanne, Switzerland

EPFL, DCSL - PROF. EDOUARD BUGNION, PROF. JAMES LARUS, PROF. MATHIAS PAYER

Aug. 2019 - Present

- Intersection between PL, Systems, and Security
- Abusing existing programming abstractions to provide efficient support for security hardware extensions
- Language and hardware-based isolation of mutually distrustful packages in applications
- Exploring Web-assembly as unit of program isolation

Enclosures: Language-based restriction of untrusted libraries (ASPLOS21)

Lausanne, Switzerland

EPFL, DSCL - PROF. EDOUARD BUGNION, PROF. JAMES LARUS, PROF. MATHIAS PAYER

Sep. 2019 - Oct. 2020

- New fine-grain programming abstraction to restrict public libraries access to program resources
- Frontend extensions to Go and Python PLs
- Backend support for hardware isolation enforcement (Intel VT-x & Intel MPK)
- Intra-address-space isolation, Sandboxing, Compiler, Linker, Runtime
- [asplos link](#)

Secured Routines: Language-based construction of TEEs (ATC19)

Lausanne, Switzerland

EPFL, DSCL - PROF. EDOUARD BUGNION, PROF. JAMES LARUS

Jun. 2018 - May 2019

- Extended Go programming language to support executing goroutines inside Intel SGX.
- Intel SGX, Confidentiality, Integrity, Go, Compilers, Code partitioning, Hardware Extensions
- [usenix link](#)

Light-Weight Contexts in Dune

EPFL, DSCL - PROF. EDOUARD BUGNION

- Process virtualization with Dune
- Intra-address space isolation, limited view of process memory resources
- Protecting application secrets from untrusted libraries
- Inter-RPC isolation, process memory snapshots
- 5x speed improvement over a Linux fork
- Intel VT-X, Dune, Virtualization, Kernel module, Virtual Memory Management

Lausanne, Switzerland

Sep. 2016 - Jul. 2017

Efficient Runtime Deoptimization for R(Master Thesis)

NORTHEASTERN UNIVERSITY - PROF. JAN VITEK

- Speculative optimizer for an R JIT compiler
- Removes performance bottlenecks due to the language semantics
- Ensures correct run-time behavior.
- On-stack replacement, speculative optimizations, runtime de-optimization, R, LLVM, JIT compiler

Boston, U.S.A.

Sep. 2015 - Mar. 2016

Aperiodic-Event Support in FASA

ABB CORPORATE RESEARCH - DR. MANUEL ORIOL

- Fixed-priority servers, data-driven events, real-time control applications
- kernel design, dynamic linking/loading & software updates, pi-calculus

Baden, Switzerland

Feb. 2015 - Aug. 2015

Scalameta: AST Persistence & Obey: Code Health

EPFL, LAMP - PROF. MARTIN ODESKY & DR. EUGENE BURMAKO

- Obey: Scala-linter for user-defined rules enforced at compile-time
- AST Persistence: typed-AST format for Scala
- Resolves compiler version incompatibilities and provides IDE macros expansion support

Lausanne, Switzerland

Jan. 2014 - Feb. 2015

Projects

Operating Systems & Design 15-410

UNDERGRADUATE

- Implementation of a x86 Unix like Kernel in C and ASM
- Design and implementation of thread library, scheduler, virtual memory, various drivers, system calls

CMU

Jan. 2013 - Jul. 2013

Tweet Aggregator

GRADUATE

- Big Data web application to gather and display real-time tweets on a map, according to user-defined keywords
- Filtering and clustering tweets according to zoom-level and selected geographical areas

EPFL

Jan. 2014 - Jul. 2014

Compiler & Advanced Compiler

GRADUATE

- Design & implementation of compilers for JVM-based Lisp-like languages
- Mark & sweep garbage collector and optimization phases including DCE-CSE, constant folding, closure hoisting

EPFL

Sep. 2013 - Jul. 2014

Personnal

Languages Fluent in French & English

Teaching Assistant

Functional Programming (2020), Introduction to Operating Systems (2019)
Introduction to Java Programming (2018), Systems for Data Science (2017-2020)
Introduction to C Programming (2016-2017), Concurrent Programming (2015)
Student Volunteer at ECOOP (2016)